

The Fleeting DP in Bulgarian and Macedonian: The View From Left-Branch Extraction

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Abstract

This paper is concerned with restrictions on Left-Branch Extraction (LBE) in Bulgarian and Macedonian, the only two Slavic languages with articles. The data indicate that the availability of LBE is related to the number of modifiers, and thus require a revision of the generalisation that all languages with articles disallow LBE. Following Martinović (2019), Calabrese & Pescarini (2014), a solution based on the order of operations is proposed, connecting the availability of LBE to the idea that projections can be removed via syntactic operations such as Exfoliation (Pesetsky 2019). The application of Exfoliation depends on the relative timing of article placement, which in turn is performed via a post-syntactic operation of Generalised Lowering (Embick & Noyer 2001). Exfoliation and subsequently LBE are fed by an early application of Lowering, assumed to be able to interleave narrow syntax (Martinović 2019), but if applied late, Lowering counter-feeds these two operations.

1. Introduction

There has been a debate in recent years over whether the DP is projected universally in all languages, or whether there is parametric variation among languages with respect to its existence. Bošković (2005, 2008, 2014c, et seq.) has argued for the latter option, claiming that there is a fundamental difference between languages with and without the definite article. By recourse to a variety of syntactic phenomena, one of them being Left-Branch Extraction (henceforth: LBE),¹ he argues that the differences arise from the fact that the

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Structure Removal, 343–384

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¹The criteria he uses to draw the line between the two types of languages are phenomena such as clitic doubling, scrambling effects, multiple *wh*-fronting, NEG-raising, transitive nominals

former languages have a DP (like English in 1a), and the latter do not (like Serbo-Croatian in 1b-c).

(1) Left-Branch Extraction (Bošković 2005)

- a. *Whose_i John likes t_i car?
 b. Čija_i se dopadaju Petku [_{NP} t_i kola] ?
 whose REFL.PRO like Petko car
 ‘Whose car does Petko like?’
 c. Lijepe_i je vidio [_{NP} t_i kuće].
 beautiful AUX saw houses
 ‘He saw beautiful houses’ (Serbo-Croatian)

The generalisation is that languages with articles block extractions of left branches, while languages without articles allow for them to be extracted. In order to explain this difference, existing approaches to LBE focus on the concept of phase: assuming that DP is a phase, LBE is blocked due to the *Phase Impenetrability Condition* (Chomsky 2000, 2001). In languages without articles the DP projection is assumed to be absent, and NP is the highest projection in the extended domain, therefore possible restrictions on LBE would not be a consequence of PIC.

This paper joins the discussion on this phenomenon, focusing on data from Macedonian and Bulgarian (DP languages/languages with articles). The data show that LBE in these languages is allowed, but only if the extracted left-branch is the only modifier of the noun. In cases with two modifiers or more, LBE is blocked. These data are problematic for the existing accounts based on the assumption that the availability of LBE is dependent exclusively on the absence of (definite) articles / the DP projection.

I follow previous accounts in assuming that the DP projection does in fact block LBE in languages with affixal articles such as Bulgarian and Macedonian. However, in the cases where LBE is allowed, I claim that the DP is originally projected, but later syntactically removed via Exfoliation (Pesetsky 2019). Exfoliation can apply only if the principle of *Recoverability of Deletion* (Chomsky 1981) is not violated. Following Martinović (2019, 2017) in assuming that the post-syntactic operation of Generalised Lowering (similar to Embick & Noyer 2001; here in charge of article placement) may interleave syntax, I argue that

with two genitives, focus marking, island sensitivity, negative concord, focus movement, the sequence of Tense etc.

Exfoliation is fed by an early application of Generalised Lowering, but a late application of Generalised Lowering counter-feeds Exfoliation. Success of Exfoliation to apply leads to the application of LBE.

The paper is organised as follows: section 2 presents the crucial data on LBE in Bulgarian and Macedonian. Previous accounts of LBE, based on the concept of phase and its extensions are discussed in section 3. The core proposal is presented in section 4: subsection 4.1 is concerned with adjustments to the original proposal for article placement from Embick & Noyer (2001), relying on a different structure of the DP in Bulgarian and Macedonian. Additional assumptions are discussed in subsection 4.3, for Exfoliation, the mechanism assumed to feed LBE in this case, and subsection 4.2, for interleaving syntax and post-syntax. I show in section 5 that with these assumptions the asymmetry between cases of one modifier and two modifiers can be straightforwardly derived as a case of feeding and counter-feeding, and offer an outlook to intra- and inter-language variation in subsection 5.3. Section 6 summarises and concludes.

2. Left-Branch Extraction in Bulgarian and Macedonian

This paper looks at cases of extraction from DPs as direct objects. Languages without articles, like the majority of Slavic languages, normally allow LBE, as shown at the beginning in (1) for Serbo-Croatian. The data to be discussed here contradict previous generalisations on the ungrammaticality of LBE in languages with articles, as opposed to languages without them.

Bulgarian and Macedonian, the only two Slavic languages with articles,²

²Macedonian and Bulgarian show a suffixed definite article, always found on the leftmost constituent of the noun phrase. The article morpheme inflects for number, and gender in the singular (Leafgren 2011, Friedman 2001). The agreement mechanism is not the main focus of this paper, but see e.g. Koev (2011) on this matter.

- (i) kniga-ta book-DEF
 interesna-ta kniga interesting-DEF book
 ADJ-DEF ... (ADJ N (general pattern))

- (ii) Pet-te golemi crveni šapki padnaa od polica-ta.
 five-DEF.PL big.PL red.PL hat.PL fell from shelf-DEF.F.SG
 ‘The five big red hats fell from the shelf’
 (Macedonian)

The article also shows allomorphy, influenced by morphological and phonological factors

were first reported in Uriagereka (1988) as not allowing LBE. The examples recurring in the literature since are given in (2) for Bulgarian and in (3) for Macedonian. In Bošković (2005) this property is strictly related to the fact that these languages have overt definite articles (i.e. project a DP).

- (2) a. *Kakva_i prodade Petko [t_i kola] ?
 what kind sold Petko car
 ‘What kind of a car did Petko sell?’
 b. *Čija_i haressva Petko [t_i kola] ?
 whose likes Petko car
 ‘Whose car does Petko like?’
 c. *Nova-ta_i prodade Petko [t_i kola]
 new-DEF.F.SG sold Petko car
 ‘The new car, Petko sold.’ (Bulgarian; Bošković 2005:3)
- (3) a. *Kakva_i prodade Petko [t_i kola] ?
 what kind sold Petko car
 ‘What kind of a car did Petko sell?’
 b. *Čija ja bendisuva Petko [t_i kola] ?
 whose it likes Petko car
 ‘Whose car does Petko like?’
 c. *Nova-ta_i ja prodade Petko [t_i kola]
 new-DEF.F.SG it sold Petko car
 ‘The new car, Petko sold.’ (Macedonian; Bošković 2005:3–4)

However, Stanković (2013) has come up with counter-evidence, showing that, among other phenomena, LBE is allowed in Macedonian from a definite NP (4). His data come from a corpus research of literary Macedonian and from a grammaticality judgement survey with 20 native speakers.³

- (4) Crvenite_i gi kupi [_{DP} t_i čevli] ?

respectively, and influences stress assignment in Macedonian, while its placement seems to be sensitive to syntactic factors (Harizanov & Gribanova 2011). For proposals which focus more on the morpho-phonology of the article in Bulgarian and Macedonian, see Franks (2001), Dost & Gribanova (2006), Franks & Rudin (2005), Franks (2015).

³LaTerza (2014) reports on an acceptability judgement study based on an online survey she conducted with 140 native Macedonian speakers, which has shown that LBE from definite NPs is not acceptable in this language. I return to this in subsection 5.3.

red.DEF them bought shoes
'You bought the red shoes?' (Macedonian; Stanković 2013:11–12)

The data that the analysis in the present paper relies on come from grammaticality judgements given by 11 native speakers of these two South-Slavic languages: 5 native Macedonian speakers and 6 native Bulgarian speakers, all non-linguists. The speakers come from west and central North Macedonia, and eastern and north-eastern Bulgaria.⁴ The participants were presented with a short text, a conversation between two people on a specific topic (an example from Bulgarian is given below in (5)) and requested to judge all of the sentences in the conversation.

- (5) Sara i Marija pijat kafe. V əgəla na stajata sa obuvkite na
Sara and Marija drink coffee in corner of room are shoes of
Marija. Sara zabeljazva edni červeni obuvki.
Marija Sara notice one red shoes
'Sara and Marija are having coffee. In the corner of the room are Marija's
shoes. Sara notices a pair of red shoes.'
- S: Obuvkite sa tvoji?
shoes are your
'Are the shoes yours?'
- M: Ne, ne, Ana gi kupi i zabravi tuk onija den.
no no Ana them bought and forgot here that day
'No, no, Ana bought them and forgot them the other day.'
- S: Červenite kupi obuvki? Az ne gi haressvam.
red bought shoes I not them like
'She bought the red shoes? I don't like them.'

