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Adverb extraction, specificity, and structural parallelism

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1. INTRODUCTION

In this paper I explore cross-linguistic variation in the availability of adverb extraction from traditional adjective phrases (TAPs) as illustrated in (1),[1] where (*) indicates that some languages allow it and some disallow it.

(1) (*)Terribly$_i$, he was t_i tired.

I establish two novel generalizations about a connection between this kind of extraction and articles, and examine implications that these generalizations have regarding the structure of TAPs across languages and in different constructions within a single language, as well as regarding the phasehood of projections in this domain. Bošković (2008a, 2012) establishes a large number of cross-linguistic generalizations separating languages that have articles from those that lack articles. He argues that differences between languages with regard to a number of syntactic and semantic phenomena, such as extraction, superiority effects, the majority reading of 'most', and radical pro-drop, to name a few, where languages behave differently depending on whether or not they have articles, can be captured if languages differ in whether or not they have DP. Among the phenomena Bošković discusses is the generalization that only languages that lack articles may allow left-branch extraction (LBE) out of TNPs, as illustrated in (2), where (*) again indicates that some languages allow (2) and some do not.

(2) (*)Smart$_i$, they are t_i students.

Adverb extraction, illustrated in (1), resembles LBE in the nominal domain. However, I will show that while this extraction is in a way a parallel operation to

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[1] I will be using the notions "traditional adjective phrase (TAP)" and "traditional noun phrase (TNP)" when there is no need to commit to the precise categorial status of the highest maximal projection in the extended domain of A and N.

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LBE, it differs substantially from LBE in the cut it makes between languages. Furthermore, I show that languages without articles that allow LBE also allow adverb extraction from predicative TAPs. In contrast, languages with articles like English and Spanish, which disallow LBE, also disallow adverb extraction out of predicative TAPs. However, languages with articles like Icelandic, Bulgarian, and Romanian, which disallow LBE, allow adverb extraction out of predicative TAPs. I show that the crucial difference here between the two kinds of languages that have articles is that Icelandic, Bulgarian, and Romanian are affixal article languages, in contrast to languages like English and Spanish. I establish the generalization that adverb extraction may be allowed in languages without articles and languages with affixal articles, but not in languages with non-affixal articles. I also propose an account of the generalization that unifies adverb extraction and LBE, but that still explains why some languages, in particular affixal article languages, disallow LBE but allow adverb extraction. A consequence of the proposed analysis is that Icelandic, Bulgarian, and Romanian are like NP-languages in disguise. More precisely, they have DP, but not for a deep syntactic reason (to be made more precise in section 2.2) as in languages such as English. I will also show that Icelandic, Bulgarian, and Romanian allow adverb extraction out of predicative TAPs for the same reason that languages such as Bosnian/Croatian/Serbian (BCS) allow it.

Furthermore, I show that adverb extraction is much more restricted with TAPs in the attributive position than in the predicative position and I provide an account of why this is the case. I argue that there is a connection between the (un)availability of adverb extraction in these contexts and the fact that many languages have morphologically different forms of adjectives reserved for attributive use. If a language has two distinct adjectival forms, then in the presence of such additional morphology, adverb extraction from the attributive position is blocked. However, when the predicative adjectival form is used in the attributive position, adverb extraction is allowed. I show this by investigating languages that use two forms of adjectives in the attributive position. A particularly interesting case in this respect is BCS, which has two forms of adjectives. The so-called long form is used only attributively; such adjectives give rise to a "definite/specific" reading of the TNP they occur in.[2] The short form is used predicatively, and in some cases it can also be used attributively, giving rise to an indefinite/non-specific reading of the TNP.

(3) a. plavi-**i** cvijet (BCS)
blue-**SPEC** flower
'the blue flower'

[2] In section 4, I discuss long-form adjectives and their connection to definiteness and specificity in more detail. While it is sometimes assumed that the presence of long adjectives gives rise to a definite interpretation (e.g., Leko 1999, Progovac 1998), Aljović (2002) shows that noun phrases with long adjectives are specific, but not necessarily definite. I follow Aljović in this respect.

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b. plav cvijet
blue.NONSPEC flower
'a blue flower'

I argue that the long-form morphology is a reflex of a functional projection within the TAP, which encodes specificity in BCS. This is different from the previous analyses, where the functional projection associated with the long-form morphology is a part of the TNP, rather than the TAP (see, e.g., Aljović 2002). I also provide an account of the exact feature-checking mechanism that adjectives and nouns are involved in within the TNP, which I show (with respect to languages like Icelandic) also has consequences for the precise statement of the binding domain for Condition A.

The paper is organized as follows. In section 2, I first establish a new generalization regarding the (un)availability of adverb extraction out of predicative TAPs. In section 2.1, I discuss a phase-based account of LBE, and I propose a phase-based account of adverb extraction in section 2.2. In section 3, I discuss adverb extraction from attributive TAPs, showing why this extraction is more restricted in such contexts. I also give an account of an interesting puzzle posed by Icelandic, which allows adverb extraction out of indefinite attributive TAPs, but disallows LBE of the TAP itself. Finally, in section 4, I discuss how BCS NPs with long adjectives get their specific reading.

2. LBE IN TRADITIONAL ADJECTIVE PHRASES

In this section, I explore a TAP-internal operation that is similar to left branch extraction (LBE) in the TNP in that it targets the left edge of the TAP, namely intensifying adverbs.[3] I will first discuss such extraction from TAPs in the predicative position. The extraction of leftmost elements in the nominal domain has been discussed ever since Ross (1967/1986:127) proposed the Left Branch Condition, which blocks movement of determiners, possessors, and adjectives out of TNPs in some languages. However, it has been noticed (see Ross 1967/1986 for Russian) that this condition does not hold in all languages, and it has been established that languages may allow LBE of adjectives only if they lack articles (Uriagereka 1988, Corver 1992, Bošković 2012). Bošković observes that LBE is allowed in BCS, Russian, Polish, Czech, Ukrainian, Slovenian, Mohawk, Southern Tiwa, Gunwinjguan languages, Hindi, Bangla, Angika, and Magahi, all of which lack the definite article.[4] Furthermore, he also observes that the development of articles in Ancient Greek led to the loss of LBE, and that the same process is happening in Finnish, where the development of an article in colloquial Finnish has led to the loss of LBE in this register.[5] In contrast to LBE in TNPs, extraction of

[3] I focus here on intensifying adverbs, which are adjoined to AP, putting aside degree adverbs (e.g., *too*, *so*), which are standardly considered to be heads taking AP as a complement (Abney 1987, Corver 1990, Grimshaw 1991, Kennedy 1999, Kennedy and Merchant 2000).

[4] Note that what matters for Bošković's generalizations is the presence of definite articles in a language (Bošković gives a number of additional generalizations that separate languages with articles from languages without articles).

[5] Note, however, that the LBE generalization is a one-way correlation. While all languages with articles ban this kind of LBE, article-less languages may, but do not have to, allow it

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intensifying adverbs from predicative TAPs, or out of TAPs in general, has received very little attention in the literature. One of the goals of the paper is to examine such extraction focusing on Slavic, Germanic, and Romance languages.

A survey of a number of these languages regarding such extraction reveals an interesting language split. English, Dutch, German, Brazilian Portuguese (BP), and Spanish disallow adverb extraction out of predicative TAPs, as shown by the examples in (4).

(4) a. *Terribly$_i$ I am [t_i tired]. (English)

b. *Ontzettend$_i$ ben ik [t_i moe]. (Dutch)
terribly am I tired
cf. Ik ben ontzettend moe.
'I am terribly tired.'

c. *Schrecklich$_i$ bin ich [t_i müde]. (German)
terribly am I tired.
cf. Ich bin schrecklich müde.
'I am terribly tired.'

d. * Terrivelmente$_i$ eu estou [t_i cansado]. (BP)
terribly I am tired
cf. Eu estou terrivelmente cansado.
'I am terribly tired.'

e. * Extremadamente$_i$ (yo) estoy [t_i cansado] (Spanish)
extremely am tired
cf. (Yo) estoy extremadamente cansado.
'I am extremely tired.'

In contrast, Bosnian/Croatian/Serbian (BCS), Polish, Russian, and Slovenian allow such extraction, as illustrated in (5).

(5) a. Strašno$_i$ je bila [t_i umorna]. (BCS)
terribly is been tired.F.SF
cf. Bila je strašno umorna.
'She was terribly tired.'

b. Okropnie$_i$ on był [t_i zmęczony]. (Polish)
terribly he was tired
cf. On był okropnie zmęczony.
'He was terribly tired.'

c. Užasno ja byl [t_i rad tebja videt']. (Russian)
terribly I was glad.SF you see
cf. Byl užasno rad tebja videt'.
'I was very glad to see you.'

(see Bošković (2012) for additional requirements for LBE). Note also that, following Bošković, I use the term LBE to refer only to AP extraction.

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d. Strašansko$_i$ je bila [t_i utrujena]. (Slovenian)
terribly is been.F tired
cf. Bila je strašansko utrujena.
'She was terribly tired.'

At first, it seems that adverb extraction makes the same cut between languages as LBE, in that languages that have articles disallow both LBE and adverb extraction, while languages that lack articles allow both. One might also suggest that adverb extraction is specific to Slavic languages, in that only they allow such extraction, given that the languages in (4) are all Germanic and Romance, but the ones in (5) are all Slavic. However, the matter turns out to be more complex. Contrary to what is expected under either of the two options just outlined, Icelandic, Bulgarian, and Romanian allow adverb extraction out of TAPs.

(6) a. Rosalega$_i$ er hún [t_i falleg]. (Icelandic)
extremely is she beautiful.SG.F
cf. Hún er rosalega falleg.
'She is extremely beautiful.'

b. Užasno$_i$ bjah [t_i umoren]. (Bulgarian)
terribly was tired
cf. Bjah užasno umoren.
'I was terribly tired.'

c. Foarte$_i$ sunt [t_i obosită]. (Romanian)
very am tired
cf. Sunt foarte obosită.
'I am very tired.'

