

NP coordination as a new argument in the debate on the DP analysis of Polish¹

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1 Introduction

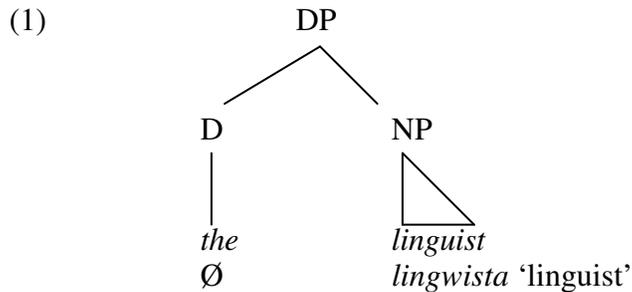
This paper analyses the syntax of modified coordinate NPs in Polish. It is observed that such structures may be premodified by adjectives (although certain constructions with plural adjectives seem to contradict this generalisation), which suggests that the syntactic position of adjectives cannot be NP-internal. An important consequence of this finding is that Polish must project functional phrases above the NP (to host the adjective) and, thus, the NP cannot be treated as the highest nominal projection. Additional support for this proposal is drawn from the fact that coordination is possible at various structural levels within the Polish DP.

2 The DP analysis of Polish

According to the Determiner Phrase (DP) hypothesis (usually attributed to Abney 1987), the NP is not the highest syntactic projection in the nominal complex. Instead, the functional D(eterminer) node is assumed to take an NP as its complement. In languages such as English, articles (*the*, *a*) are taken to be typical lexical instantiations of the D category. Therefore, there is no agreement among generative syntacticians whether languages which lack articles (e.g. Polish and

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most other Slavic languages, apart from Bulgarian and Macedonian) should also be analysed in terms of the DP hypothesis. If the DP hypothesis is assumed, it must be claimed that the D node must remain empty in most syntactic configurations:



Researchers such as Zlatić (1997) or Willim (2000) argue that there is no evidence for the DP layer in the articleless Slavic languages. On the other hand, Progovac (1998), points out that the D node may be occupied by personal pronouns in Serbo-Croatian. Rutkowski (2002) follows this line of reasoning and uses Progovac's (1998) word order (noun/pronoun asymmetry) test to demonstrate that Polish should also be analysed according to the DP hypothesis. He discusses examples such as the following:

- (2a) [*Sam Cezary*] *odwiedził nas wczoraj.*
 alone Cezary visited us yesterday
 'Cezary himself visited us yesterday.'
- (2b) [*On sam*] *odwiedził nas wczoraj.*
 he alone visited us yesterday
 'He himself visited us yesterday.'
- (3a) [*Wszyscy lingwiści*] *odwiedzili nas wczoraj.*
 all linguists visited us yesterday
 'All linguists visited us yesterday.'
- (3b) [*Oni wszyscy*] *odwiedzili nas wczoraj.*
 they all visited us yesterday
 'All of them visited us yesterday.'
- (4a) [*Trzej lingwiści*] *odwiedzili nas wczoraj.*
 three linguists visited us yesterday
 'Three linguists visited us yesterday.'
- (4b) [*Oni trzech*] *odwiedzili nas wczoraj.*
 they three visited us yesterday
 'Three of them visited us yesterday.'

- (6b) *Ta_i je vidio [t_i kola].*
 that AUX-3SG seen car
 ‘That car, he saw.’
- (6c) *Lijepe_i je vidio [t_i kuće].*
 beautiful AUX-3SG seen houses
 ‘Beautiful houses, he saw.’
- (6d) *Koliko_i je zaradila [t_i novca]?*
 how-much AUX-3SG earned money
 ‘How much money did she earn?’

Latin:

- (7a) *Cuiam_i amat Cicero [t_i puellam]?*
 whose loves Cicero girl
 ‘Whose girl does Cicero love?’
- (7b) *Quales_i Cicero amat [t_i puellas]?*
 what-kind-of Cicero loves girls
 ‘What kind of girls does Cicero love?’