According to the speakers' judgements, Left-Branch Extraction is allowed in a definite context in Bulgarian, see (6), in the sentence equivalent to Stanković's examples for Macedonian (4).⁵

⁴Stanković (2013, 2015) also reports that the Timok-Lužnica dialect of Serbo-Croatian also allows LBE in the same contexts. This dialect is structurally (and geographically) close to Macedonian and Bulgarian in morpho-syntax, by exhibiting clitic doubling, having an affixal definite article, lacking case inflection etc.

⁵In the morpho-syntactic context that the data in this paper illustrate, clitic doubling is obligatory in Macedonian, but optional in Bulgarian. More on the matter of clitic doubling can be found in Franks & Rudin (2005).

- (6) Červenite_i kupi [DP t_i obuvki] ?
 red.DEF bought shoes
 'She bought the red shoes?' (Bulgarian)

Furthermore, a quantifier in the same position, i.e. as the only modifier of a noun, can also be extracted in Bulgarian and Macedonian. Judgements from the consulted speakers for extraction of a quantifier are in line with the ones for adjectives.

- (7) a. Tri-te_i gi zaboravi [DP t_i torbi] ?
 three-DEF them forgot bags
 'Did you forget the three bags?' (Macedonian)
- b. Tri-te_i zabravi [DP t_i čanti] ?
 three-DEF forgot bags
 'Did you forget the three bags?' (Bulgarian)

However, LBE is not always allowed in these languages: if a quantifier and an adjective co-occur in a sentence, in the presence of an article, none of the modifiers can be extracted, as shown in (8) for Macedonian, and in (9) for Bulgarian.

- (8) Gi prativ [DP šest-te crni / crni-te šest torbi]
 them sent six-DEF.PL black black-DEF six bags
 'I sent the six black bags.' (Macedonian)
- a. *Crni_i gi prativ [DP šest-te t_i torbi]
 black them sent six-DEF bags
- b. *Crni-te_i gi prativ [DP t_i šest torbi]
 black-DEF them sent six bags
- c. *Šest-te_i gi prativ [DP t_i crni torbi]
 six-DEF them sent black bags
- d. *Šest_i gi prativ [DP crni-te t_i torbi]
 six them sent black-DEF bags
- (9) Pratih [DP šest-te černi / černi-te šest čanti]
 sent six-DEF.PL black black-DEF six bags
 'I sent the six black bags.' (Bulgarian)
- a. *Černi_i pratih [DP šest-te t_i čanti]
 black sent six-DEF bags

- b. *Černi-te_i pratih [DP t_i šest čanti]
black-DEF sent six bags
- c. *Šest-te_i pratih [DP t_i černi čanti]
six-DEF sent black bags
- d. *Šest_i pratih [DP černi-te t_i čanti]
six sent black-DEF bags

The same holds for cases where there are two adjectival modifiers of the NP – no LBE is allowed, regardless of the adjective’s position within the NP and the definite article.

- (10) Gi skršiv [DP mali-te beli / beli-te mali čaši]
them broke small-DEF white white-DEF small cups
‘I broke the small white cups.’ (Macedonian)
 - a. *Mali-te_i gi skršiv [DP t_i beli čaši]
small-DEF them broke white cups
 - b. *Mali gi_i skršiv [DP beli-te t_i čaši]
small them broke white-DEF cups
 - c. *Beli-te_i gi skrši [DP t_i mali čaši]
white-DEF them broke small cups
 - d. *Beli gi_i skrši [DP mali-te t_i čaši]
white them broke small-DEF cups
- (11) Sčupih [DP malki-te beli / beli-te malki čaški]
broke small-DEF white white-DEF small cups
‘I broke the small white cups.’ (Bulgarian)
 - a. *Malki-te_i sčupi [DP t_i beli čaški]
small-DEF broke white cups
 - b. *Malki_i sčupi [DP beli-te t_i čaški]
small broke white-DEF cups
 - c. *Beli-te_i sčupi [DP t_i malki čaški]
white-DEF broke small cups
 - d. *Beli_i sčupi [DP malki-te t_i čaški]
white broke small-DEF cups

The data in (10) and (11) are reminiscent of the pattern found in Serbo-Croatian. Bošković (2005) notices that LBE of a single modifier of a noun is allowed,

and extraction of one modifier from a configuration with two adjectives is disallowed in Serbo-Croatian, an NP-language.

- (12) *Visoke_i je vidio [_{NP} t_i lijepe djevojke]
 tall AUX saw beautiful girls
 'He saw tall beautiful girls.' (Bošković 2005:12)

Given what we have seen so far, Bulgarian and Macedonian, DP-languages, seem to behave exactly like Serbo-Croatian, an NP-language.⁶ Additionally, in Serbo-Croatian, multiple LBE, where both adjectival modifiers of the noun are fronted, is also disallowed (13-a), but can be performed if one of them is a demonstrative (13-b).⁷

- (13) a. *Visoke_i lijepe_j je on vidio [_{NP} t_i t_j djevojke]
 tall beautiful AUX he saw girls
 'He saw tall beautiful girls' (Bošković 2005:12)
- b. Onu_i staru_j prodaje [_{NP} t_i t_j kuću]
 that old sells house
 'He/She sells that old house.' (Bošković 2016:21)

This is not the case in Bulgarian and Macedonian: according to the speakers consulted, multiple LBE is disallowed, in configurations with two adjectives (14-a), in configurations with an adjective and a demonstrative (14-b), and in configurations with a quantifier and an adjective (14-c).

- (14) a. *Malki-te_i žolti_j prodava [_{DP} t_i t_j kotki]
 small-DEF yellow sells cats
 'He/She sells the small yellow cats.' (Bulgarian)
- b. *Tezi_i malki_j prodava [_{DP} t_i t_j kotki]
 these small sells cats
 'He/She sells these small cats.'
- c. *Tri-te_i malki_j prodava [_{DP} t_i t_j kotki]
 three-DEF small sells cats
 'He/She sells the three small cats.'

The data from Bulgarian and Macedonian with LBE from NPs modified with a

⁶For similarities of these two languages with Serbo-Croatian with respect to binding, see LaTerza (2016, 2014).

⁷I return to the issue this set of data represents in subsection 5.3.

quantifier and an adjective or with two adjectives (8)–(11), are in line with the findings of Uriagereka (1988), Bošković (2005, 2008). On the other hand, the data in (4)–(7), with one adjective or quantifier, show that in these languages LBE is available in a restricted set of cases. The summary of the data, given below in Table 1, strongly suggests that the availability of LBE depends on the number of modifiers: if there is one, LBE can be performed, if there are two, it cannot, regardless of whether only one of them or both are to be extracted.

Table 1: The availability of LBE in Bulgarian and Macedonian

structure	LBE
[_{DP} AP NP]	✓
[_{DP} QP NP]	✓
[_{DP} QP AP NP]	✗
[_{DP} AP AP NP]	✗

3. Previous Discussions on Phase Status

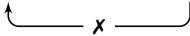
The ban on extraction from the left periphery of the NP is formalised as *Left Branch Condition* by Ross (1967/1986), for ruling out sentences as in (15-a) for English. However, Ross himself has noticed that the constraint on this and similar extractions does not hold cross-linguistically. Namely, numerous studies have shown that Latin and many Slavic languages (illustrated in (15-b) for Russian), also Korean, Literary Finnish (15-c), Mohawk etc. allow extraction of adjectives (and demonstratives, possessives, a.o.) from NP.

- (15) a. *Beautiful_i he saw [t_i houses]
 b. Doroguju/Etu_i on videl [t_i mašinu]
 expensive/that he saw car.ACC
 ‘He saw an expensive/this car.’ (Russian; Bošković 2012:2)
 c. Punaisen_i ostin [t_i auton]
 red.ACC buy.PST.1SG car.ACC
 ‘I bought a red car.’

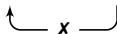
(Literary Finnish; Bošković 2012:2)

A widely accepted explanation comes from Bošković (2005), who explores the availability of LBE, joined with other syntactic and semantic phenomena, with respect to the presence of articles. If the presence of articles equals existence of the DP layer in the structure, and if the DP is a phase, then the ban on LBE in

DP languages is a consequence of the *Phase Impenetrability Condition* (16), illustrated in (17):

- (16) *Phase Impenetrability Condition* (Chomsky 2000:108)
 In a phase α with head H, the domain of H is not accessible to operations outside α ; only H and its edge are accessible to such operations.
- (17) [XP ... [_{DP} D [_{NP} t_{XP} N]]] (✗ PIC)


As the definition of PIC states, the phase head and its edge are still accessible to operations triggered outside the extended domain, therefore the modifier could simply move to the specifier of D and its extraction would be allowed. To exclude this, Bošković (2005) invokes a version of *anti-locality* (18), the ban on movements that are too short (Abels 2003, Grohmann 2003, 2011, Erlewine 2016), which blocks the alternative to violating PIC. What anti-locality can be assumed to state for present purposes is that a movement step must cross at least one maximal projection other than the one in which it is immediately contained. Therefore, extremely local Spec-to-Spec movement, as illustrated in (19), violates anti-locality.

- (18) *Spec-to-Spec Anti-Locality* (Erlewine 2016:431,458)
 A-movement of a phrase from the Specifier of YP must cross a maximal projection other than YP.
- (19) [... [_{DP} XP D [_{NP} t_{XP} N]]] (✗ anti-locality)


Given that languages without articles are assumed to not have a DP phase, and the PIC is thus not active in the extended domain of a noun, LBE is predicted to be generally available. Any restriction on its availability in an NP-language is assumed to arise from independent reasons.