These three languages have articles; furthermore, like other languages with articles, they disallow LBE (Bošković 2012). Icelandic has two forms of adjectives, one for indefinite and one for definite contexts; neither of the forms can undergo LBE (7a–b). Bulgarian also disallows LBE (7c), and the same holds for Romanian (7d–e).

(7) a. *Fallegt keypti hann hús.
beautiful bought he house.INDEF
cf. Hann keypti fallegt hús.
'He bought a beautiful house.' (Icelandic)

b. *Fallega keypti hann hús-ið.
beautiful.DEF bought he house-the
cf. Hann keypti fallega húsið.
'He bought the beautiful house.'

c. *Kakva prodade Petko t kola.
what.kind.of sold Petko car
cf. Kakva kola prodade Petko t?
'What kind of car did Petko sell?' (Bulgarian; Bošković 2001:198)

d. *Scumpe am văzut automobile.
expensive have seen cars

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cf. Am văzut scumpe automobile.
'I saw expensive cars.'

e. *Scumpe-le am văzut automobile.
expensive-the have seen cars
cf. Am văzut scumpele automobile.
'I saw the expensive cars.' (Romanian; Petroj 2014)

Given the peculiar behaviour of these three languages, in that they behave like other languages with articles with respect to LBE, but like languages without articles with respect to adverb extraction, we can conclude that adverb extraction does not simply distinguish between languages with and without articles. Since not only Bulgarian, but also Icelandic and Romanian, pattern with the languages in (5) with respect to this extraction, it is clear that it is also not just some property of Slavic languages that allows for it. One crucial property that separates these three languages from the other languages that have articles discussed above is that articles in these three languages are affixes, more precisely suffixes. With all of the above in mind, we reach a rather strange new generalization:

(8) *Generalization I*: Languages with non-affixal articles disallow Adv-extraction out of predicative TAPs, but languages without articles and languages with affixal articles may allow it.

Obvious questions that arise at this point are: What does lacking or having an article in the nominal domain has to do with extraction possibilities in the adjectival domain? That is, why does lacking an article in the TNP coincide with the availability of extraction out of the TAP? Why do affixal-article languages behave differently from other languages with articles concerning adverb extraction, patterning in this respect with languages that lack articles? It is clear that the presence or absence of articles within the TNP cannot influence extraction possibilities within the predicative TAP directly. However, it is possible that the two are indirectly related, as I will argue below. In what follows I first discuss LBE in more detail and introduce an existing phase-based account of such extraction, and then return to the new generalization in (8).

2.1. Adjectival left branch extraction

As mentioned briefly above, building on Uriagereka (1988) and Corver (1992), Bošković (2005, 2008a, 2012) establishes a correlation between the availability of adjectival LBE and the absence of articles across languages.

(9) Only languages without articles may allow LBE, while languages without articles never allow it.

This is illustrated in (2), repeated here as (10), with examples from BCS, which allows LBE (in fact, very productively), as in (10a), and English, which disallows it, as in (10b).

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(10) a. Pametni$_i$ su oni [t$_i$ studenti].[6] (BCS)
smart are they students
'They are smart students.'

b. *Smart$_i$ they are [t$_i$ students]. (English)

Bošković (2013a, 2014a) argues that (9) follows from a structural difference between TNPs in the two groups of languages and gives an account of this split based on a contextual approach to phases. According to Chomsky (2000, 2001), phases define locality domains and determine what part of the structure is sent to Spellout at the relevant point of the derivation. After Spellout, only the head of the phase and its edge remain accessible for further syntactic operations, which Chomsky formalizes as the *Phase Impenetrability Condition* (PIC). For Chomsky, *v*P and CP function as phases (in fact, they always function as phases regardless of the context in which they occur). However, a number of researchers have argued that whether or not a category X is a phase head can depend on its syntactic context (Bobaljik and Wurmbrand 2005; Bošković 2005, 2013a, 2014a; den Dikken 2007; Gallego and Uriagereka 2007; Takahashi 2011; Despić 2013; Wurmbrand 2014; among others). Specifically, Bošković (2013a) argues that the highest projection in the extended domain of every lexical head (including N and A) functions as a phase. Phasehood of a phrase thus depends on the amount of structure projected in the extended domain of a lexical head, which can vary cross-linguistically. Within the nominal domain, DP is a phase in languages with articles. However, many have argued that DP is missing in languages without articles (e.g., Fukui 1988; Corver 1992; Zlatić 1997; Chierchia 1998; Baker 2003; Bošković 2005, 2008a, 2012, 2013a; Marelj 2011; Despić 2011, 2013); NP is then a phase in BCS, which lacks articles, as the highest projection in the TNP. What the generalization in (9) follows from in this system is an interaction of two locality constraints. First, given the PIC, phrasal movement out of a phase XP must proceed via [Spec,XP] or XP-adjunction. Another relevant constraint is that movement steps cannot be too short, referred to as *anti-locality* by Grohmann (2003) (for arguments for anti-locality see: Bošković (1994, 2005, 2013a), Abels (2003), Grohmann (2003), Saito and Murasugi (1999), Boeckx (2005), and Ticio (2003), among many others). In that regard, Bošković (1994, 2005) argues that a moving element must cross at least a full maximal projection (not just a segment). Bošković adopts the traditional assumption that APs originate as NP-adjoined. To move out of DP in languages with articles, an adjective has to first move to SpecDP to satisfy the PIC, but this step violates anti-locality since it crosses only a segment of NP. This explains why LBE is disallowed in DP-languages. Since languages without articles lack the DP layer, NP-adjoined adjectives originate at the edge of the nominal phase (the NP) and can move out of it without violating any locality constraints.

[6] Both long and short adjectives can undergo LBE in BCS.

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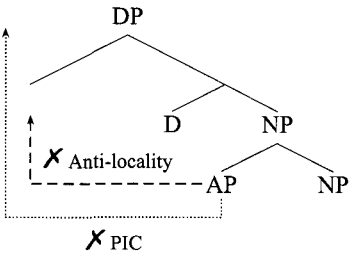
(11) a.



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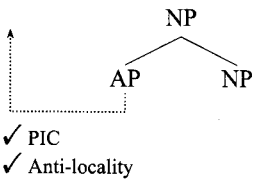


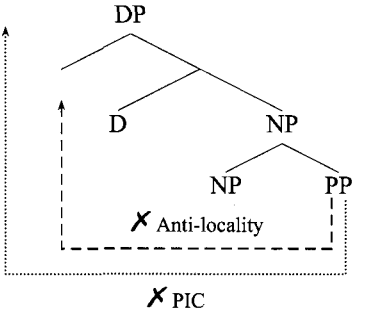
Similarly, following an observation by Stjepanović (1998), Bošković shows that NP-adjuncts other than APs are also extractable only in NP languages.[7] Compare the English and BCS examples in (12).

(12) a. * [From which city]$_i$ did you meet [$_{DP}$ [$_{NP}$ [$_{NP}$ girls] t_i]]? (English)

b. [Iz kojeg grada]$_i$ si sreo [$_{NP}$ [$_{NP}$ djevojke] t_i]]? (BCS)
from which city are met girls (Bošković 2005: 10)

This is accounted for in the same way as (9). The PP originates as NP-adjoined; it then needs to move to [Spec,DP] (due to the PIC), which is blocked by anti-locality.

(13) a.



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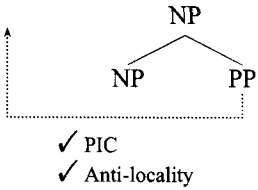

Furthermore, LBE is also impossible even in languages without articles if the NP from which LBE takes place is embedded in another NP, as in (14).

(14) *Pametnih$_i$ on cijeni [$_{NP1}$ prijatelje [$_{NP2}$ t_i [$_{NP2}$ studenata]]]? (BCS)
smart.GEN he appreciates friends.ACC students.GEN
cf. On cijeni prijatelje pametnih studenata.
'He appreciates friends of smart students?' (Bošković 2013a:89)

Recall that, as the highest projection in the TNP, NP is a phase in BCS. Since the higher NP is a phase in (14), the AP must move to its specifier, given the PIC; this movement violates anti-locality.

[7] See Bošković 2012 for a language survey in this respect as well as some interfering factors that need to be controlled for when testing the generalization with respect to other languages, especially because languages can differ regarding the adjunct/argument functions of certain PPs.

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To summarize, for an adjective to move out of an NP, there cannot be a phase projected immediately above it. More generally, it follows from the system that, in the extended projection of any lexical head, it is impossible to extract an element adjoined to the complement of a phase head.[8] In the following section I return to the generalization established above in (8) regarding adverb extraction.

2.2. Structural parallels in different extended domains

In this section I propose an account of the generalization established in (8), arguing that different lexical categories are uniform in the amount of structure they project in their extended domain within a single language. In the foregoing discussion of adjunct extraction out of TNPs in different languages, we have seen that the amount of structure projected within the extended domain of a lexical category correlates with the extraction possibilities of elements contained in it. The extraction possibilities of an element may therefore be used as a diagnostic for the amount of structure present within the extended projection where that element originates. Regarding adverb extraction from predicative TAPs, we have seen that languages that lack articles allow it (5), while non-affixal article languages like English disallow it (4).[9] Given this parallelism, I will pursue here the idea of structural parallelism between different extended projections. More specifically, I propose that the data in (4)–(5) suggest that, within a single language, the extended projections of different lexical categories are uniform in structural complexity.[10]

(15) Structural Parallelism (to be slightly revised):

a. If a language has functional structure within TNP (DP), it also has functional structure in TAP (let us call it XP_{AP}).

b. If a language has a bare NP, it also has a bare AP.

Assuming that intensifying adverbs are AP-adjoined, as in (16) (parallel to adjectives in TNP, as in (11)), the difference between languages with and without articles in (4)–(5) is easily captured under the contextual approach to phases. Recall that under this approach, the highest projection in an extended domain functions as a phase. In English-type languages in (4), DP is always present within the TNP, so these languages also always have an XP_{AP} in the TAP by (15a). In BCS-type languages in (5), since TNP can be a bare NP due to the lack of DP, these languages lack the XP_{AP} in the TAP as well, by (15b).