As shown above, in languages such as Serbo-Croatian and Latin, pronominal modifiers are allowed to be extracted from the nominal expression and moved to a focal position, located at the left periphery of the sentence. This extraction operation is not grammatical in English or Bulgarian:

English:

- (8a) **Whose_i did you see [t_i father]?* ← compare (6a)
- (8b) **That_i he saw [t_i car].* ← compare (6b)
- (8c) **Beautiful_i he saw [t_i houses].* ← compare (6c)
- (8d) **How much_i did she earn [t_i money]?* ← compare (6d)

Bulgarian:

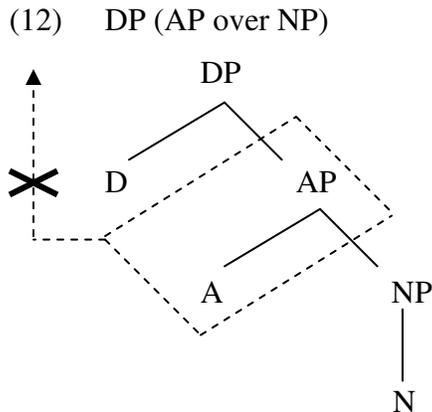
- (9a) [*Kakva kola*]_i prodade Petko t_i?
 what-kind-of car sold Petko
 ‘What kind of a car did Petko sell?’
- (9b) **Kakva_i prodade Petko [t_i kola]?*
 what-kind-of sold Petko car

According to Bošković (2005), the fact that LBE is possible in some languages but not in others can be accounted for if some languages (e.g., the articleless

Slavic languages) are assumed not to project the DP layer. He argues that the position of adjectives in DP and non-DP languages is different and follows Abney (1987) in assuming that A(djective) might be analysed as a functional head in the region between DP and NP.² However, Bošković (2005) claims that Abney's (1987) AP-over-NP structure (A selects an NP complement) occurs in DP languages only. In languages which do not have articles nor the DP layer, the AP-over-NP configuration is not possible (AP cannot function as an argument and, therefore, NP must be the highest nominal projection, taking AP as its specifier). The two types in question are illustrated in (10-11), respectively.

- (10) [DP D [AP Adj [NP N]]] ← the DP (AP over NP) pattern
 (11) [NP AP N] ← the non-DP (NP over AP) pattern

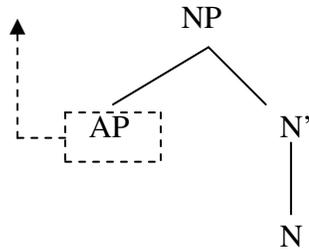
In Bošković's (2005) analysis, the ban on LBE in languages such as English or Bulgarian is related to the fact that adnominal modifiers cannot be separated from the head noun if they are not constituents (only phrasal constituents can undergo this type of movement). In DP (i.e. AP-over-NP) languages, AP is not a constituent to the exclusion of NP:



On the other hand, in non-DP languages, LBE does not involve non-constituent movement because AP is a separate constituent (NP is not a part thereof):

² Note that this assumption was questioned in many later papers – for instance, Cinque (1994) argues that adjectives are specifiers of special functional phrases projected above the noun.

(13) Non-DP (NP over AP)



As shown below, Polish allows LBE, which, according to Bošković's (2005) assumptions, means that it should be analysed as a non-DP (NP-over-AP) language:

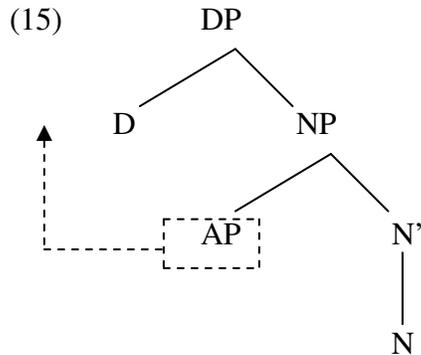
Non-LBE (unmarked information structure):

(14a) [*Czyją dziewczynę*]_i *kocha* *Cyceron* *t_i*?
 whose girl loves Cicero
 'Whose girl does Cicero love?'

LBE (marked information structure):

(14b) *Czyją*_i *kocha* *Cyceron* [*t_i dziewczynę*]?
 whose loves Cicero girl
 'Whose girl does Cicero love?'

It should be noted, however, that Bošković's (2005) proposal that LBE is blocked if AP is not a constituent to the exclusion of NP is not necessarily dependent on the presence of the DP layer. Assuming that APs are specifiers in functional projections above NP, their internal structure does not block extraction even if the whole nominal expression is a DP:



Thus, we argue that, although Bošković's (2005) model might offer an interesting explanation of the impossibility of LBE in English (if A is assumed to be a functional head in this language), it does not exclude the DP analysis of languages such as Polish. Moreover, in what follows, we attempt to show that there is evidence against Bošković's (2005) NP-over-AP structure.

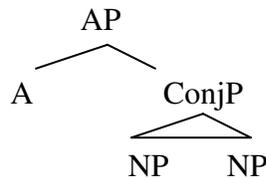
4 NP coordination in Polish

We argue that Bošković's (2005) AP placement hypothesis, if valid, should have important implications for the phenomenon of NP coordination.