For deriving the ungrammaticality of LBE in Serbo-Croatian when the noun is modified with two adjectives (20), Bošković (2005:25–26) relies on two important conceptions. First, he assumes that adjectives in Serbo-Croatian are adjuncts. That being said, when multiple adjectives are present, they are assumed to be equidistant from the noun, in terms of Chomsky (1995, 2000). In such cases a revision of the concept of Lethal Ambiguity, put forward in

McGinnis 1998, is invoked: due to the impossibility to determine a hierarchical relation between the two modifiers and decide which one to extract, LBE fails, which gives rise to ungrammaticality of (20) in Serbo-Croatian.

- (20) a. *Visoke je on vidio lijepe djevojke.
 tall be.3SG he saw beautiful girls
 b. *Lijepe je on vidio visoke djevojke.
 beautiful be.3SG he saw tall girls

(Bošković 2005:12)

However, when one of the modifiers is a quantifier, LBE is allowed in Serbo-Croatian (21),⁸ which is derived by assuming that quantifiers are heads which take nouns as their complements, additionally projecting an intermediate FP, whose presence in the structure in turn renders all modifiers of NP available for extraction, without violating PIC and anti-locality.

- (21) Visokih je video pet devojaka.
 tall be.3SG saw five girls
 'He saw five tall girls.'

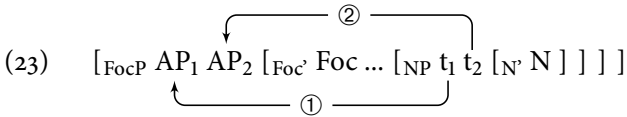
- (22) [... [QP AP [Q' Q [FP [F' F [NP t_{AP} N]]]]]] (✓ anti-locality, ✓ PIC)

For cases like (13-b), similar to Fernandez-Salgueiro (2006) for multiple *wh*-movement in Serbo-Croatian, Bošković (2016) proposes that Multiple LBE is in fact focus movement, where the demonstrative / higher Spec of NP moves first to SpecFocP.⁹ The lower Spec of NP can be moved in the next step, and be

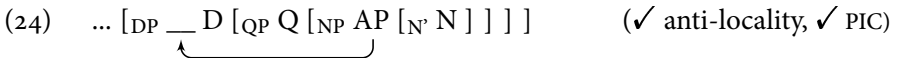
⁸ Recall that this is not the case in Bulgarian and Macedonian, cf. (9) and (8) – the presence of a quantifier does not change the speakers' judgements regarding the ungrammaticality of LBE. This might be because quantifiers have a different status in Bulgarian and Macedonian than in Serbo-Croatian. In the case of LBE quantifiers in Bulgarian and Macedonian seem to fully share the fate of adjectives.

⁹ According to Bošković (2005), demonstratives are adjectives in Serbo-Croatian, which creates a problem for the analysis from Bošković (2016), as Murphy (2017) points out. Bošković (2014a:59) claims the difference to be a semantic effect: single referent of the focalised element and deicticity. However, for the analysis to work, the difference would have to be structural; the adjectives in (13-a) would have to be equidistant, while the demonstrative in (13-b) would have to be structurally higher than the adjective. A solution that Murphy (2017) proposes is to treat the demonstrative as an argument in the specifier of DP.

tucked in as the lower SpecFocP.



If these analyses are applied to the data from section 2, one encounters several problems. First, Bulgarian and Macedonian have definite articles, which puts them into the group of DP-languages.¹⁰ Thus LBE should not be possible in a definite context with a single modifier, as in (4), (6), and (7), and in cases with two adjectives, as in (10) and (11). Second, should one adopt the view that quantifiers are heads taking nouns as their complements, and that adjectives are adjuncts to NP, as Bošković proposes, LBE in the sentences with a quantifier and an adjective modifying the noun, like (8), (9), should be grammatical, since the AP could make an intermediate stop in SpecDP, and subsequently move to its designated position in the structure, incorrectly deriving a part of the data.



In sum, the account that would derive the data correctly needs to predict availability of LBE in the cases with one adjective or a quantifier, but crucially rule out the same operation in the context of two adjectives, and in the context of an adjective and a quantifier.

4. Theoretical Model

If one adopts the generalisation that LBE is only possible when there is no DP in the structure, the pattern presented in section 2 implies that the DP is

¹⁰Talić (2015, 2017), looking at adverb extraction from adjectival phrases, proposes that languages with affixal articles such as Bulgarian (also Icelandic and Romanian) are NP languages, but still project a DP within the noun phrase in order to achieve the semantic interpretation of definiteness. This should be the case because the existence of articles as vocabulary items blocks the possibility of covert type-shifting, available in languages without articles (the *Blocking Principle* of Chierchia 1998). The proposed analysis accounts for the generalisation Talić operates with, that Bulgarian, Icelandic, and Romanian disallow LBE, but do allow Adverb Extraction from a predicative AP. Given the data on LBE in Bulgarian (section 2), one would be forced to stipulate that covert type-shifting is available with one modifier even though the article is present, but unavailable with multiple modifiers.

not projected in the first place when there is one modifier. However, this is a problematic statement, since the article is obviously present. In the same context, just with one more modifier, LBE is disallowed, meaning that the DP is present.

Therefore, I will take a more radical solution and propose that the DP was initially there, but that it was deleted at a later point, which made performing LBE possible. For this purpose I employ a syntactic operation of Exfoliation, proposed by Pesetsky (2019) (although the original idea that parts of syntactic structures can disappear in the course of the derivation comes from Ross' 1967 Tree Pruning). The application of this operation depends on the relative timing of article placement, which in turn can be performed at different stages of derivation, depending on the number of modifiers. Thus, I will first revise the assumptions on the structure of the DPs in Bulgarian and Macedonian and the operation in charge of article placement. The interaction of article placement with Exfoliation will derive the restrictions on LBE in Bulgarian and Macedonian.

4.1. Revisiting The Structure of Bulgarian and Macedonian DPs

The traditional approach to the structure of the DP was proposed by Abney (1987), where adjectives are heads taking NPs as complements. Embick & Noyer (2001) assume the same structure for their proposal of the post-syntactic operation of *Lowering*, a version of Marantz's (1988) Morphological Merger.

Embick & Noyer (2001) differentiate *Lowering*, which operates in terms of hierarchical structure, from *Local Dislocation*, assumed to refer to linear adjacency. In the rest of the subsection I will show that in order to derive the restrictions on LBE in Bulgarian and Macedonian there is no need for employing two different operations. Rather, the relative timing of a single operation, determined by independent factors, will give rise to cases in which both Exfoliation and LBE are either allowed or blocked.

The article is the head of the DP (a 'head' clitic in Embick & Noyer 2001), but the affixation is not done via head-movement, rather via a post-syntactic operation of *Lowering*: the article targets the highest head in its domain and adjoins to it, as illustrated in (25).

$$(25) \quad [_{DP} D^0 \dots [_{YP} \dots Y^0 \dots]] \rightarrow [_{DP} \dots [_{YP} \dots [_{Y'} Y^0 + D^0] \dots]]$$

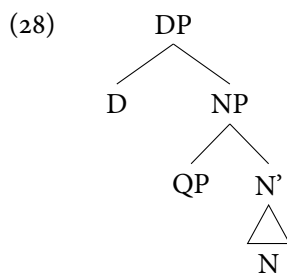
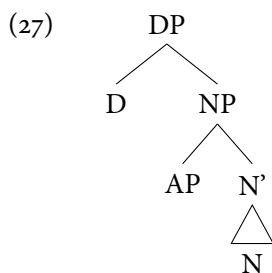
Due to its originally proposed timing after all syntactic operations, but before

Vocabulary Insertion, Lowering is assumed to be sensitive to the hierarchical structure, which allows the lowering head to be blind to adjuncts and thus be able to skip them. For example, in (26), the PP *ot doktora* is assumed to be an adjunct of the AP *predpisano*, thus the article skips it when Lowering applies and adjoins to A.

- (26) *ot doktora predpisano-to mi lekarstvo*
 from doctor prescribed-DEF me medicine
 ‘the medicine prescribed to me by the doctor’
 (Bulgarian; Schürcks & Wunderlich 2003)

Applied at this stage of the derivation, Lowering cannot refer to later information, such as e.g. word order, or phonological information such as number of syllables, which are available only after Vocabulary Insertion.

However, going back to Corver (1990), but also to more recent studies (Cinque 1994, 2010, Pyszczyk 2008, Franks 2015, 2017, Talić 2017, Stateva 2002, Dimitrova-Vulchanova & Giusti 1996, *inter alia*) it has been claimed that (Slavic) adjectives behave more like specifiers (27), rather than heads. I adopt this NP-over-AP structure. Since quantifiers exhibit the same type of behaviour with respect to the article placement and LBE, I assume they are also projected as specifiers of NP, as in (28).