[8] See also Abels's (2003) generalization that complements of phasal heads cannot move. Movement of phasal complements and adjuncts to phasal complements is in fact blocked in the same way.

[9] I set affixal article languages aside for the moment.

[10] An important word of caution is in order here. This paper deals only with AP and NP. Thus, it is possible that the parallelism holds only for these two categories, for example, by virtue of them being [+N]. I will not examine other phrases from this perspective here, but the first phrase to look at would actually be PP, given that there may be independent reasons for a richer structure with VPs; see Bošković (2014b).

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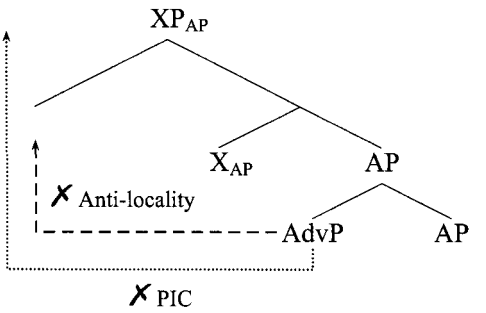
(16) a.



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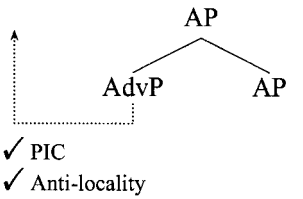

Thus, in languages with XP_{AP} in their adjectival domain, XP_{AP} functions as a phase, but in languages with bare AP, AP functions as a phase. To move out of a TAP, the adverb needs to move to the edge of TAP unless it originates at the edge. In the languages in (4), where XP_{AP} is projected above AP, this step violates anti-locality, and moving the adverb out of the XP_{AP} phase without stopping in $SpecXP_{AP}$ violates the PIC (16a). In contrast, there is no XP_{AP} above AP in the languages in (5), so AP is a phase. The adverb is adjoined to the AP, already at the edge of the adjectival phase, and ready to move out of it, as in (16b). We thus account for the contrast between English, Dutch, German, BP, and Spanish in (4) and BCS, Polish, Russian, and Slovenian in (5) regarding the possibility of adverb extraction. In fact, the contrast is accounted for in the same way as the contrast between languages regarding LBE discussed above (see (11)).

Now, recall that Bulgarian, Icelandic, and Romanian, all of which have articles, pattern with languages without articles in allowing adverb extraction from predicative TAPs. Thus, predicative TAPs in these languages seem to be bare APs just like in languages without articles, which is unexpected under (15). However, these languages differ from other languages with articles in that their articles are affixes. To understand their behaviour, it is necessary to abandon the TNP-centric view proposed in (15), and revise it to the more general version in (17).

(17) Structural Parallelism:

a. If a language allows bare lexical structure without a functional layer in the domain of one lexical category, it may allow bare lexical structure in the domain of other lexical categories. (e.g., a language can have both bare NP and bare AP).[11]

[11] Note that this is a one-way correlation.

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b. If a language never allows bare lexical structure, that is, it always requires a functional layer in the domain of one lexical category, it must have a functional layer in the domain of all lexical categories (e.g., such a language will never have bare NP or bare AP).

Furthermore, it is also important to note that the amount of structure in the extended projection of a lexical category in a language can vary from construction to construction. Thus, Bošković (2013a, 2014a) argues that TNP is not always a bare NP in BCS; in some constructions there can be functional structure above TNP in BCS. Thus, the TNP is typically, but not always, a bare NP in BCS. Apart from the fact that BCS allows LBE (10), this is also reflected in the fact that BCS does not allow extraction of genitive-marked nominal complements. Consider (18). The TNP from which extraction takes place here is a bare NP, which means that the NP is a phase. To move out of NP, the complement of N has to move via SpecNP due to the PIC, but this violates anti-locality As noted in footnote 3, Abels (2003) argues that phasal complement extraction is quite generally disallowed for this reason.

(18) ?* Ovog studenta sam pronašla sliku t. (BCS)
this.GEN student.GEN am found picture.ACC
'Of this student I found a picture.' (Bošković 2012:204)

However, Bošković (2012, 2014a) argues that certain quantifiers and numerals in BCS do project a phrase, specifically QP, above NP. In such cases, QP rather than NP is the phase. Importantly, complement extraction is allowed in the presence of a quantifier within the TNP.

(19) Ovog studenta sam pronašla mnogo/deset slika t. (BCS)
this.GEN student.GEN am found many/ten pictures.ACC
'Of this student I found many/ten pictures.' (Bošković 2012:205)

Here, NP is not a phase due to the presence of QP above it in the domain of N QP is thus the phase as the highest projection in the domain. The complement moving out of the TNP in (19) therefore has to go through the specifier of the QP, not the specifier of the NP. Such movement satisfies both the PIC and anti-locality.

Consider now Icelandic, Bulgarian, and Romanian from this perspective. Articles in these three languages are quite different in their PF manifestation from what is usually found in other languages with articles: they are affixes/clitics, and, more importantly, they do not occur DP-initially where articles typically occur in head-initial languages, but rather as a suffix on the noun in Icelandic and as an enclitic/suffix on the first element within the TNP in Romanian and Bulgarian.[12] The PF manifestation of articles in Icelandic, Bulgarian, and Romanian is thus very

[12] The first element in the TNP need not be a noun. It is therefore not entirely clear whether the Bulgarian article is a clitic or an affix, because it can attach to a noun, an adjective, an AP with an intensifier, or a quantifier (Franks and King 2000). The diversity of hosts points to its clitic status, according to one of Zwicky and Pullum's (1983) criteria. However, Halpern (1992) and Franks and King (2000) argue that it is a suffix. I will be referring to both languages as affixal article languages because the difference between an affix and a clitic does not matter for our purposes here.

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different from languages like English. Furthermore, the affixal article of languages like Icelandic, Bulgarian, and Romanian has been argued to behave differently from typical articles with respect to several phenomena. For example, Bošković (2008b) shows for a number of affixal article languages (Bulgarian, Swedish, Romanian, Norwegian, Hebrew, and Albanian) that they can void certain islandhood effects. This is illustrated with examples from Bulgarian, Icelandic, and Romanian, which are insensitive to *wh*-islands in the examples below.

(20) a. *I saw a book which I wonder who knows who sells.

b. Vidjah edna kniga, kojato$_i$ se čudja koj znae
saw one book which.the SE wonder who knows
koj prodava t_i. (Bulgarian)
who sells (Bošković 2008b:259)

c. Hvaða mynd var það sem þú vildir gjarnan vita
which film was it that you would like know
hver hefði stjórnað t_i? (Icelandic)
who had directed (Bošković 2008b:263)
'Which film did you want to know who had directed?'

d. Am vāzut o carte pe care mā întreb cine o vinde.
have.1SG seen a book for which myself wonder who sells
'I saw a book which I ask myself who sells.' (Romanian)
(Bošković 2008b:262)

Moreover, Reuland (2011) and Despić (2015) observe that languages with affixal articles allow reflexive possessives, unlike languages with typical non-affixal articles.[13] Most importantly, we will see below that the article can actually be omitted in Bulgarian, Icelandic, and Romanian, in contexts where it is obligatory in English type-languages—that is, that these languages in some contexts can lack DP. Given all this, it is reasonable to treat Icelandic, Bulgarian, and Romanian, as languages that do not, in principle, require functional structure (17b). Recall, however, that this does not mean that they cannot have functional structure above NP and AP. The current proposal blocks certain languages from ever having bare NP and AP, but it does not require that any language always has only bare NPs and APs. As a result, while Icelandic, Bulgarian, and Romanian belong to the group of languages that in principle allow bare lexical projections (17) (bare AP and bare NP), they still may have functional projections. In languages that disallow bare lexical projections, it is natural to assume that functional structure is present due to a formal syntactic requirement, such as feature checking, though I leave open the question of what exactly it is.[14] In contrast, in languages that in principle allow bare lexical projections, and do not require functional structure for formal reasons, I

[13] I discuss this in more detail below; see(41)

[14] The intuitive idea is straightforward: lexical heads in such languages have a feature-checking requirement that necessitates the presence of a functional head above them. Working out the details of the analysis would, however, take us beyond the scope of this paper.

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suggest that when functional structure is present, it must be motivated by interface considerations. This means that it either has PF manifestation, or is required by semantics. Otherwise, it will not be there.

Consider Icelandic, Bulgarian, and Romanian from this perspective. These three languages are different from languages like BCS, which also in principle allow bare lexical structure, in that they have articles in their functional vocabulary inventory. Crucially, Chierchia (1998) argues that articles in languages that have them contribute to the interpretation of the TNP; in particular, they are responsible for interpretations that are achieved by pure type-shifting operations in languages that do not have articles. For example, the definite article *the* has the meaning of the iota-operator in semantics; it changes expressions of type $<e,t>$ to e. In languages that do not have articles, like BCS, the interpretation of NPs as type e is attained through pure type-shifting in semantics.[15] Regarding type-shifting, Chierchia formalizes the Blocking Principle, under which covert type-shifting in semantics is not available for any type-shifting operation for which there is an overt item in the language that contributes its meaning. Given the Blocking Principle, in languages that have articles contributing the meaning of the type-shifting operators, covert type-shifting is not available.[16] What this means for languages like Icelandic, Bulgarian, and Romanian is that even though the presence of functional structure in the TNP in these languages is not required by parallelism (17), the right semantic interpretation cannot be achieved most of the time without projecting a DP. The mere existence of articles as vocabulary items in these languages blocks the possibility of covert semantic type-shifting operations that are available in languages that lack articles. Therefore, even though Icelandic, Bulgarian, and Romanian in principle belong to the NP-type languages (in that in principle they can have a bare NP), this is obscured in these languages in most TNPs because they have articles. As a result, DP projects within the TNP, which is why these languages, like other DP languages, disallow LBE (7).[17] Icelandic, Bulgarian, and Romanian are thus different from prototypical DP languages with non-affixal articles in that the presence of their articles, which also have non-standard PF manifestation as discussed above, is motivated by the semantics, not by formal (syntactic) reasons.