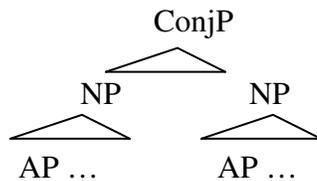
4.1 Modification of coordinated NPs

One of the consequences of the NP-over-AP analysis is that adjectives, being NP-internal, are expected not to be able to modify coordinated NPs. On the other hand, this problem should not arise in AP-over-NP languages:

(16a) DP (AP over NP)



(16b) Non-DP (NP over AP)



At first sight, the Polish examples in (17) seem to pattern with the NP-over-AP hypothesis. In example (17a), each NP conjunct is modified independently. On the other hand, as (17b) shows, a coordinated phrase consisting of two NPs cannot be treated as a single plural constituent with respect to adjectival modification. Under the assumption that only constituents may be coordinated, the data in (17) might suggest that, as predicted by Bošković (2005), an NP cannot function as a constituent to the exclusion of the AP in Polish.

- (17a) *gorzka herbata i gorzka kawa*
 unsweetened-SING tea and unsweetened-SING coffee
 ‘unsweetened tea and unsweetened coffee’
- (17b) **gorzkie* [_{ConjP} *herbata i kawa*]
 unsweetened-PLUR tea and coffee

Plural agreement is grammatical in example (18a) (a copular construction with an adjectival predicate) and (18b) (with AP being a secondary predicate) – this, however, could possibly be explained by claiming that predicative APs are base-generated outside the extended projection of the noun (thus, they are not NP-internal even if we assume the NP-over-AP structure).

- (18a) *herbata i kawa są gorzkie*
 tea and coffee are unsweetened-PLUR
 ‘tea and coffee are unsweetened’
- (18b) *pijam herbatę i kawę wyłącznie gorzkie*
 I-drink tea and coffee exclusively unsweetened-PLUR
 ‘I only drink tea and coffee unsweetened’

Furthermore, the fact that, in English (i.e. a language which is widely believed to project DPs), examples such as (19) are grammatical seems to be consistent with Bošković’s (2005) analysis of the DP (AP-over-NP) pattern.

- (19) *the nice* [_{ConjP} *boy and girl*]

In summary, the data shown so far make the NP-over-AP analysis of Polish plausible.

Nevertheless, we want to argue that the above *prima facie* conclusions are actually incorrect. First, it should be noted that example (20) is clearly ungrammatical although, in this case (unlike in (17b)), there seems to be no structural reason for the ungrammaticality (which suggests that the article and adjective in (19) are acceptable only because they are not morphologically plural).

- (20) **these nice boy and girl*

The unacceptability of the plural form *these* in (20) does not mean that the coordinated NP structure cannot be preceded by a determiner. As shown in (21), in spite of their singular morphology, determiners such as *this* or *a* may refer to both conjuncts of a coordinated nominal construction.

- (21) *this/a nice boy and girl*

As noted, *inter alia*, by Winter (2000) coordinated structures preceded by singular determiners are ambiguous in English:

(22) *Every linguist and philosopher knows the Gödel Theorem.*

Winter (2000) points out that a Boolean analysis would require the coordinated phrase in (22) to be interpreted as referring to a person who is both a linguist and a philosopher (i.e. to the intersection of the denotations of the two nouns). According to King and Dalrymple (2004), languages such as German or Brazilian Portuguese allow only this interpretation for coordinated structures preceded by a singular determiner. However, in English, it is also possible for the coordinator *and* to take scope over the quantifier *every*. Winter (2000) refers to the latter interpretation as the wide scope reading (as opposed to the narrow scope reading):

Narrow scope:

(23a) (every' (linguist' \cap philosopher')) (know_gödel)

Wide scope:

(23b) (every' (linguist') \cap every' (philosopher')) (know_gödel)

Heycock and Zamparelli (2005) label the reading formalised in (23b) “split interpretation”. They argue that, as regards articles, the split reading is rare cross-linguistically – it is, for instance, clearly ungrammatical in much of Romance:

(24) **Ce marin et soldat sont souvent ensemble.*
this sailor and soldier are often together
'this sailor and soldier are often together'

Interestingly, the split interpretation is allowed in Polish. In many cases, coordinated structures are even more ambiguous than shown above, because, due to the fact that bare nominals are not ungrammatical, phrases such as (25) may have (at least) three different interpretations – see (26a-c).