Note that, given how Lowering is originally assumed to be performed, illustrated earlier in (25), with the assumed structures in (27)–(28), the D would never be able to lower to any constituent other than the noun, which is incorrect in Bulgarian and Macedonian. Therefore, I adopt the proposals of Schürcks & Wunderlich (2003), Cornilescu (2016), Cornilescu & Nicolae (2011), Ortmann & Popescu (2000) that the article targets the [+N] feature on the constituents within the DP, depicting the natural class of nouns, adjectives and quantifiers in

Bulgarian and Macedonian.¹¹ For this assumption to be incorporated properly, Lowering should be defined slightly more generally than in Embick & Noyer (2001).

(29) *Generalised Lowering:*

A lexical item α is attached to the right of a lexical item β iff:

- a. α has a feature [\blacktriangleright F], and β has a matching feature [F].
- b. There is a Γ that contains β but does not contain α , and there is no Γ' that contains α but does not contain β .
- c. There is no β' that is closer to α than β .

Thus, according to (29), Lowering is a feature-driven operation, subject to three requirements: feature matching, containment, and minimality. First, α , as the host of the feature triggering Lowering, and β , as the goal for Lowering, must share a feature. For present purposes, the trigger feature can be assumed to be [\blacktriangleright +N], a lexical property of D. The targeted feature [+N] shows up on heads in the edge domain of NP, that is, nouns, adjectives, and quantifiers.¹² The goal of Lowering, β , is contained in a possibly complex linguistic expression Γ' . The requirement of containment, for hierarchical structures, is based on c-command; in linear structures, β is a member of the string, but α (the host of the Lowering feature) is not. Containment is not reflexive. Minimality is determined in terms of closeness: hierarchical, if the structure is available, or linear, if only a string of lexical items is available.

Defined this way, Generalised Lowering captures standard Lowering and Local Dislocation as a single operation. The relevant difference between the

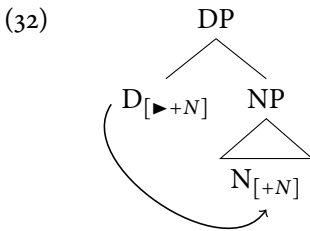
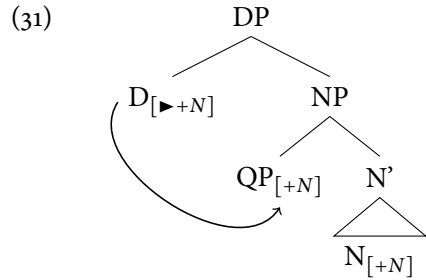
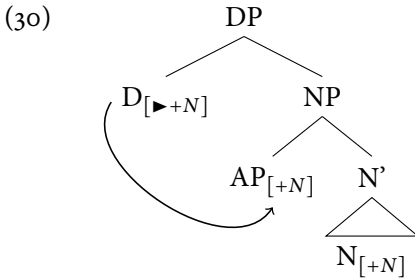
¹¹The class of lexical categories targeted for D-Lowering is assumed to vary from language to language. For example, in Romanian, the article fails to lower onto a quantifier (Cornilescu 2016, Cornilescu & Nicolae 2011), but in e.g. Danish, it only ever lowers onto a noun (Hankamer & Mikkelsen 2018, Schoorlemmer 2012). In other cases in Danish the article is a free morpheme.

¹²Any theory of Lowering would have to have some means of defining what can the D lower to. This is here resolved by assuming that certain lexical categories are underlyingly specified with a lowering feature, while others are not. See Hankamer & Mikkelsen (2018) for a solution based on sisterhood.

Additionally, demonstratives and possessives, given that they undergo concord with the noun they modify, could also be observed as [+N] categories. However, while possessives can host the article morpheme, demonstratives cannot. An additional issue is the fact that some possessive constructions demand definiteness, and that cases of double definiteness, with both the demonstrative and the definite article, show up in colloquial speech. For more on these issues, see Schürcks & Wunderlich (2003), Franks & Rudin (2005).

two operations arises as an epiphenomenon, i.e. it is a consequence of whether Generalised Lowering precedes or follows spell-out in the post-syntax.

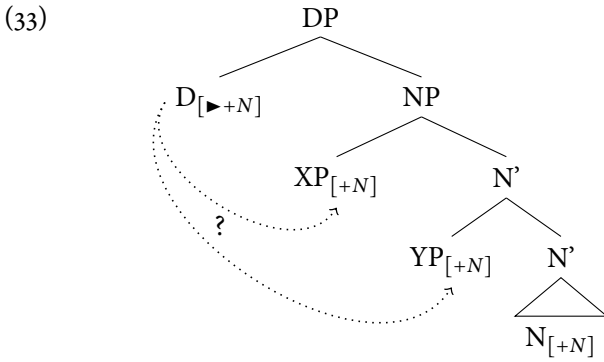
In the cases under consideration, with one modifier, the modifier and the noun would both be eligible goals in terms of features, and the article would dock onto the adjective (30) or the quantifier (31), as the closest head at the edge of NP. If there is no modifier, the article would dock onto the noun (32).¹³



Recall that whenever in Bulgarian and Macedonian two constituents modify the noun, their linear order is not fixed, but it is the leftmost one to which the article will be suffixed. The assumption about the respective statuses of adjectives and quantifiers in the structure, illustrated in (27) and (28), implies that NPs in Bulgarian and Macedonian can have multiple specifiers. Considering the fact that their order is not fixed and that the article can be found on either of the modifiers, whichever is placed to the leftmost edge, I assume that the specifiers

¹³According to the original proposal of the *Minimal Link Condition* (Chomsky 1995), given that there is no c-command relation between NP and AP, that is, NP and QP, the noun and its modifier would be equidistant to D. I adopt a version of the Minimal Link Condition that subsumes c-command and dominance, as proposed in Kitahara (1997), Müller (1998), Rackowski & Richards (2005), inter alia.

are equidistant from D (Ura 1996, Chomsky 1995, 2000). In the structure in (33) both XP and YP can be understood as either AP or QP.¹⁴



The previous assumptions about the nature of Lowering and the structure of the DP bring the derivation into a dilemma. If minimality is determined on the basis of a tree, and the two specifiers of NP are equally close to α (although the head N is not), the D head finds two [+N] goals at the edge of the NP, as in (33). Thus Lowering faces Lethal Ambiguity (McGinnis 1998). The Principle of Lethal Ambiguity states that two elements which are equidistant from a target K are lethally ambiguous for attraction by K if they are featurally non-distinct. I ascribe the same property to Lowering – the D head fails to find a unique goal because the two specifiers have the same [+N] feature that the D

¹⁴Note that I deviate slightly from the original idea of equidistance, where equidistant constituents are assumed to be equal goals for a higher head. A potential evidence for equidistance would be a DP in Bulgarian and Macedonian where the D could be found on either of the two modifiers, the outer one or the inner one. I have located a couple of such examples via Google search, however, my informants have either rejected them as ungrammatical or judged the constructions as ‘suspicious’ (thus the question mark).

- (i) ?(Te) se razdeljat na dve sami-te trenirovki.
 they REFL.PRO divide on two alone-DEF.PL trainings
 ‘They are divided into two separate trainings.’ (source: <https://trenirai.bg/2012/11/>)
- (ii) ?Otnovo be pusnala dълга červena-ta kosa.
 again was released long red-DEF.F.SG hair
 ‘She had released again the long red hair.’ (Bulgarian)
 (source: <https://www.rulit.me/books/knizharnichka-na-ostrova-read-414306-57.html>)

targets. Therefore, Lowering cannot apply. The placement of the article is then postponed.

When the phrase is spelled-out and flattened (Uriagereka 1999), the article is still not properly placed, i.e. the feature [\blacktriangleright +N] is still not checked. At this stage of the derivation, minimality is determined on the basis of a bare string of lexical items, and the leftmost one is invariably closer to α than all following items in the string. Generalised Lowering thus gets another chance to apply.¹⁵ It follows that now Generalised Lowering cannot skip constituents; thus, intervening elements cannot be ignored. In the case of Bulgarian and Macedonian, the [+N] constituent, i.e. noun, adjective, or quantifier, would receive the article if it is the leftmost.

Evidence that in the structures with multiple specifiers linear adjacency rather than hierarchy is the relevant relation comes from data with intervening constituents of a different category. Namely, in structures like (34) in Bulgarian, where the adjective is modified with an adverb, the article can never be found on the adjective, regardless of whether the AP is linearised as the leftmost or the QP, cf. (34-a) vs. (34-b), (34-c). If the article placement were performed via early Generalised Lowering, when the hierarchical structure is still visible, (34-c) would be expected to be grammatical. Instead, the D is realised as a full demonstrative pronoun, as in (34-d).

- (34) a. dve-te mnogo hubavi momičeta
 two-DEF very beautiful girls
 (i) [Q+D Adv Adj N]
- b. *dve mnogo hubavi-te momičeta
 two very beautiful-DEF girl
 (i) *[Q Adv Adj+D N]
- c. *mnogo hubavi-te dve momičeta
 very beautiful-DEF two girls
 (i) *[Adv Adj+D Q N]

¹⁵In this case Generalised Lowering can without consequences be called Local Dislocation, since it is subject to the identical restriction as Local Dislocation in Embick & Noyer 2001, to operate only in terms of linear adjacency. I am not assuming two different operations, because for the purposes of this account their definitions would differ only in the way minimality is determined.