Under the current proposal, we would expect affixal-article languages to be less clearly DP languages than, for example, English. As noted above, their articles are different from the ones in English in their PF manifestation, which, as shown in section 3.1, has consequences for the nominal domain (i.e., spellout within this domain). But more importantly, given the above discussion, we would expect Icelandic, Bulgarian, and Romanian to be able to omit articles where they are not semantically motivated. A confirmation of this comes from the fact that Bulgarian, Icelandic, and Romanian can omit the definite article when it is not necessary for

[15] This is how Chierchia treats Slavic languages without articles.

[16] It is worth noting here that the relevant interpretation (broadly associated with definiteness) is not the same in languages with articles and languages without articles. In the same contexts, the two language types differ with respect to the presupposition of uniqueness/exhaustivity, as discussed in Bošković (2012), who attributes this to the presence/absence of DP in definite contexts.

[17] I will return to this matter below.

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the right interpretation. One such context is with superlatives. It has been noted that the definite article in superlatives does not contribute the definiteness interpretation it has in non-superlative contexts. This is visible from the lack of definiteness effect in the context of superlatives. For instance, while extraction out of indefinite DPs like in (21a) below is possible, definite DPs, as in (21b), disallow such extraction. This is usually referred to as the definiteness effect.

(21) a. Who did you see pictures/a picture of t?

b. *Who did you see the/these pictures of t?

However, superlative DPs, despite the presence of the definite article, do not induce the definiteness effect (Szabolcsi 1986, Ticio 2003).

(22) Who did you see the best picture of t?

Furthermore, in superlatives, uniqueness is standardly assumed to be imposed by the semantics of the *-est* morpheme (see, for example, Sharvit and Stateva 2002). Therefore, *the* in English superlatives appears to be present merely for formal reasons; it is essentially an expletive. On certain readings of superlatives, it even has to be interpreted as indefinite, which is why Heim (1999) treats *the* as a semantically vacuous element in this context. Importantly, as discussed by Pancheva and Tomaszewicz (2012) and Shen (2014), Bulgarian can omit the definite article in superlatives.[18] This is illustrated in (23a–b).

(23) a. Ivan ima naj-dobri-**te** albumi ot U2. (Bulgarian)
Ivan has superlative-good-**the** albums by U2.
(Pancheva and Tomaszewicz 2012:296)

b. Ivan ima naj-dobri albumi ot U2.
Ivan has superlative-good albums by U2
'Ivan has the best albums by U2.'
(Pancheva and Tomaszewicz 2012: 295)

The same in fact holds for Icelandic.[19]

(24) a. Jón á bestu plötu U2. (Icelandic)
John owns best album U2

[18] Romanian superlatives are formed with the AP constituent *cel* + *mai* 'more' + A (Dobrovie-Sorin and Giurgea 2006). The affixal article is not used if the superlative (i.e., the constituent in question) precedes the noun, which is what matters for our purposes (if the superlative follows the noun, the affixal article does attach to the noun). It may be worth noting that the element *cel* also occurs with cardinal numerals and adjectives co-occurring with elided nouns (Dobrovie-Sorin and Giurgea 2006); it can also optionally precede a postnominal adjective, in which case an affixal article is present on the noun (see Marchis and Alexiadou 2009, who also show that *cel* is not an article).

[19] Bulgarian and Icelandic are not exactly the same here. I leave open why this is the case, simply focusing on the fact that superlatives can occur without a definite article in these languages.

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b. *Jón á bestu plötu-**na** U2
John owns best album-**the** U2

c. Jón á bestu plötu-**na** frá U2
John owns best album-**the** from U2

d. *Jón á bestu plötu frá U2
John owns best album from U2

Focusing on Bulgarian, recall that DP in Bulgarian is not required for formal reasons as it is in English, and the use of articles in this language needs to be motivated by interface considerations. As noted above, the presence of the definite article in superlative contexts is not required by the semantics. This means that in Bulgarian superlatives where the definite article is also not phonologically present, such as (23b), there is no interface motivation for the presence of the DP projection, since it is not required by the semantics and it has no PF manifestation. It then follows that DP is not projected in such cases, since as we have seen, there is no feature-checking, that is, syntactic motivation for its presence in languages like Bulgarian. Crucially, Shen (2014) argues for the absence of DP in (23b), by showing that a certain interpretation of superlative expressions, possible in NP languages but not in English-type DP languages, is available in Bulgarian. In particular, regarding superlative expressions like (25)a), Pancheva and Tomaszewicz (2012) observe that, while English only allows the relative reading in (25b), Slavic languages without articles allow both relative readings in (25b–c).

(25) a. Ivan has the best album by U2.

b. 'Ivan has better albums by U2 than anyone else does.'

c. 'Ivan has better albums by U2 than by any other band.'

(Pancheva and Tomaszewicz 2012:294)

Concerning Bulgarian superlatives, Pancheva and Tomaszewicz (2012) observe that the relative reading with NP-internal focus as in (25c) is not available when the article is present (23a), just as in other languages that have articles (25), but it is available when the article is absent in (23b), just as in languages that lack articles. Shen (2014) argues that the reading in (25c) is possible only if the NP-internal focus can move outside of TNP. This movement is blocked by the DP layer in the English example in (25) and the Bulgarian example in (23a), but not in the Bulgarian example in (23b). Shen thus argues that DP is not present in (23b). It should be noted that Dubinsky and Tasseva-Kurktchieva (2014) also argue that Bulgarian can lack the DP layer in some cases when no overt articles are present, noting that Bulgarian in these cases exhibits the behavior of languages like BCS, not English.

Given that Bulgarian can lack the DP layer in the TNP when it has neither semantic motivation nor phonological manifestation, I take this to mean that Bulgarian in principle may allow bare NPs (as in fact argued by Shen 2014 and Dubinsky and Tasseva-Kurktchieva 2014). However, articles are needed in most cases to give the right semantic interpretation of Bulgarian TNPs, so the DP is usually projected. The intuitive idea here is that affixal-article languages are in a sense less fully DP languages than other DP languages. The obvious connection

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here is that non-typical PF-manifestation of articles as suffixes or enclitics is related to the possibility of dropping DP in some cases.[20] While the intuitive idea here is clear, I leave formalizing it for another occasion, since it goes well beyond the scope of this paper, which focuses on adverb extraction out of TAPs.

Further support for the possible lack of DP in certain cases in affixal-article languages comes from weak definites, another context where the definite article in English lacks its prototypical interpretation of uniqueness or a familiarity presupposition. Aguilar-Guevara (2014) notes that the set of nouns that can occur as weak definites is restricted to a few classes and some isolated cases, and that only certain verbs taking such phrases as complements give rise to a weak definite reading. Furthermore, Scholten (2010) shows that the set of nouns that can serve as weak definites is not the same across languages. Thus, some nouns that can be weak definites in English do not function like that in other languages. Nevertheless, Icelandic, Bulgarian, and Romanian can omit the definite article in some contexts of this sort, where the definite article is obligatory in English.

(26) a. Hún fór til tannlæknis. (Icelandic)
she went to dentist
'She went to the dentist.'

b. Ég tók rútu í skóla-nn.
I took bus in school-the
'I took the bus to school all my life.'

c. Hann fór út í búð.
he went out in store
'He went to the store.'

d. (Toj) slusha radio. (Bulgarian)
(he) listens radio.
'He is listening to the radio.'

e. (Tja) otide na zəbolekar.
(she) went to dentist
'She went to the dentist.'

f. Cjal jivot pətuvah s avtobus.
whole life travelled with bus
'I travelled with the bus all of my life.'

g. S-a dus la pravalie. (Romanian)
REFL-has went to store.INDEF
'He went to the store.

In sum, extended projections of different lexical categories within the same language are uniform with respect to their complexity. Some languages never allow bare lexical structure without a functional layer. Among the languages I have

[20] An important word of caution is in order here. It is not out of the question that only languages with suffix/enclitic articles (not affix/clitic articles in general) exhibit this behavior, since only the suffix/enclitic requirements lead to atypical PF manifestation. I leave this issue for future research.

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investigated, such languages are English, Dutch, German, Brazilian Portuguese, and Spanish.[21] They always have DP in the TNP and they also always have a functional projection in the TAP. In contrast, other languages investigated here do allow bare lexical projections, without any functional structure. Such languages are BCS, Polish, Russian, Slovenian, Icelandic, Bulgarian, and Romanian. They have bare APs in the predicative position, and they also allow bare NPs. What is important for our purposes is that the possibility of bare AP leads to the possibility of extraction of adverbs from predicative TAPs.[22]

Above, I have discussed only TAPs in predicative position. In the following section I turn to TAPs in attributive position.

3. ATTRIBUTIVE TAPS AND ADVERB EXTRACTION

In this section, I discuss contexts with attributive TAPs in the languages investigated above. At first sight it appears that the split between the two kinds of languages captured in the generalization in (8) is lost in this context; that is, adverb extraction from attributive TAPs appears to be uniformly impossible. Examples from languages that disallow bare lexical projections (i.e., where TAPs are always XP_{AP}'s) are given in (27), and from languages that allow bare lexical projections (i.e., which allow bare APs in the predicative position) in (28):

(27) Languages that disallow bare lexical projections:

a. * Extremely$_i$ she has seen a [t_i tall] man. (English)
cf. She has seen an extremely tall man.

b. * Zeer$_i$ had ze een [t_i lange] man gezien. (Dutch)
extremely has she a tall man seen.
cf. Ze had een zeer lange man gezien.
'She has seen an extremely tall man.'

c. * Extrem$_i$ hat sie einen [t_i großen] Mann gesehen. (German)
extremely has she a tall man seen.

d. * Extrem$_i$ hat sie den [t_i großen] Mann gesehen.
extremely has she the tall man seen
cf. Sie hat einen/den extrem großen Mann gesehen.
'She saw an/the extremely tall man.'