- (25) *ten student I policjant*
this student and policeman
'this student and policeman'
- (26a) this [student & policeman]
(26b) [this student] & [this policeman]
(26c) [this student] & [a/the policeman]

The fact that the split reading is acceptable is best observed in examples such as (27-28), where an interpretation parallel to either (26a) or (26c) is very implausible.

- (27) *Pijam gorzką herbatę i kawę.*
 I-drink unsweetened-SING tea and coffee
 ‘I drink unsweetened tea and coffee.’
- (28) *Na każdym wydziale stypendium dostanie jeden profesor, doktorant i magistrant.*
 on each department fellowship will-get one professor PhD-student and MA-student
 ‘In each department, one fellowship will be given to a professor, one to a PhD student and one to an MA student.’

Therefore, we take examples such as (27-28) to indicate that singular NP conjuncts in Polish can in fact be subject to modification of the wide scope type but, similar to English and unlike Russian (see (29)), the modifying element has to be morphologically singular (the plural forms in (18a-b) are not DP-internal and, therefore, they do not exhibit singular morphology).

- (29) *èti mudryje muž i žena* (Russian)
 these wise-PLUR man and woman
 ‘this wise man and woman’

Heycock and Zamparelli (2005) argue that the singularity/plurality mismatch exemplified in (21) is possible because a syntactic feature for number (\pm PLUR) is distinct from a semantic one (which they label \pm LATT for ‘lattice’). They consider the split between the two features responsible for phenomena such as the fact that in Hungarian a semantically plural noun remains morphologically singular when it is preceded by a numeral:

- (30a) *Öt hajót láttam.*
 5 ship I saw
 ‘I saw 5 ships.’
- (30b) *Hajókat láttam.*
 ships I saw
 ‘I saw ships.’

Another analysis based on featural distinctions has been proposed by King and Dalrymple (2004). They distinguish two types of agreement features associated with nouns: CONCORD features (responsible for agreement between a noun and

its modifiers) and INDEX features (responsible for semantic agreement between a nominal construction and a verb). We will not discuss the above approaches in detail because they are not essential for the analysis presented here. From our point of view, the most important conclusion of those studies is that, in languages such as Polish, a singular determiner/modifier may be combined with both conjuncts of a coordinated singular NP construction. We take this observation to indicate that such a determiner/modifier cannot be a part of either of the coordinated NPs. This is illustrated in (31).

(31) [AP-SING [NP-SING & NP-SING]]

The above structure is difficult to reconcile with Bošković's (2005) NP-over-AP pattern. A possible way out of this problem would be to assume that the surface structure in (32a) is derived from the base configuration in (32b) through AP ellipsis under identity:

- (32a) *słodka herbata i kawa*
 sweet-SING tea and coffee
 'sweet tea and coffee'
- (32b) *słodka herbata i ~~słodka~~ kawa*
 sweet-SING tea and sweet-SING coffee

However, even this assumption would fail to account for the narrow scope interpretation illustrated in (26a). It does not seem plausible to propose that two copies of the same adjective are base generated in this case. It should be noted that none of the interpretations in (26a-c) corresponds to examples such as (33).

- (33) *dziewięciuset profesorów, doktorantów i magistrantów*
 nine-hundred professors PhD-students and MA-students
 'nine hundred professors, PhD students and MA students'

The above phrase cannot be interpreted in a Boolean way (as in (26a)) due to pragmatic reasons. Neither is it possible to subsume it under the type illustrated in (26b) – examples (33) and (34) are not synonymous.

- (34) *dziewięciuset profesorów, dziewięciuset doktorantów i dziewięciuset magistrantów*
 nine-hundred professors nine-hundred PhD-students and nine-hundred MA-students
 'nine hundred professors, nine hundred PhD students and nine hundred MA students'

Finally, we cannot interpret (33) by analogy to (26c) because all the three conjuncts in (33) are assigned genitive by the numeral. It should be noted that, according to Bošković's (2005) model, numerals must be analysed as NP-internal (similarly to adjectives and other modifiers). Thus, we argue that the NP-over-AP pattern should not allow structures such as (33) (even if we assume that repeated NP-internal modifiers are subject to ellipsis).

In conclusion, only the structure proposed in (31) can correspond to all examples of modified NP coordination discussed in the present paper.