- d. *tija mnogo hubavi dve momičeta*
 th(es)e very beautiful two girls
 (i) [D Adv Adj Q N] (Bulgarian)

Note that the adverb modifying the adjective is not an obstacle for the Generalised Lowering to apply early if the QP is absent from the example like the ones above (35). I take this as evidence that, when applied early, while the hierarchical structure is visible, Generalised Lowering skips adverbs because they lack the [+N] feature, as in (35-a), but if referring to linear order, available only after spell-out of the phase, Generalised Lowering cannot apply if an adverb is the leftmost constituent, as in (34-b-i)–(34-d-i).

- (35) *mного hubavi-te momičeta*
 very beautiful-DEF girls
 a. [Adv Adj+D N]

To summarise, in this section I have revised the assumptions on the structure of the DP in Bulgarian and Macedonian, and the assumptions on operations that regulate the placement of the article. First of all, both adjectives and quantifiers are projected as specifiers of N. When only one of them is present in the structure, Generalised Lowering can apply early, because it sees the only specifier as the highest [+N] constituent (higher than the noun). In case there are two specifiers, Lowering encounters ambiguity and its application is postponed until minimality can be respected together with Lethal Ambiguity in another way. When the link is established, this time in terms of linear adjacency, Generalised Lowering applies, affixing the article to the linearly closest [+N] constituent.

4.2. Interleaving Syntax and Post-Syntax

Generalised Lowering is a PF operation, and it is usually assumed that all PF operations must follow all syntax, cf. Chomsky (2000), also *The Late Lowering Hypothesis*:

- (36) *The Late Lowering Hypothesis* (Embick & Noyer 2001:567)
 All Lowering in Morphology follows all movement in syntax. Lowering can never remove an environment for syntactic movement.

Some recent studies have argued that post-syntactic processes might interleave

syntactic. For some authors, these would be the processes that refer to the hierarchical structure, which would be then fed back into narrow syntax and parts of the structure would potentially still be accessible to higher operations. Such post-syntactic processes could feed syntactic: for example, this was argued for object cliticisation in Northern Italian Friulian dialect by Calabrese & Pescarini (2014), and for Extraordinary Left-Branch Extraction by Radkevich (2010). The most recent arguments for interleaving come from Martinović's (2019, 2017) work on Wolof.

Martinović (2019) focuses on the cases when the past tense morpheme *-oon* is present in the clause: it is then suffixed onto the verb, presumably already (head-)moved to C (37-a). The same holds independently for the negation morpheme *-ul* in (37-b). However, when both negation and past are present in the structure, the negation morpheme is suffixed, but the past morpheme *oon* is stranded below C and realised as a free constituent *woon* (37-c).

- (37) a. Xale yi lekk-**oon**-na=ñu jën.
 child the.PL eat-PST-C=SCL.3PL fish
 'The children had eaten fish.'
- b. Xale yi lekk-u(l)-∅=ñu jën
 child the.PL eat-neg-C=scl.3pl fish
 'The children didn't eat fish.'
- c. Xale yi lekk-u(l)-∅=ñu **woon** jën.
 child the.PL eat-NEG-C=SCL.3PL PST fish
 'The children hadn't eaten fish.'

(Wolof; Martinović 2019:17)

Martinović (2019) interprets the data in (37) as evidence that syntactic movement can bleed post-syntactic Lowering. She argues that the verb in Wolof head-moves through every inflectional head. The past morpheme is lowered onto the verb only if the negation is not present in the structure, as illustrated in (38), and the TP is spelled-out as the complement of CP. If both TP and NegP are present in the structure, at the moment of spell-out of the phasal complement the verb has already head-moved to SpecNegP, i.e. out of the TP domain. Lowering of the past morpheme therefore fails, as illustrated in (39). Only the negation morpheme can be affixed onto the verbal root, and the past morpheme is consequently realised as a free constituent.

(38) [CP C [TP T [T' [T eat] [VP [DP children] V' t_V [DP fish]]]]]

(39) [CP C [NegP [Neg eat Neg] [TP T [T' [T t_V] [VP [DP children] V' t_V [DP fish]]]]]]

The central claim I adopt from these proposals is that some post-syntactic operations can be applied to a particular domain, which is then fed back into narrow syntax, with syntactic operations targeting elements in the (partially) spelled out domain. Applied to the cases of LBE in Bulgarian and Macedonian, the object DP in the domain of a higher phase is spelled out for affixation of the article morpheme. Bulgarian/Macedonian LBE thus can be observed as evidence that post-syntax can feed a later syntactic operation in the case of the single modifier, but in the cases of multiple modifiers it counter-feeds syntax.¹⁶

4.3. Deleting Layers

It was mentioned earlier that in order for LBE to be performed in Bulgarian and Macedonian it is necessary for the DP layer to be present for article placement, but at the same time, the DP should be absent, in order to permit LBE. I propose that this is precisely what happens – the DP was deleted after article placement, via a syntactic operation.

It is an old idea that parts of syntactic structure can disappear, going back to Ross's (1967) *Tree Pruning* and the proposal from Heycock & Kroch (1994) that deletion of a trace of a head results in the disappearance of the category that dominates it, and the entire projection of the head. More recently, Stepanov (2012) has argued that the projection of a head can disappear after head-movement, and the residual material can be re-associated. Müller (2018, 2017) proposes the operation of Remove as the mirror image of Merge, subject to the same restrictions that apply to Merge. Pesetsky (2019) proposes that infinitives and reduced clauses are derived via 'deletion of the C layer of the clause', triggered by the interaction between a higher probe (R₁, R₂ or \bar{A}) and an embedded subject (40). Probing of an embedded subject by a clause-external probe triggers Exfoliation of the C layer, as in (41), transforming a full CP into

¹⁶Note that these assumptions are not contrary to the core conception of the Late Lowering Hypothesis in (36): it is the failure of Lowering to apply that blocks Exfoliation and LBE, operations which apply in the narrow syntax, not its application.

an infinitive, that is, a TP. Since TP is not a phase, the subject in Spec,TP can be moved to a higher position in the structure without violating PIC (42).

(40) $[V [_{CP} C [_{TP} Subj [_{T'} T [_{IP} [_{\Gamma} INFL \nu P]]]]]]]$
 (✗ PIC, ✗ anti-locality)

(41) $[V [_{CP} C [_{TP} Subj [_{T'} T [_{IP} [_{\Gamma} INFL \nu P]]]]]]]$ (Exfoliation)
 $\underbrace{\quad \quad \quad}_{\emptyset}$

(42) $[V [_{TP} Subj [_{T'} T [_{IP} [_{\Gamma} INFL \nu P]]]]]]$
 (Subject extraction allowed)

Thus, given that WP and YP are adjacent phases, and γP is not a phase, probe π with an EPP property can locate a goal γ across a YP boundary, even if γ does not occupy the edge of that YP, but, given PIC, γ can move to π only if γ occupies the edge of YP. Applying Exfoliation as a repair operation removes the phase boundary and renders γ available for movement.

(43) *Structural Description:*
 $[_{WP} \dots \beta \Lambda \cancel{YP} \dots [_{\gamma P} \dots \gamma \dots]]]$

Crucial for Exfoliation are its restrictions; namely, Exfoliation is a Last Resort operation, applied to make a movement operation triggered by a higher head applicable without violating PIC and anti-locality.¹⁷ For the purposes of this analysis, Exfoliation is employed to delete the DP, hence get rid of the phase boundary and thus enable LBE.

The question emerges how can one assume that the DP is absent from the structure, when the article is evidently present, if one recalls data in (4), (6) and (7), where the single modifier extracted. I argue that this is in fact possible, because the D head is already gone from its original projection (i.e. early Lowering has already adjoined it) when Exfoliation is supposed to be applied. Exfoliation simply removes the residue of the DP and renders the remaining structure accessible. In the case when D is affixed to the linearly closest constituent, which happens much later in the derivation, Exfoliation is blocked from applying.

¹⁷Unlike Exfoliation, Remove is feature-driven, follows the Strict Cycle Condition, and can apply recursively. While Exfoliation only applies downwards, Remove can also apply to an m-commanded goal. Remove is not applicable to the present case of LBE, because, as shown in section 2, LBE in Macedonian and Bulgarian is not made available by the presence of a lexical category bearing the removal feature, rather by the number of modifiers of the noun.

For this reason, Exfoliation must be constrained by *Recoverability of Deletion* (Chomsky 1981).¹⁸ Informally, this constraint states that a node can only be deleted if there is no semantic information that would otherwise not be recoverable from the remaining structure.

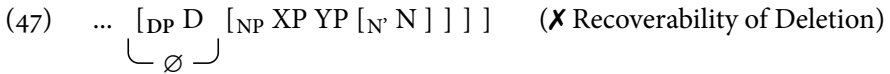
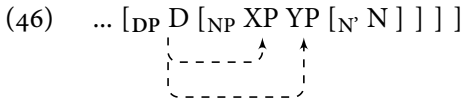
In the cases discussed in this paper the DP phase is the barrier for LBE, and therefore is targeted as goal for Exfoliation. In the case where minimality is determined hierarchically, and Generalised Lowering applied early (44), Exfoliation can also be applied because the Recoverability of Deletion is satisfied, i.e. the semantic information of definiteness is recoverable from the remaining structure (45).