[21] In limited cases in Romance, bare nominals can occur as objects (e.g., Espinal and McNally 2011, Riqueros 2013 for Spanish). One possibility here is that such nominals incorporate into the verb (Espinal and McNally 2011). Incorporation would satisfy the formal inadequacy that would otherwise require nominals in argument positions to project a DP (cf. Baker 1988 on N-incorporation and case). However, Riqueros (2013) shows that bare nominals can be modified by adjectives, a potential problem for an incorporation account. He also shows that bare nominals pattern with regular DPs regarding extraction possibilities, arguing that they must have a functional projection.

[22] I will return to LBE from this perspective in section 3.1.

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e. * Extremamente$_i$ ela viu um omem [t_i alto]. (BP)
extremely she saw a man tall
cf. Ela viu um homem extremamente alto.
'She saw an extremely tall man.'

f. * Extremadamente$_i$ (ella) vio un hombre [t_i alto]. (Spanish)
extremely she saw a man tall
cf. (Ella) vio un hombre extremadamente alto.
'She saw an extremely tall man.'

(28) Languages that allow bare lexical projections:

a. * Izuzetno$_i$ su kupili [t_i skupi] automobil. (BCS)
extremely are bought expensive.LF car
cf. Kupili su izuzetno skupi automobil.
'They bought the extremely expensive car/one of the extremely expensive cars.'

b. ??/* Niezwykle$_i$ ona widziała [t_i wysokiego] mężczyznę (Polish)
extremely she saw tall man.
cf. Ona widziała niezwykle wysokiego mężczyznę.
'She saw an extremely tall man.

c. * Očen'$_i$ ona uvidela [t_i vysokogo] čeloveka. (Russian)
very she saw tall.LF man
cf. Ona uvidela očen' vysokogo čeloveka.
'She saw a/the very tall man.'

d. * Izjemno$_i$ je kupila [t_i lep] plašč. (Slovenian)
extremely is bought beautiful coat
cf. Kupila je izjemno lep plašč.
'She bought an extremely beautiful coat.'

e. * Izklyučitelno$_i$ tya vidya [t_i visok] čovek. (Bulgarian)
extremely she saw tall man
cf. Tya vidya izklyučitelno visok čovek.
'She saw an extremely tall man.'

f. * Rosalega$_i$ keypti hún [t_i fallegu] úlpu-**na.**
extremely bought she beautiful.ACC.F.**DEF** jacket. ACC.F-**the**
cf. Hún keypti rosalega fallegu úlpu.
'She bought the extremely beautiful jacket.' (Icelandic)

g. * Foarte$_i$ a cumpărat un [t_i căput] scump. (Romanian)
very has bought a.M coat expensive
cf. A cumpărat un foarte căput scump.
'He bought a very expensive coat.'

These data might lead us to the following generalization.[23]

(29) Generalization II: Adverbs cannot be extracted from attributive TAPs.

[23] This generalization will be revised below.

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The generalization in (29) suggests that adjectives in the attributive position have additional structure even in languages that allow bare lexical projections; this structure then blocks adverb extraction. What could the source of this additional structure be? The most obvious candidate here is the modification itself; that is, the modification relation requires the presence of additional structure independently of our current concerns. In fact, it is well known that many languages have a different form for adjectives in attributive positions, with this form typically being morphologically richer. For instance, BCS adjectives have a long and a short form (*poznati* 'famous.LF.M' vs. *poznat* 'famous.SF.M'). The long form can only be used attributively (compare (30a) and (30c)).

(30) a. poznati pjesnik (BCS)
famous.LF poet
'the/a famous poet'

b. Mak Dizdar je poznat.
Mak Dizdar is famous.SF
'Mak Dizdar is famous.'

c. * Mak Dizdar je poznati.
Mak Dizadar is famous.LF

Russian also distinguishes between long and short forms of adjectives (*novyj* 'new.LF.M' vs. *nov* 'new.SF.M'). The short form never occurs attributively (31a), and the long form is reserved only for this use (31b). In some cases, the long form appears to be used predicatively (31d), but it has been demonstrated (Bailyn 1994, Babby 2010, among others) that such adjectives are followed by a null generic head meaning 'man', 'woman', 'person', or 'entity'. Therefore, the long form that seems to be in the predicative position is actually an attributive adjective.

(31) Russian (Cinque 2010: 108, from Pereltsvaig 2000)

a. * Nov dom stoit na gore.
new.SF house.NOM stands on hill

b. Novyj dom stoit na gore.
new.LF house.NOM stands on hill
'The new house stands on a/the hill.'

c. Dom nov.
house.NOM new.SF
'The house is new'

d. Dom novyj.
house.NOM new.LF
'The house is new.'

In view of the differences found in many languages between attributive and predicative adjectives found in many languages, it would seem reasonable to assume that attributive adjectives have a more complex structure even in languages with bare predicative TAPs. In fact, based on the syntactic and semantic properties of the long/short adjective paradigm in Russian (31), Bailyn (1994) argues,

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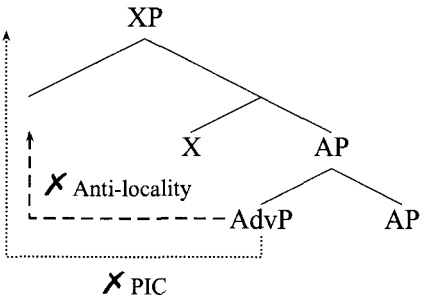
following Rubin (1991), that attributive TAPs quite generally must have a functional projection above the AP—that is, that such TAPs cannot be bare APs. Given the existence of such a projection, we capture the fact that adverb extraction is blocked in both (27) and (28) in the same way as we did for (4): the functional projection blocks adverb extraction, due to the conflict between the PIC and anti-locality.

(32)



The existence of this additional projection in attributive TAPs in languages that in principle allow bare APs could be taken to be imposed by the modification relation. Alternatively, it could be taken to be parallel to the existence of QP in BCS TNPs (19) and DP in Bulgarian TNPs (23), which allow bare NPs in the absence of morphological manifestation (and semantic motivation) of an additional projection in the extended domain of N. Under this view, we might expect to find bare TAPs even in the attributive position in the absence of morphology motivating it. It turns out that this is indeed the case.

The only two languages investigated in this paper that allow two different forms of adjectives to be used in the attributive position are BCS and Icelandic.

(33) a. poznat-**i** pjesnik vs. poznat pjesnik (BCS)
famous-**LF** poet famous.SF poet

b. góð-**a** stelpa-**n** vs. góð stelpa (Icelandic)
good-**DEF.F** girl-**the** good girl

In both languages one of those forms is used only attributively (the long form in BCS and the definite form in Icelandic), while the other form is used both in the predicative position and attributively in non-specific/indefinite TNPs. We have seen that both BCS and Icelandic disallow adverb extraction from attributive TAPs with adjectives that only occur attributively ((34b) and (34d). Importantly, both of these languages allow adverb extraction even from attributive adjectives, provided that the adjectve has the form that can be used both attributively and predicatively (34a) and (34b)).

(34) a. Izuzetno$_i$ su kupili [t_i skup] automobil. (BCS)
extremely are bought expensive.SF car
cf. Kupili su izuzetno skup automobil.
'They bought an extremely expensive car.'

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b. * Izuzetno$_i$ su kupili [t_i skupi] automobil.
extremely are bought expensive.LF car
cf. Kupili su izuzetno skupi automobil.
'They bought the extremely expensive car/one of the extremely expensive cars.'

c. Rosalega$_i$ keypti hún [t_i fallega] úlpu. (Icelandic)
extremely bought she beautiful.ACC.F.INDEF jacket. ACC.F
cf. Hún keypti rosalega fallega úlpu.
'She bought an extremely beautiful jacket.'

d. * Rosalega$_i$ keypti hún [t_i fallegu] úlpu-**na.**
extremely bought she beautiful.ACC.F.**DEF** jacket.ACC.F-**the**
cf. Hún keypti rosalega fallegu úlpu-na.
'She bought the extremely beautiful jacket.'

Based on (34), we can now revise the generalization given in (29) as follows:

(35) Languages with non-affixal articles disallow adverb extraction from attributive TAPs, while languages without articles and with affixal articles allow it only in the absence of overt attributive adjectival inflection.

Under the current proposal, languages like BCS and Icelandic have a bare AP in the predicative position, but they have an additional functional layer in attributive TAPs, which is morphologically manifested and blocks extraction in (34b) and (34d). The attributive TAPs in (34a) and (34c) have the same adjectival form as is used in the predicative position, which I have argued above involves a bare AP. It is then natural to take the attributive TAPs in question also to be bare APs. This way we can easily capture the possibility of adverb extraction in this context in BCS (I return to Icelandic below). AP-adjoined adverbs can be extracted in such cases because there is no XP within the TAP (16b), nor DP within the TNP (11b), to block this movement.

The facts discussed in this section and the analysis proposed here have several consequences. First, Hiraiwa (2005) makes the claim that what is at the edge of the edge of phase X is not at the edge of X for the purposes of the PIC, and therefore is not accessible for movement. Given that adverbs originate as AP-adjoined, that APs are NP-adjoined, and that NP is a phase in BCS, what (34a) demonstrates is precisely movement of the edge of the edge; hence it raises a problem for Hiraiwa's claim (see Bošković 2013c for additional problems). Such examples show that at least some edges of this sort can be extracted.

Furthermore, the availability of adverb extraction from attributively used APs also provides evidence that such TAPs are not reduced relative clauses, arguing against Cinque's (2010) claim to that effect. In particular, relative clauses are very strong islands in BCS (36b), just as they are in English (36d).

(36) a. Upoznali su nekoga ko poznaje Kosaru. (BCS)
met are someone who knows Kosara
'They met someone who knows Kosara.'