4.2 Multiple DP-internal layers of coordination

Pereltsvaig (2005) points out that the relative order of adjectives in Russian (an articleless language) is not freer than the relative order of adjectives in English. Note that Bošković's (2005) model predicts the order of adjectival modifiers in the articleless Slavic languages to be relatively free (multiple adjectives are assumed to reside in multiple specifiers of the same nominal head). Therefore, Pereltsvaig (2005) argues that Bošković's (2005) NP-over-AP analysis is not supported by the data she analyses. Instead, she proposes to derive the relatively strict ordering of Russian adjectives from the order of functional phrases projected above NP, which should correspond to the semantic hierarchy postulated by Scott (2002):

- (35) Ordinal > Cardinal > Subjective Comment > Evidential > Size > Length > Height > Speed > Depth > Width > Temperature > Wetness > Age > Shape > Color > Nationality/Origin > Material

Pereltsvaig's (2005) observations seem to hold also for Polish structures with two (or more) adjectives: the further apart the two adjectives are on Scott's (2002) scale, the stricter their relative ordering is likely to be – thus, from the point of view of information structure, the order in (36a) is more natural than the one in (36b) (the adjectives *polski* 'Polish' belongs to Scott's (2002) ORIGIN type, whereas the adjective *dobry* 'good' belongs to the SUBJECTIVE COMMENT type):

- (36a) *te pięć dobrych polskich policjantek*
 these five good Polish policewomen
 'these five good Polish policewomen.'
- (36b) *?te pięć polskich dobrych policjantek*
 these five Polish good policewomen

A simplified illustration of the differences between the analyses of adjectives advocated by Bošković (2005) and Pereltsvaig (2005) is provided in the structures in (37a-b) (which correspond to example (36)).³

The NP-over-AP model:

(37a) $[_{NP} te [_{N'} pięć [_{N'} dobrych [_{N'} polskich [_{N} policjantek]]]]]]$

The DP model:

(37b) $[_{DP} te [_{NumP} pięć [_{\alpha P-EVAL} dobrych [_{\alpha P-ORIGIN} polskich [_{NP} policjantek]]]]]]$

We argue that Bošković's (2005) model does not account for the fact that, as shown in (38a-e), coordination is possible at many phrasal levels within the DP structure.

- (38a) *te pięć dobrych polskich policjantek i lingwistek*
 these five good Polish policewomen and linguists
 'these five good Polish policewomen and linguists.'
- (38b) *te pięć dobrych polskich policjantek i niemieckich lingwistek*
 these five good Polish policewomen and German linguists
 'these five good Polish policewomen and German linguists.'
- (38c) *te pięć dobrych polskich policjantek i wspaniałych niemieckich lingwistek*
 these five good Polish policewomen and excellent German linguists
 'these five good Polish policewomen and excellent German linguists.'
- (38d) *te pięć dobrych polskich policjantek i siedem wspaniałych niemieckich lingwistek*
 these five good Polish policewomen and seven excellent German linguists
 'these five good Polish policewomen and seven excellent German linguists.'
- (38e) *te pięć dobrych polskich policjantek i tamte siedem wspaniałych niemieckich lingwistek*
 these five good Polish policewomen and those seven excellent German linguists
 'these five good Polish policewomen and those seven excellent German linguists.'

³ For ease of presentation, we use the labels $\alpha P-EVAL(UATION)$ and $\alpha P-ORIGIN$, which do not appear in Pereltsvaig (2005) – she considers αP a functional category which can be reiterated (the relative ordering of the adjectives follows from Scott's (2002) hierarchy).

In Bošković's (2005) model, the structures coordinated in examples (38a-d) are not phrasal constituents. Thus, they should not be able to function as phrasal conjuncts. On the other hand, nominal structures consist of a number of independent functional layers, according to the DP model shown in (38b). Therefore, phrasal coordination may be allowed at each of those levels:

- (39a) [DP [NumP [α P-EVALUATION [α P-ORIGIN [ConjP]]]]] \rightarrow NP coordination
- (39b) [DP [NumP [α P-EVALUATION [ConjP]]]] \rightarrow α P-ORIGIN coordination
- (39c) [DP [NumP [ConjP]]] \rightarrow α P-EVAL coordination
- (39d) [DP [ConjP]] \rightarrow NumP coordination
- (39e) [ConjP] \rightarrow DP coordination

It should be stressed again that the structure illustrated in (37b), even though it assumes the DP layer, is nonetheless consistent with Bošković's (2005) claim that LBE is possible only if it does not involve non-constituent movement. APs are specifiers of functional projections above the head noun (Pereltsvaig's (2005) α Ps), and consequently constituents (thus, they need not be NP-internal in order to be extracted).

5 Conclusion

Bošković's (2005) NP-over-AP hypothesis is not supported by the facts of NP coordination in Polish. A DP analysis of Polish seems to be necessary in this case because it provides a rich functional structure, which can explain the possibility of NP-external adjectival modification and phrasal coordination at various levels.

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