(44) ... [DP D [NP XP [N' N]]]

(45) ... [DP [NP [XP X+D] [N' N]]] (✓ Recoverability of Deletion)

In other words, Recoverability of Deletion has nothing to say regarding deletion of a DP from which the D head is already gone, as in (45), but it would be violated if the displacement had not yet occurred. I have argued that this is the case when the noun has two modifiers. According to the proposal from subsection 4.1, due to the equidistance of modifiers, minimality cannot be established in terms of hierarchical relations, and Generalised Lowering cannot be applied early (46). When Exfoliation is in order to apply, the DP is still targeted as a barrier that needs to be removed from the structure. However, should Exfoliation apply, the information about definiteness of the object noun would be unrecoverable from the structure (47). In order to avoid violating Recoverability of Deletion, Exfoliation fails to apply.

¹⁸The concept of deletion under recoverability (cf. Chomsky & Lasnik 1977) is also formalised as a constraint by Pesetsky (1998), in an OT-approach to the pronunciation of complementizers, and subsequently in Ackema & Neeleman (2004). The imposing of the Recoverability constraint is not per se incompatible with the original proposal in Pesetsky (2019), although it may seem so at first glance. Namely, for the purposes of deriving infinitivisation, Pesetsky makes no explicit mentions of recoverability, since the CP has to be fully removed in order for the infinitive to be created, and not left behind anywhere in the structure, as the D in the present case. However, the constraint refers to the semantic information that would, if its syntactic node is deleted, not be recoverable. In the case of D, this information would be definiteness, but there is no information of equivalent semantic relevance contained in a declarative complementizer, which brings us to a conclusion that the Recoverability of Deletion would have nothing to say against deleting a complementizer, as in Pesetsky's original proposal of Exfoliation.



In sum, the successful application of Exfoliation, the operation which deletes the phase boundary from the structure, depends on the successful application of Generalised Lowering. In the cases where Lowering has already applied, Exfoliation removes the residue of the DP projection. However, in cases where Lowering cannot establish a hierarchical link between the D and its goal, and thus must be postponed, Exfoliation fails so that the information on definiteness can be preserved.

5. Exfoliation, Lowering, and Left-Branch Extraction

The data presented in section 2 can be derived using the three operations motivated in the previous sections: Exfoliation, Left-Branch Extraction, and Generalised Lowering, ordered as given in Table 2.

narrow syntax		post-syntax		narrow syntax		post-syntax
Merge (DP, WP)	»	Generalised Lowering	»	Exfoliation	»	Vocabulary Insertion
Spell-Out (DP)				LBE	»	Linearisation
						Generalised Lowering

Table 2: Order of operations

Adopting a cyclic spell-out model (Uriagereka 1988, 1999), I assume the structure is built incrementally, and the completed cycles (phases) are subject to transfer. Transfer involves (among others) the spell-out of the complement of a phase head (Chomsky 2001, 2000). The object DP is regularly merged as the complement of VP, and entirely spelled out as a complement of the ν P phase. The purpose of Generalised Lowering is to attach the article to its host. I propose that Generalised Lowering can be triggered at the moment of spell-out of the DP, to satisfy the feature [\blacktriangleright +N] on D. The spelled-out domain, fed back into narrow syntax, is still accessible, since its hierarchical structure has not yet been flattened. Exfoliation applies to resolve the dilemma between PIC and anti-locality, by deleting the DP layer. LBE can apply. After all syntax is

completed, Vocabulary Insertion and Linearisation (reflecting the c-command relations) apply.

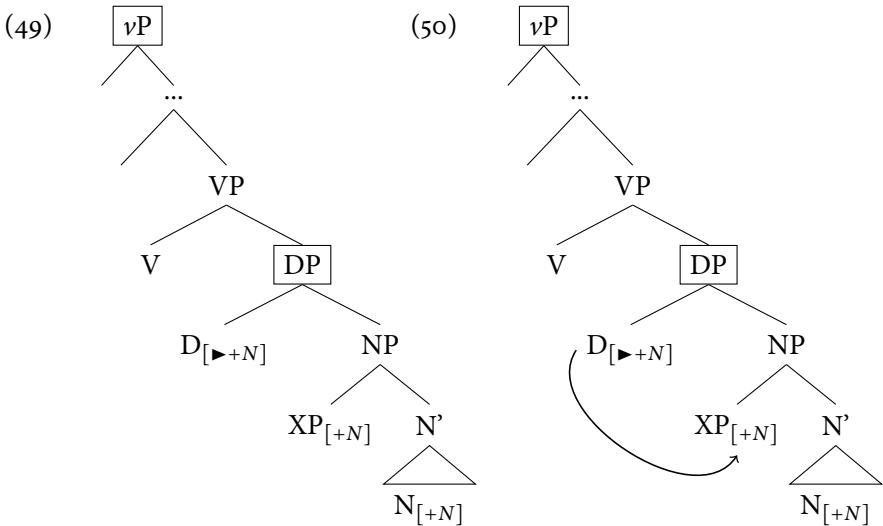
The proposed order of operations does not make a difference between the cases when LBE is possible, with one specifier, and when LBE is blocked, with multiple specifiers. In the rest of the text I show how can this difference be derived, using the proposed order of operations.

5.1. One Specifier – LBE

In the cases with one specifier, the order of operations applied is such that Generalised Lowering precedes Exfoliation and LBE. Generalised Lowering feeds Exfoliation, which in turn feeds LBE.

(48) Generalised Lowering >> Exfoliation >> LBE

An adjective or a quantifier (here marked with a provisional XP label) is merged as the specifier of N, which is the complement of the DP. At the moment of Spell-Out of the DP, which is in turn a complement of a higher phase, Lowering is triggered by D as a phase head. D targets the XP with the [+N] feature as the hierarchically closest constituent, and adjoins to it, cf. (50).



The entire DP, together with higher parts of the phasal complement, is fed back into narrow syntax. At this point of the derivation LBE cannot be performed

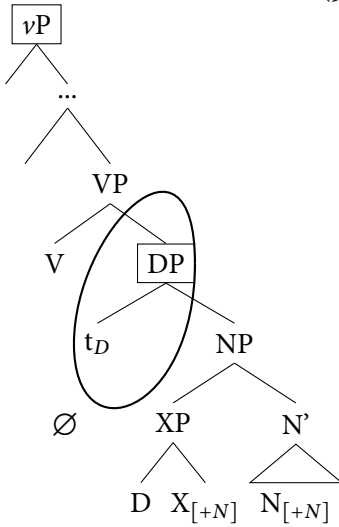
because the DP, as a phase, renders the structure below inaccessible to higher operations, due to the dilemma imposed by PIC and anti-locality. As a last resort, Exfoliation applies, by targeting the DP layer as the phasal boundary. The information of definiteness is retrievable from the rest of the structure, since the D head has lowered to the modifier, therefore the DP shell can be deleted, as shown in (51). Now LBE may be performed (since the PIC does not hold for this domain any longer) by moving the XP to SpecCP (52), together with the article.¹⁹ All of this is exactly as argued by Pesetsky (2019) for CP deletion in infinitives.

¹⁹With Pesetsky (2019), I assume here that the phase status is also completely gone with the projection that held it, as in Chomsky's original conception of phases. Another way of implementing Exfoliation of DP would be to say that the phase status is afterwards assigned to NP, as the highest in the extended domain (assuming the contextual approach to phases, cf. Bošković 2014*b*, Bošković 2014*c* et seq.). The specifier, as the phase edge, would still be accessible for extraction, however, extraction from the right would be banned, such as the ban on extracting the genitive complement of a noun in Serbo-Croatian (i).

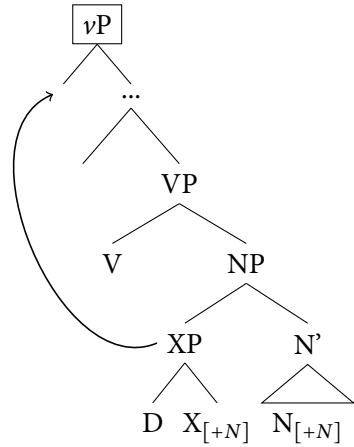
- (i) * [Ovog studenta]_i sam pronašla [NP knjigu t_i]
 this.GEN.SG student.GEN.SG AUX found book.ACC.SG
 'I found this student's book.' (Serbo-Croatian)

Bulgarian and Macedonian have no such NP-under-NP constructions, and the meaning above would be expressed most probably with a PP, which seem to be extractable, cf. (26), also LaTerza (2014:ch.3.4.2). Although extractability of NP-complements could be understood as an argument in favour of not having the phase at all after applying Exfoliation, I leave the issue for subsequent research.

(51)



(52)



In the post-syntax the vocabulary items are inserted and the structure is linearised, giving rise to the configuration as in (53), with the adjective/quantifier extracted together with the article.