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b. * [Koju djevojku] su upoznali nekoga ko poznaje t?
which girl are met someone who knows

c. They met someone who knows Julia.

d. * [Which girl] did they meet someone who knows t ?

If these TAPs were reduced relative clauses, adverb extraction out of them should be disallowed just as it is disallowed with a full relative clause (37b), which is not the case (37c).

(37) a. Vidjeli su djevojku koja je kupila [izuzetno lijep kaput].
seen are girl which is bought extremely beautiful.SF coat
'They saw a girl who bought an extremely beautiful coat.'

b. * [Izuzetno] su vidjeli djevojku koja je kupila
extremely are seen girl which is bought
[t lijep kaput].
beautiful.SF coat

c. Izuzetno je kupila lijep kaput.
extremely is bought beautiful.SF coat
'She bought an extremely beautiful coat.'

One might assume that even under Cinque's analysis, the grammaticality of (37c) could follow from its reduced relative clause structure, and that this extraction is allowed because the part of the structure that makes a relative clause an island is missing. However, this cannot be maintained, because BCS does have reduced relative clauses and they disallow Adv-extraction. For instance, better candidates for the reduced relative clause analysis in BCS are postnominal adjectives, such as the ones in (38), which are also treated this way by a number of authors (e.g., Sadler and Arnold 1994, Larson 1998, Larson and Marušič 2004, Cinque 2010).

(38) a. Vidjeli su čovjeka izuzetno pó:nosno:g na svoju djecu. (BCS)
seen are man extremely proud.SF of his children
'They saw a man extremely proud of his children.'

b. Upoznali su roditelje izuzetno pó:nosne na u svoju djecu.
met are parents extremely proud.SF of in their children.
'They met parents extremely proud of their children.'

c. Posjetili su zemlju izuzetno bógatu rijekama.
visited are country extremely rich.SF rivers.INST
'They visited a country extremely rich in rivers.'

Importantly, Adverb extraction in such contexts is disallowed, as shown in (39).

(39) a. * Izuzetno su vidjeli čovjeka t pó:nosno:g na svoju djecu. (BCS)
extremely are seen man proud.SF of his children

b. * Izuzetno su upoznali roditelje t pó:nosne na svoju djecu.
extremely are met parents proud.SF of his children

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c. * Izuzetno su posjetili zemlju t bógatu rijekama.
extremely are visited country rich.SF rivers.INST

It is impossible to use long adjectives in the postnominal reduced relative clause, which follows from the fact that they cannot occur predicatively. Even though that is not visible in (39a) because the long/short distinction for this adjective in the accusative is completely neutralized, the forms in (39b–c) are clearly short. It is not possible to use the long forms even without extraction: **roditelje ponosne: na svoju djecu* ('parents proud.PL.LF of their children') or **zemlju bogatu: rijekama* ('country rich.PL.LF rivers.INST'), where the long-form adjectives differ in the length of the final vowel from their short counterparts in (39b–c).[24]

Given the contrast between the availability of adverb extraction from prenominal TAPs with short adjectives and the unavailability of such extraction with non-reduced and reduced relative clauses in BCS, I conclude that prenominal short adjectives in BCS should not be treated as reduced relative clauses.

In the following section I return to adverb extraction from Icelandic attributive TAPs.

3.1. Icelandic attributive TAPs—adverb extraction and LBE

We have seen that Icelandic allows adverb extraction in the context of predicative TAPs (6), behaving like BCS-type languages in this respect. Also, just like BCS, Icelandic has an adjectival form that can occur both in the predicative and in the attributive position (the short form). Like BCS, it allows adverb extraction even from attributive TAPs with that adjectival form (34c). Icelandic also has an adjectival form that is used only attributively (the long form). Again like BCS, it disallows adverb extraction from attributive TAPs with this from (34d). We have seen that the possibility of adverb extraction from predicative TAPs in Icelandic (and other languages of this type) follows from the lack of the functional layer, XP_{AP}, in this position (16b), which is present in English-type languages and blocks such extraction. Regarding the impossibility of adverb extraction in (34d), we have seen that even in languages that in principle allow bare APs, the functional layer is present above AP in contexts where we see its morphological manifestation. Thus, with the Icelandic long adjectives, there is an XP_{AP} present, blocking adverb extraction in such contexts (32). However, an issue arises regarding extraction from short-form TAPs in the attributive position (34c). BCS allows adverb extraction with short adjectives used in the attributive position because in such cases it lacks both the XP_{AP} within TAP and the DP within the TNP, so the adverb can extract without violating the PIC or anti-locality. However, in Icelandic in (34c), even if the TAP lacks the functional layer, as in BCS, the question remains why the DP doesn't block adverb extraction. We have seen that Icelandic belongs to the group of languages that, in principle, allows bare lexical projections, so an immediate suggestion for indefinite Icelandic TNPs might be that they just lack the DP layer

[24] Note that I am ignoring here vocative contexts which may have additional word order possibilities due to the focalization/expressive component that they are associated with; see Todorović (2014).

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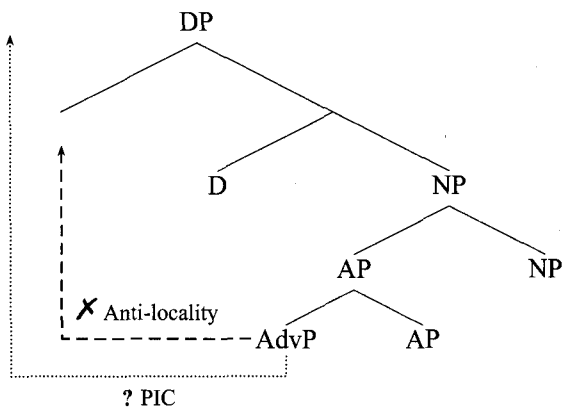
(Harðarson 2014).[25] In other words, since their indefinite article is not overt, perhaps it is just not there at all (see Thráinsson (2007), who claims that Icelandic has no indefinite article). The fact that LBE is always blocked in Icelandic (7a–b) might indicate the presence of DP in such contexts, where LBE would be blocked just as in English (11). However, the LBE generalization is a one-way correlation: while DP languages can never allow LBE, NP languages may or may not allow it. The impossibility of LBE in (7a–b) thus does not necessarily indicate the presence of DP. The presence of DP may, however, be enforced by the semantic considerations of the kind discussed above. Consider then how the issue raised by adverb extraction from attributive TAPs with short adjectives would be approached from this perspective.[26]

Under the contextual approach to phases, the highest projection in the extended domain of N is a phase (Bošković 2013a, 2014a), so DP is a phase when present. As discussed above, the presence of DP blocks LBE. An AP moving out of a DP has to go through SpecDP, but moving from an NP-adjoined position to SpecDP violates anti-locality. However, if DP is there and if it is a phase, why doesn't it also block adverb extraction in (34c)? An AP-adjoined adverb moving out of the DP would have to first move to SpecDP due to the PIC, just like a moving AP. This step would cross segments of two phrases, but not a full maximal projection, and would be ruled out by anti-locality as well.

(40)



I suggest that the possibility of adverb extraction from an Icelandic indefinite attributive AP has to do with the affixal nature of its article. In particular, I assume an analysis of affixal article languages that Despić (2011) proposed based on binding. He argues that the spellout of the complement of D is delayed in affixal-article languages in general. I argue that adverb extraction is possible because of this delay, but that LBE is not possible even with a delayed spellout due to the

[25] While Harðarson (2014) assumes a more elaborated functional structure in both indefinite and definite TNPs in Icelandic, he does argue that the DP layer is absent in indefinite TNPs, but present in definite TNPs.

[26] The reader should, however, bear in mind that it is not out of the question that DP is not present here.

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conflicting requirements that extraction and agreement impose on the adjective. Such a conflict does not arise with adverbs because they do not agree with either the noun or the adjective.

Recall that articles in Icelandic are affixes, and therefore morpho-phonologically dependent on their complement; that is, the affix has to be in the same spellout domain as its host.[27] Because of this, Despić (2011) proposes that spelling out the complement of D in affixal-article languages is delayed until the next phase head enters the structure. If the D-complement in these languages were to be spelled out at the moment when the DP-phase is completed, the affix and its host would belong to two separate spellout domains. However, this should not happen given that affixal D in Icelandic gets suffixed onto the noun. For simplicity, we can say that D is a "weak" phase head in Icelandic (the spellout of its complement is delayed), while D is a "strong" phase head in non–affixal-article languages (forcing immediate spellout of its complement). The first "strong" phase head in affixal article languages is introduced at the *v*P-level. The *v* triggers spellout of its complement VP, which is also when the complement of a weak D embedded within VP is spelled out. The affixal article and its host are now both part of the same spellout domain, which allows for the affix to lower and attach to the host. Let us see how the derivation of (34c) proceeds.

The adverb in (34c) originates as AP-adjoined (40). Given that this TAP is headed by an adjective of the same form that is used predicatively, the functional XP that would project above AP when definite adjectival morphology is present—(28)/(32)—is not projected here, just as it is absent when these APs are used predicatively (6).[28] The adverb thus originates at the edge of the adjectival phase, and nothing blocks its extraction from the AP (16b). The DP does not block this adverb extraction either because spelling out the complement of D, in which the adverb is base-generated, is delayed until *v* sends its complement VP, to spellout. As is standardly assumed, after *v* enters the derivation, elements that will be moving out of *v*P move first to [spec,*v*P]. Then, *v* sends its complement to spellout. As a result, the moving adverb does not have to move through [spec,DP], which is what causes a violation in other DP-languages. Rather, the first step it has to make to satisfy the PIC is to move to [spec,*v*P]; since this step also satisfies anti-locality, extraction is possible. Crucially, we have seen that Icelandic and Bulgarian DPs are transparent for other phenomena as well, where these two languages pattern with NP-languages rather than DP-languages (see also the discussion of adverb extraction out of predicative TAPs where these languages also pattern with NP languages (8)). This also suggests that affixal D is weak. Moreover, Reuland (2011) and Despić (2015) observe that reflexive possessives are available in NP-languages, but not in DP-languages (see the contrast between (41a) and (41b)). What is interesting is that they observe that DP-languages with affixal articles pattern with

[27] I assume that the affix lowers in PF to attach to the host as in affix-hopping/prosodic inversion analyses.