(53) Vocabulary Insertion and Linearisation [X+D C ... N]

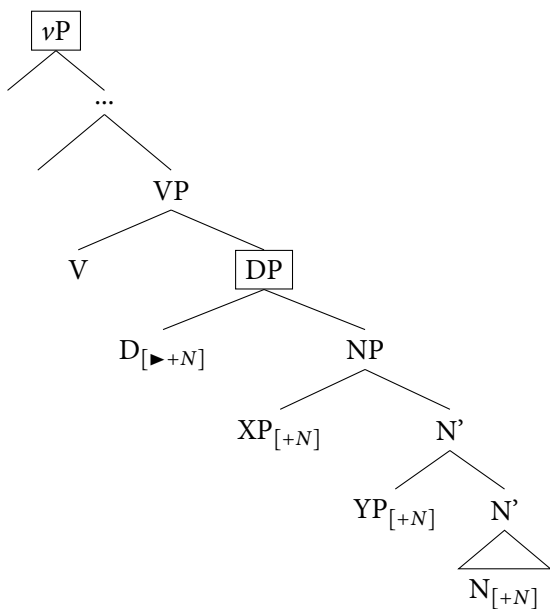
5.2. More Specifiers – No LBE

In the cases when the object NP has two specifiers, Generalised Lowering can be successfully applied only after spell-out of the CP as a whole. The late application of Lowering creates a counter-feeding order of operations.

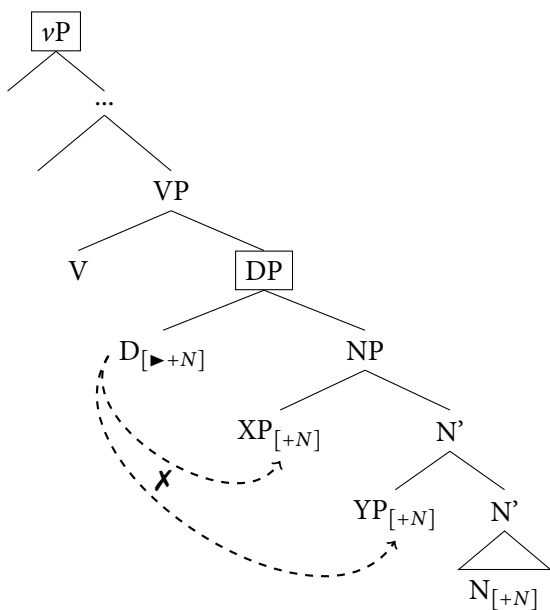
(54) ✗ Generalised Lowering >> Exfoliation >> LBE >> ✓ Generalised Lowering

In the second type of cases an adjective and a quantifier, or two adjectives, are merged as multiple specifiers of NP. The specifiers are marked with XP and YP in (55) et seq. When this DP is spelled out (55), Generalised Lowering could also be triggered by the [▶+N] feature on D. However, in (56) Lowering cannot apply because the two specifiers are equidistant from the D head and both carry the [+N] feature. In other words, minimality cannot be determined based on hierarchical relations. Due to Lethal Ambiguity (McGinnis 1998), Lowering cannot apply (56).

(55)



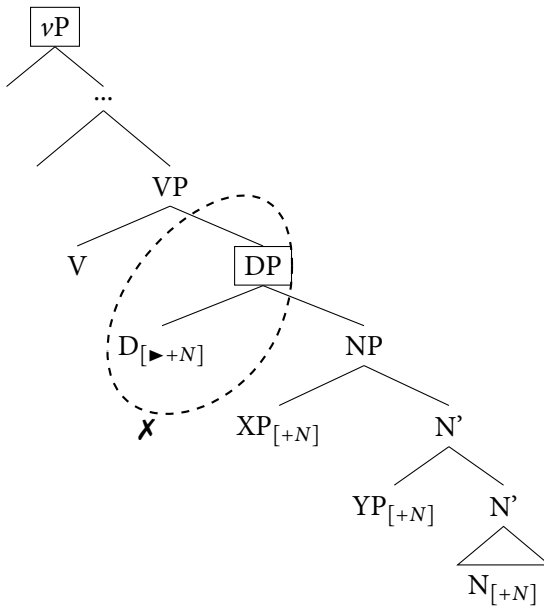
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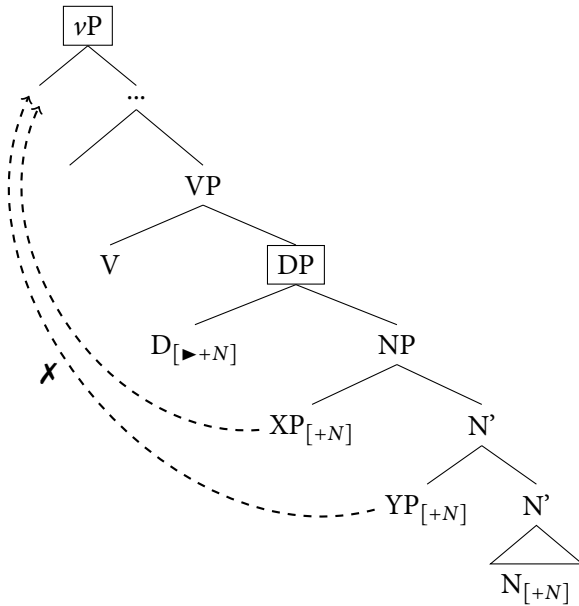
In the next step, Exfoliation would need to be applied, but it is blocked for one crucial reason: Lowering has not applied, and the D head is still in its original projection. Deleting the DP now would mean losing the information about definiteness of the object NP, thus violating Recoverability of Deletion. Exfoliation fails to apply (57).

Since Exfoliation has failed to apply, the DP layer remains in the structure and performs its role of a phase: due to PIC and anti-locality LBE is blocked. This is illustrated in (58).

(57)



(58)



Note that after all these operations have failed, the article is still in its original position, meaning that the feature [▶+N] has not been checked. Since Lowering has not applied earlier (56), the morpheme is forced to wait until after Linearisation. Once linear adjacency is established as a link between the D and its goal, the article will be associated with the immediately adjacent constituent (assuming the constituent is specified with a [+N] feature), as shown in (59).

(59) Vocabulary Insertion, Linearisation,
 [C ... D X_[+N] Y_[+N] N_[+N]]
 ↘ ↗
 Generalised Lowering

In sum, LBE in Bulgarian and Macedonian is dependent on the outcome of Exfoliation, which is in turn dependent on the outcome of Generalised Lowering in the first cycle of spell-out – if Lowering applies while the hierarchical structure is still visible, so can Exfoliation and LBE. If Lowering does not apply, Exfoliation is blocked, and subsequently, LBE. Thus, article placement can feed Exfoliation

and, then, LBE, if it is performed by early Generalised Lowering, or counter-feed these operations, if done via late applied Generalised Lowering.

5.3. Outlook – Deriving Variation

The interest in the LBE data is motivated by my own observation that speakers of Bulgarian and Macedonian I am exposed to use the constructions with LBE in the unmarked discourse. LaTerza (2014:ch.3.4.2), however, reports on an online-study based on acceptability judgements she had conducted with 140 speakers of Macedonian. The sentence from LaTerza's study in (60), with an adjective extracted from a definite object noun phrase, is structurally identical to the sentences in (4), from Stanković (2013) for Macedonian, and (6), my own data from Bulgarian, however the judgements conflict.²⁰

- (60) *Vredni-ot Jovana go zapozna student.
diligent-DEF Jovana him met student
'Jovana met the diligent student.' (mean 1,72; LaTerza 2014:200–204)

Marked word orders cross-linguistically have been often reported to give rise to decrease in acceptability, processing difficulties, also reported to be less frequent in corpora and acquired later than unmarked word orders.²¹ It is possible that, had LaTerza provided some appropriate context for the participants in her study, she would get the same results as Stanković and myself (also see footnote 20).

Another way to look at these differences is in terms of inter-speaker variation. In syntactic approaches to word order in German (such as Haider & Rosengren

²⁰In the case of Stanković (2013), his data come from two sources: corpora and judgements of 20 native speakers, where the sentences were placed in appropriate context. LaTerza reports that the participants in her study were presented with sentences without any prior context, and also states (on pages 205 and 209) that the collaborator on the study, I. Stojanovska, has informed her that, given the right context, sentences with LBE are grammatical for her. Speakers who participated in my study have all been presented with sentences with LBE in a conversational context.

²¹Experimental studies (Altmann & Steedman 1988, Steedman 2000, Weber & Neu 2003, Hyönä & Hujanen 1997, Lau et al. 2017, Bernardy et al. 2018, inter alia) have shown that appropriate discourse context or even repetition (as in e.g. Nagata 1988) can positively influence acceptability and even neutralise any increase in processing difficulty. Non-canonical order sentences are, according to these studies, expected to involve more processing cost and therefore lower the acceptability grades when no preceding context is provided.

2003, Frey 2006, inter alia), a marked word order is derived from the unmarked word order via syntactic operations. A growing body of proposals account for variation in subject-verb agreement in terms of order of syntactic (and post-syntactic) operations (Murphy & Puškar 2018, Assmann et al. 2015, Müller 2009, Marušić et al. 2015, Bhatt & Walkow 2013, Driemel & Stojković 2019), where different possible orders / different timing of operations give rise to different agreement strategies.

Such an approach can be implemented in the case of the two sets of data in opposition. In one set of data, LBE is allowed only with a single modifier (data from Stanković 2013, myself, I. Stojanovska); in the other, LBE is blocked in all cases (data from LaTerza 2014). The two orders of operations proposed in (48) and (54), which derive LBE of a single modifier, are based on the assumption that Generalised Lowering may interleave operations performed in narrow syntax, but is not necessarily required to. I propose that for the variety represented by LaTerza's speakers, the order of syntactic and post-syntactic operations is such that Generalised Lowering does not interleave narrow syntax – rather, it is ordered and applied after the entire CP is spelled out.

- (61) Spell-Out (DP) >> ... >> Exfoliation >> LBE >> Spell-Out (CP) >> Generalised Lowering

If the order of operations where Generalised Lowering follows all operations in narrow syntax, the feature [\blacktriangleright +N] could be checked only when the linear order is made available. Therefore, Exfoliation, the operation which applies in narrow syntax and could enable LBE, would be blocked due to Recoverability of Deletion, regardless of the number of specifiers. Note that the different timing of Generalised Lowering with respect to operations in narrow syntax does not change anything for its original function of article placement.

A potentially problematic set of data comes from Bašić (2004), who claims that in both Bulgarian and Macedonian LBE is possible, with the article affixed to the noun, as in (62-a), (62-b), and (63). LaTerza (2014) also discusses these examples, claiming that these are not cases of LBE, rather that these adjectives function as “depictive secondary predicates”.

- (62) a. Nova ja prodade kola-ta (toj).
 new it sold car-DEF (he)
 ‘He sold the car new.’

- b. Visoki gi haresva momičeta-ta.
 tall them like girls-DEF
 ‘He likes the girls tall.’ (Bulgarian; Bašić 2004:96)
- (63) Nova ja Petko prodade kola-ta.
 new it Petko sold car-DEF
 ‘Petko sold the car new.’ (Macedonian; Bašić 2004:96)

The answer to why these date are grammatical lies in the position from which the adjectives are extracted. As secondary predicates, they are complements of N, as in (64).

- (64)
$$[_{VP} V [_{DP} AP [_{D'} D [_{NP} N t_{AP}]]]]$$
 (✓ anti-locality, ✓ PIC)
-

Extraction from this position would be performed in two steps: in the first step, the AP would move to SpecDP, which does not violate (Comp-to-Spec) anti-locality since the AP crosses a maximal projection – NP. Then, in the second step, without violating the PIC, the AP can be moved out to a higher position. This movement of AP does not interact with Generalised Lowering, since NP is already the higher goal for the article.

Cross-linguistic data show that the generalisations on LBE in Bulgarian and Macedonian, reported in section 2, do not hold for other languages with an affixal definite article. For example, Romanian, a DP language with an affixal article does not allow LBE (Petroj 2018). Many Germanic languages with an affixal definite article (Swedish, Norwegian, Faroese, Danish and Icelandic, cf. Santelmann 1993, Schoorlemmer 2012, Hankamer & Mikkelsen 2018), also disallow LBE (except for some special wh-extraction cases). For these languages, I would assume that Generalised Lowering does not interleave narrow syntax. It follows that the article is lowered later in the derivation, after Exfoliation had been blocked by the Recoverability of Deletion constraint, which renders LBE unavailable.

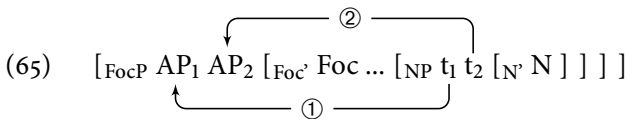
For example, it was mentioned earlier that the article in Danish only ever lowers to a bare noun. In other cases it is a free morpheme (Hankamer & Mikkelsen 2018, Schoorlemmer 2012). In Icelandic the article always appears on the noun, regardless of whether it is modified or not (Schoorlemmer 2012). None of the languages allow LBE. In the present theory, in Icelandic, only

nouns would bear the feature [+N], which the article targets, and Generalised Lowering, ordered after spell-out of the entire CP, would still counter-feed Exfoliation and LBE. For Danish, it would be necessary to assume that the AP and NP are equidistant from D, which would force Generalised Lowering to wait until linear order is established. This timing of Generalised Lowering would also counter-feed Exfoliation and LBE.

It is well known and discussed that, for speakers of English, sentences with extracted left-branches are unacceptable. I assume the reason why lies in the nature of the article in English. Namely, the affixal article lowers, but the one in English does not, simply because there is no such rule in the morphology. Exfoliation cannot apply for the same reason as above: deleting the intervening DP would result in losing information on definiteness, which could not be recovered from the remaining structure.

The account proposed in this paper does not contradict the prediction that LBE should be generally allowed in languages without articles, and that restrictions on its availability must arise from independent reasons. Such a language is Serbo-Croatian, which allows LBE, except in the case of multiple modifiers. Bošković (2005) explains this by recourse to equidistance of modifiers and Lethal Ambiguity.

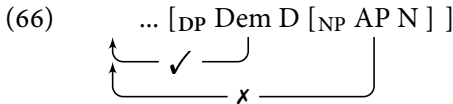
However, as shown earlier, Serbo-Croatian does allow multiple LBE when one of the modifiers is a demonstrative, recall (13-b). For these cases only, Bošković (2016) proposes that Multiple LBE is in fact focus movement, where the demonstrative / higher Spec of NP moves first to SpecFocP. The lower Spec of NP can be moved in the next step, and be tucked in as the lower SpecFocP.²²



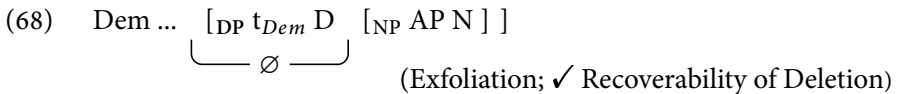
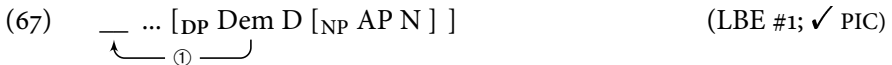
According to Bošković (2005), demonstratives are adjectives in Serbo-Croatian, which creates a problem for the analysis from Bošković (2016), as Murphy (2017) points out. Bošković (2014a:59) claims the difference to be a semantic effect: single referent of the focalised element and deicticity. However, for the analysis to work, the difference would have to be structural; the adjectives in

²²Bošković follows the proposal by Fernandez-Salgueiro (2006) for multiple *wh*-movement in Serbo-Croatian. For a remnant movement analysis of multiple LBE in Serbo-Croatian, see Bašić (2008, 2009).

(13-a) would have to be equidistant, while the demonstrative in (13-b) would have to be structurally higher than the adjective. A solution that Murphy (2017) proposes is to treat the demonstrative as an argument in the specifier of DP.²³ If that is the case, the demonstrative would be available for extraction, but the DP phase would still block extraction of the adjective.



In the configuration as in (66), multiple LBE can be derived if the before mentioned assumptions from Bošković (2016), Murphy (2017) are enriched with Exfoliation. Namely, multiple LBE would apply in two steps. In the first step, the demonstrative is extracted from the specifier of DP (67). Exfoliation applies as a last resort (68), deleting the DP and rendering the adjective available for extraction, which subsequently happens (69).



Two remarks have to be made. First, in (68) the DP can be deleted completely because the demonstrative has moved out of the DP, and therefore, the information on definiteness is recoverable. Second, the extraction of the adjective in (69) still requires tucking in, given the superiority effect. The solution I am giving is only a sketch, since the status of demonstratives in NP languages is not completely clear; however, it illustrates once more how the relative timing of Exfoliation can give rise to different extraction effects cross-linguistically.

²³Murphy (2017) bases his proposal on the claims from numerous literature such as Progovac (1998), Leko (1999), Rappaport (2000), Rutkowski (2002), Pereltsvaig (2013), Petrović (2011), Bailyn (2012), Caruso (2012), Veselovská (2014), Stanković (2015), Phan & Lander (2015), Giusti & Iovino (2016), that DP can be projected by certain lexical items in NP languages.

6. Conclusion

Data from Bulgarian and Macedonian challenge the generalisations on differences between languages with and without articles – Left-Branch Extraction is allowed in definite contexts, but iff there is one modifier of the noun. With two modifiers LBE is blocked, including Multiple LBE. This pattern is problematic for phase-based approaches (Bošković 2005, 2016, 2014*b*) since the DP is required to be both present and absent at the same time – present, for an article to be inserted, absent, in order not to block LBE.

I argue that the availability of LBE is dependent precisely on the presence/absence of the DP layer, which can be syntactically removed via Exfoliation (Pesetsky 2019), but not if the semantic information is not recoverable from the remaining structure. The successful application of Exfoliation is dependent of the relative timing of Generalised Lowering, an operation in charge of article placement. The specific restrictions on availability of LBE in Bulgarian and Macedonian (the number of modifiers) are accounted for in terms of order of operations, in such a way that a post-syntactic operation of Generalised Lowering is assumed to be able to interleave narrow syntax (Martinović 2019). In the case with one modifier, Generalised Lowering is applied at the moment of spell-out of the DP-domain, so Exfoliation and subsequently LBE are thereby fed by Lowering. In the cases with two modifiers Generalised Lowering is applied later, when the linear order of constituents is available, which counter-feeds Exfoliation and, subsequently, LBE.

Therefore, apart from being able to account for the generalisations imposed by the data, an advantage of the account presented here is in that it correctly extends to inter-language and cross-linguistic variation, with minor adjustments.

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