[28] Recall that with the form of the adjective that is used only attributively in Icelandic and BCS, XP is present and adverb extraction is blocked within the XP_{AP}, regardless of the presence/absence of D.

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NP-languages, rather than with DP-languages with non-affixal articles, in allowing reflexive possessives within their DPs (41c).

(41) a. * John saw himself's book.

b. Ivan je vidio svoju knjigu. (BCS)
Ivan is seen self's.ACC book.ACC

c. Marija prodade svojata nova kniga. (Bulgarian)
Mary sold self's.the new book (Despić 2011:155)

Binding domains for anaphors have been analyzed in terms of phases; it has been argued by many that anaphors need to be bound within their minimal phase (Lee-Schoenfeld 2004, Canac-Marquis 2005, Hicks 2006, Quicoli 2008, Despić 2011, among others). DP is a phase in languages with articles, and NP is a phase in languages without articles, under the contextual approach to phases adopted here. Thus, the anaphors in (41) seem to be licensed from outside their minimal phase in languages with affixal articles and languages without articles, but not in languages with non-affixal articles. Based on (41), the requirement for anaphor licensing can be stated as follows:

(42) A reflexive anaphor has to be bound within the minimal phase projected by a strong functional phasal head.

This two-way split in the availability of possessive reflexives between non–affixal-article languages on the one hand, and NP-languages and affixal-article languages on the other, can be accounted for in the following way. In DP-languages, DP is a phase and a reflexive anaphor cannot be licensed outside of its minimal DP, hence the ungrammaticality of (41a). In NP-languages, NP is a phase, but not a phase projected by a functional head, so it does not close the binding domain (42). The next phase is *v*P; it is projected by a functional head, so it closes the binding domain. Given that *v*P introduces the subject, the subject can bind the reflexive in the NP, as in (41b), allowing for subject-oriented reflexive possessives in NP-languages. As mentioned above, Despić (2011) appeals to the affixal nature of D in these languages and argues that D delays spellout of its complement. Thus, in (41c), the first "strong" phase head is introduced at the *v*P-level. The weak D extends the binding domain to *v*P, which is the same as the binding domain of reflexives in NP-languages. The subject can now bind into the DP in Bulgarian and Icelandic. This makes them parallel to NP-languages in the availability of reflexive possessives.

This brings us to the following question: if affixal D is weak, what prevents affixal-article languages like Icelandic and Bulgarian from always allowing LBE even in the presence of a definite article?[29] More specifically, since the affixal D delays spellout of its complement, a moving adjective would not have to move to [spec,DP] first, which causes a violation in other DP languages (10b); it should thus be free to move out. I suggest that delayed spellout combined with the timing of

[29] In the presence of the definite article, an additional reason for not allowing LBE could be the specificity effect, which is well known to block extraction out of DPs in some languages (though not all), but even if we put definite DPs aside, the question still remains about indefinite non-specific contexts.

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feature valuation is responsible for this. The difference between Icelandic adjectives and intensifying adverbs is that adjectives have unvalued case, gender, number, and definiteness features, while adverbs have no features that need to be valued within DP. Following Frampton and Gutmann (2000), Pesetsky and Torrego (2007), and Bošković (2013b), I assume that D has unvalued Φ-features, just like the adjective, and that D probes both the adjective and the NP. Agree between D and the adjective (i.e., Agree between unvalued features) results in feature-sharing (Pesetsky and Torrego 2007). Thus, when the NP values features on D, it also values features on the adjective by transitivity, given the feature-sharing between D and A. Crucially, the adjective does not agree with the NP directly, and unvalued features on D and adjectives can be valued only when the head D is activated for Agree. Now, Richards (2007) argues that feature valuation takes place at Transfer (i.e., transfer to the interfaces). This proposal has interesting consequences for the issue under investigation. First, to move out of DP, the adjective need not stop in [spec,DP]. In fact, since NP is not spelled out when D enters the derivation, such movement is not needed; hence it can be assumed to be ruled out by Last Resort (Chomsky 1995). At the point of entrance of the next phase head, *v*, the adjective needs to move to [spec,*v*P] due to the PIC. This step is long enough and does not violate anti-locality. At the Transfer of VP, all unvalued features within it need to be valued, which means that D can finally probe its NP complement. Importantly, Chomsky (2001) argues that traces do not participate in Agree relations, and Bošković (2011b) shows that traces are in fact not interveners for Agree. Therefore, at the Transfer of VP, the only copy of the adjective visible for feature valuation is the one in [spec,*v*P], but it is not available to D any more, so features of the adjective cannot be valued in this configuration. As a result, moving adjectives out of DP inevitably leads to a crash, even if spelling out the complement of D is delayed.

In short, even affixal-article languages disallow LBE because an adjective has to be outside its base-generated position when the DP reaches Transfer to be able to extract, but it has to be inside its base-generated position to be able to agree with D. If the adjective moves, it cannot get its features valued. What makes adverb extraction out of such DPs different (34b) is the fact that adverbs have no features that need to be valued at the point when D probes. Thus, even when they move out of the AP, and out of DP, they neither violate any locality constraints, nor do they have a feature that cannot be valued.

In the following section I turn to attributive adjectives in BCS in more detail, discussing their connection to specificity.

4. BOSNIAN/CROATIAN/SERBIAN LONG ADJECTIVES AND SPECIFICITY

In this section, I take a closer look at BCS attributive TAPs with long adjectives, which I have analyzed as XP_{AP}'s above, and discuss how they contribute the specific reading to the noun they modify. The long form of adjectives can occur only in the attributive position (cf. (30a–b), repeated as (43a–b) below).

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(43) a. poznati pjesnik (BCS)
famous.LF poet
'the/a famous poet'

b. * Mak Dizdar je poznati.
Mak Dizadar is famous.LF

c. poznat pjesnik
famous.SF poet
'a famous poet'

NPs with long adjectives can be translated into English using a definite article, but Aljović (2002) argues that the semantic contrast between NPs with long adjectives (43a) and NPs with short adjectives (43c) is specificity (presupposition), rather than definiteness, as traditionally assumed.[30] Guillemin (2011) shows that short adjectives are compatible only with indefinite NPs ((44a) and (44d), but long adjectives are compatible with both indefinite and definite NPs ((44b) and (44c)).

(44) a. jedan poznat pjesnik (BCS)
one famous.SF poet
'a famous poet'

b. jedan poznati pjesnik
one famous.LF poet
'a famous poet'

c. taj poznati pjesnik
that famous.LF poet
'that famous poet'

d. * taj poznat pjesnik
that famous.SF poet
'that famous poet'

Given that long adjectives occur in specific contexts, one might suggest that the specificity effect rather than additional functional projection in TAPs with long adjectives blocks adverb extraction in the context in question. However, as noted by Bošković (2012), BCS items like demonstratives, 'some', 'every', and possessives fail to induce specificity effects and, unlike such items in English, allow stacking.

(45) O kojem piscu je pročitao [svaku knjigu / (tu) tvoju knjigu].
about which writer is read [every book / (that) yours book.
(BCS)

cf. *About which writer did he read every book/that book of yours.

For this reason, BCS long adjectives are not necessarily expected to induce specificity effects either. In fact, they behave just like the items discussed by

[30] For relevant discussion on definiteness/specificity, see also Enç (1991), Ishane and Puskás (2001), von Heusinger (2002), Ionin (2006), Arsenijević and Stanković (2009), Guillemin (2011).

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Bošković in both respects, and allow extraction of other elements out of the NP too (46a), and can co-occur with other items related to specific contexts (46b).

(46) a. Za koji problem si pronašao pra:v**o:** rješenje? (BCS)
for which problem are found right.**LF** solution
'For which problem did you find the right rolution?'

b. Danas sam pročitala ovaj/svaki Amelin zanimljiv**i** esej.
today am read this/every Amela's interesting.**LF** essay
'I read this interesting essay of Amela's today.'

Turning to the PF manifestation of the difference between short and long adjectives, after a considerable historical change of the long-form inflection, which originates from a pronominal element in Old Church Slavonic (Schenker 1993), BCS now distinguishes the long form from the short form either by prosodic means (accent shift and vowel lengthening) or by an overt inflectional piece. The former strategy is used more frequently, and the only overt inflectional piece remaining is *-i* for masculine singular adjectives in nominative and accusative for inanimate objects.

I suggested above that a functional projection, XP_{AP}, is present in attributive TAPs with long adjectives (32). Given that long adjectives are correlated with specific readings of BCS NPs (Aljović 2002), it is reasonable to propose that this functional layer is projected by the feature [+specific] and that the feature is realized by the long-form inflectional piece or by a change in prosody. I suggest that there are two exponents for the long-form adjectival inflection:

(47) a. [+specific] → -i / [SG, M, {NOM, ACC.INANIMATE}]+_____

b. [+specific] → $\emptyset_{\text{penultH}}$ / elsewhere

Under the framework of Distributed Morphology (Halle and Marantz 1993, Marantz 1995, Embick and Halle 2005, among others), when the rule of Vocabulary Insertion faces more than one rule that could be applied to a certain node in a given structure, it is subject to the Subset Principle (Marantz 1995), which resolves the conflict by inserting the most highly specified exponent. The exponent for the more specified environment [masculine, singular, nominative or accusative for inanimate objects] in (47a) is *-i*, and in all other environments a null morpheme is inserted, which causes the final vowel lengthening and certain tone changes (47b).

Given that unlike nouns, adjectives themselves are not interpreted as specific or non-specific (the noun is), a question that arises is how this feature reaches the noun that gets interpreted as specific. I suggest that the relevant feature of the noun is interpretable and unvalued, and that it has to agree with the adjective to get valued. I adopt the following valuation mechanism.

Chomsky (2000, 2001) proposes that it is necessary to distinguish between interpretable/uninterpretable and valued/unvalued features, linking valuation and interpretability (i.e., a feature is uninterpretable iff it is unvalued). Chomsky suggests that only uninterpretable valued features can be deleted. A number of authors have shown that interpretability and valuation do not go hand in hand, based on evidence for the existence of (inherently) valued uninterpretable features (e.g., gender of BCS nouns in Bošković 2011a) and unvalued interpretable features (e.g.,

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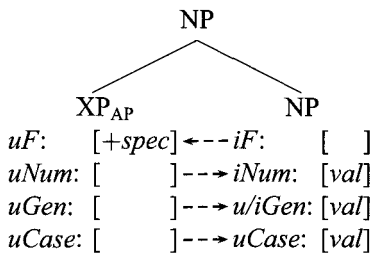
Tense on T in Pesetsky and Torrego 2007), with Agree being valuation driven (see also Wurmbrand 2012). Bošković (2011a) argues that uninterpretable valued features do not have to act as probes; that is, uninterpretable features that are inherently valued (uF: [val]) can be deleted even without being checked in the syntax.

Following these proposals, I suggest that the relevant feature on the long adjective (more precisely, the functional head X_{AP}) is uninterpretable but inherently valued as [+specific] in BCS (uF:[SPEC]),[31] and the feature on N is interpretable but unvalued (iF:[ ]).[32] The NP also carries number, gender, and case features, which are either valued inherently (iNum:[val]; u/iGen:[val]), or by an external assigner (uCase:[val]). These features on XP_{AP} all depend on the noun, so they are all uninterpretable and unvalued on XP_{AP} (uNum:[ ]; uGen:[ ]; uCase:[ ]). Given that both the XP_{AP} and NP have unvalued features to check with each other, they will both act as probes, which is possible given that a projection of X_{AP} c-commands a projection of N, and vice versa. I follow Bošković (2011a), who argues that both interpretable and uninterpretable unvalued features act as probes, that is, that they need to undergo Agree with a corresponding valued feature in their c-command domain. The scenario is given below, with arrows indicating the direction of probing.

(48)



The feature valuation mechanism illustrated in (48) shows that it is sufficient to have only one XP_{AP} within a BCS NP for the NP to get the value [+specific] for the iF: [ ]. In situations with multiple long adjectives (XP_{AP}), it is enough for one of them to agree with the N for the F feature. Crucially, the feature uF: [+spec] on other XP_{AP}'s can be deleted even without feature checking, given that it enters the derivation already valued and given that lexically valued uninterpretable features can simply be deleted (see Bošković 2011a). In bare NPs where XP_{AP}'s are not present and hence cannot check this feature, I suggest that the F feature of the noun is licensed by type-shifting. In other words, if there is an element that can value the F feature in the syntax (XP_{AP}, demonstrative, possessive), this will be done in the

[31] Other examples of uninterpretable valued features are gender in SC, which Bošković (2011a) argues to have both interpretable (natural gender) and uninterpretable options (grammatical gender) on nouns (depending on a particular case) but is always uninterpretable on adjectives, and Case, which he argues is uninterpretable on both the assigner (e.g., T, where Case feature is valued) and the NP (where Case feature is not valued).

[32] This F feature is similar to the Tense feature discussion in Pesetsky and Torrego (2007): for them, Tense is interpretable and unvalued on T but uninterpretable and valued on V.

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syntax. In the absence of any element that would value this feature (in bare NPs), this feature can be licensed by type-shifting, but if the licensing can be done in the syntax, it must be done in the syntax. This is somewhat similar to Chierchia's (1998) *Blocking Principle* ("Type-Shifting as Last Resort"), by which only if a language does not have articles is it able to use semantic type-shifting operations to achieve the interpretations contributed by them. For example, a language can use type-shifting to achieve a definite reading for a noun like *cat* (which BCS can do) only if it does not have overt items like *the*.

Under this analysis, XP_{AP}'s (long adjectives) and elements like demonstratives and possessives value the F feature as [+specific]. In the absence of such elements, in particular with a bare N, this specific interpretation can be achieved by covert type-shifting. Another context where specificity-inducing items are absent is in NPs with short adjectives modifying the noun. Such NPs are interpreted as indefinite and non-specific, and unlike bare nominals never get the definite/specific interpretation. This raises the question of what prevents such NPs from undergoing covert type-shifting in semantics like bare nominals. Type-shifting is available for BCS bare nominals because BCS lacks articles, and the relevant interpretation thus cannot be achieved in the syntax. Languages that have in their functional vocabulary articles that project within the TNP have to use articles to get this interpretation because type-shifting is not available to them (Blocking Principle). Now, for the context A + N, the BCS functional vocabulary includes an item with the feature [+specific], that is, the long adjectival inflection, which projects a functional layer within the TAP (XP_{AP}). Despić (2011) in fact argues that the adjectival inflection, which is pronominal in nature, performs the relevant type shift here (see Despić 2011 for the details of semantic composition). This means that for modified NPs (i.e., the A + N context), unlike for bare nominals, there is a way to value the feature [+specific] in the syntax (and get the relevant interpretation). Therefore, covert type-shifting is unavailable in such contexts.

5. CONCLUDING REMARKS

I have explored the left branch of traditional adjective phrases (TAPs) in a number of languages, establishing two novel generalizations concerning adverb extraction from TAPs in predicative and attributive positions, and discussed what the (un)availability of such extraction reveals about the structure of TAPs cross-linguistically and in different constructions within the same language. Regarding adverb extraction from predicative TAPs, languages considered here fall into two groups. English, Dutch, German, Brazilian Portuguese, and Spanish disallow adverb extraction from predicative TAPs, while Bosnian/Croatian/Serbian (BCS), Polish, Russian, Slovenian, Icelandic, Bulgarian, and Romanian allow it. Based on this, I established the generalization that adverb extraction from predicative TAPs is disallowed in languages with non-affixal articles, but allowed in languages that lack articles or that have affixal articles. I have argued that what separates these two groups of languages is that English-type languages never allow bare lexical projections, while BCS-type languages can have bare lexical projections (more precisely, in the absence of semantic requirements that would impose a functional

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layer, or in the absence of PF manifestation of a functional layer). Thus, BCS-type languages have bare predicative APs and allow AP-adjoined adverbs to extract (parallel to the possibility of NP-adjoined adjectives being able to extract from NP). However, parallel to DP in the nominal domain, English-type languages have a functional layer (XP_{AP}) above the AP and the AP-adjoined adverb, which blocks extraction (just as DP blocks extraction of adjectives). With respect to extraction of adverbs out of attributive TAPs, English-type languages never allow it, and such extraction is more restricted even in BCS-type languages. Many languages have an adjectival form that occurs only in the attributive position, which is different from the form that occurs in the predicative position. I have argued that this indicates that such TAPs are not bare APs, and that the presence of the additional functional layer blocks adverb extraction in that context even in languages that in principle allow bare APs. However, Icelandic and BCS can use the adjectival form they use in the predicative position in the attributive position as well. In such cases these languages allow adverb extraction. Given the lack of semantic and PF motivation for an additional layer in such TAPs, and the possibility of adverb extraction, I have argued that such attributive TAPs are also bare APs. With no functional structure above AP, nothing blocks adverb extraction from AP in such contexts. I have also provided evidence that BCS short form APs should not be treated as reduced relative clauses when used attributively, contrary to what previous accounts of such items suggest. Also, I have shown that the affixal nature of Icelandic articles gives rise to a peculiar paradox in that Icelandic allows adverb extraction out of attributive APs, but disallows LBE of the AP itself. I have argued that this paradox is due to the features that AP has to check with the D, which adverbs lack.

More generally, I have argued that extended projections of different lexical categories are uniform within a language with respect to how much structure they project. The intuition here is clear. In some languages the functional layer is always present above the lexical projection, while other languages in principle allow bare lexical projections. In languages that allow bare lexical projections, the functional layer is simply not projected if it is not motivated by interface considerations, namely, in the absence of semantic motivation or PF manifestation.

I have also addressed the question of how the specificity feature is encoded in BCS in constructions with long-form adjectives. I have argued that this feature projects a functional layer within the TAP (i.e., it is a reflex of a functional projection within the TAP, not TNP), which has two morphological exponents in contemporary BCS. This feature values an interpretable unvalued specificity feature on the noun that the adjective modifies. More generally, I have provided an account of the feature-checking mechanism that adjectives and nouns are involved in within the TNP, which also has consequences for the precise statement of the binding domain for Condition A.

APPENDIX: ABBREVIATIONS USED IN GLOSSES AND TREES

SPEC = specific
NONSPEC = nonspecific
INDEF = indefinite
DEF = definite

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D = determiner
DP = determiner phrase
PIC = Phase Impenetrability Condition
NP = noun phrase
AP = adjective phrase
BCS = Bosnian/Croatian/Serbian
GEN = genitive
ACC = accusative
XP_{AP} = functional projection in the extended projection of A
X_{AP} = functional head taking AP as its complement projecting a phrase in the extended projection of A
AdvP = adverb phrase
SE = A clitic in Slavic used most frequently as a reflexive or a passive particle, but it also has other uses.
REFL = reflexive
F = feminine
M = masculine
LF = long form
SF = short form
NOM = nominative
INST = instrumental
$ø_{penultH}$ = a null suffix inserting a High tone to the penultimate syllable
uF: [+spec] = uninterpretable specificity feature inherently valued as specific
iF: [ ] = unvalued interpretable specificity feature
uNum: [ ] = unvalued uninterpretable number feature
iNum: [val] = valued interpretable number feature
uGen: [ ] = unvalued uninterpretable gender feature
u/iGen: [val] = valued uninterpretable/interpretable gender feature
uCase: [ ] = unvalued uninterpretable Case feature
uCase: [val] = valued uninterpretable Case feature

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