

On the nature of prenumeral adjectives*

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0. Introduction

In this paper we discuss a group of adjectives that appear in unexpected positions: adjectives preceding numerals prenominaly. We argue that these adjectives violate cross-linguistic generalizations only apparently, as the noun phrases with such adjectives actually contain additional covert structure – structure that is not realized phonologically/phonetically.

It has been noted already by Greenberg (1963) that in prenominal position numerals universally precede adjectives; finding prenumeral adjectives prenominaly would thus be unexpected. Greenberg's generalization 20 states that elements inside the DP come in a certain order: when a demonstrative, numeral and adjective precede the noun, the order is always Dem > Num > Adj > N, and when a demonstrative, numeral and adjective follow the noun, they are found either in the same or in the opposite order, so the string is either N > Dem > Num > Adj or N > Adj > Num > Dem.¹

Cinque (2005) shows that of the 24 logically possible ordering combinations of the four elements Dem, Num, Adj, and N, only 14 orders are attested in natural languages. He further claims that in the probed languages, the prenominal position never exhibits adjectives preceding the numerals. Moreover, Cinque (2005) argues that if we posit a fixed sequence of functional projections with the order in (1) and two further restrictions on movement (which are not relevant for our purposes at this point), we will be able to derive all of the attested orders of these elements, and we will also rule out all of the unattested orders as underivable (cf. also Abels & Neeleman 2009 for a simpler solution of this cross-linguistic puzzle that also relies on the same underlying order of merge of these four elements).

(1) [DemP [NumP [AdjP [NP]]]]

Therefore, adjectives preceding numerals are unexpected not only because they violate a well-established cross-linguistic generalization, but also because they should, assuming the universal hierarchy of functional projections, simply not be derivable.

1. Prenumeral adjectives

The existence of several cases of prenumeral adjectives has already been noted for various languages. Babby (1985) mentions the examples in (2) from Russian, Ionin & Matushansky (2006) mention the English example in (3) (see also Jackendoff 1977).

(2) a. *predstojaščie* *pjat'* *novyx* *voprosov* (Russian)
coming_{ACC.PL} five_{ACC} new_{GEN.PL} questions_{GEN.PL}
'coming five new questions'
(Babby 1985: 5, (12))

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¹ The actual generalization states "When any or all of the items (demonstrative, numeral, and descriptive adjective) precede the noun, they are always found in that order. If they follow, the order is either the same or its exact opposite." (Greenberg 1963: 87).

- b. *Ja vypil* (I drank): (Russian)
dobryx pjat' bol'six butylok vina
 good_{GEN.PL} five_{ACC} big_{GEN.PL} bottles_{GEN.PL} wine_{GEN}
 'I drank a good five big bottles of wine.' (Babby 1985: 6, (11a))

(3) *a stunning one thousand/twenty five books* (Ionin & Matushansky 2006: 324, (18))

For the most part, these mentions involve cases in which the adjective is seen as modifying the numeral alone. Solt (2007) notes that there are two types of “modified cardinals”. The adjective can modify either the following nominal expression (quality reading), as in (4a), or it can modify the quantity or amount of the following nominal expression (quantity reading), (4b).

- (4) a. *A lucky three students got fellowships.* (Solt 2007, 2, (1a))
 b. *An incredible eight thousand soldiers died at Gettysburg.* (Solt 2007, 2, (1c))

Cinque (2010) notes the possibility that in English, the adjectives *possible* and *wrong* can be located higher than NumP, the projection of cardinal numerals (Cinque 2010: p. 131, fn 1).

- (5) a. *She always goes to see every possible first two games.* (Cinque 2010)
 b. *She always goes to see every first two possible games.* (Cinque 2010)
- (6) a. *We discussed the wrong two answers* (=which it was wrong for us to discuss)
 b. *We discussed the two wrong* (= incorrect) *answers.* (both Cinque 2010)

More examples of this type are presented in Marušič (2011), who shows that the class of prenumeral adjectives is not uniform (contra Cinque 2010, who claims that these are all adjectives from reduced relative clauses), as well as in Keenan (2013), (8a-b), and Maekawa (2013), (8c-d).

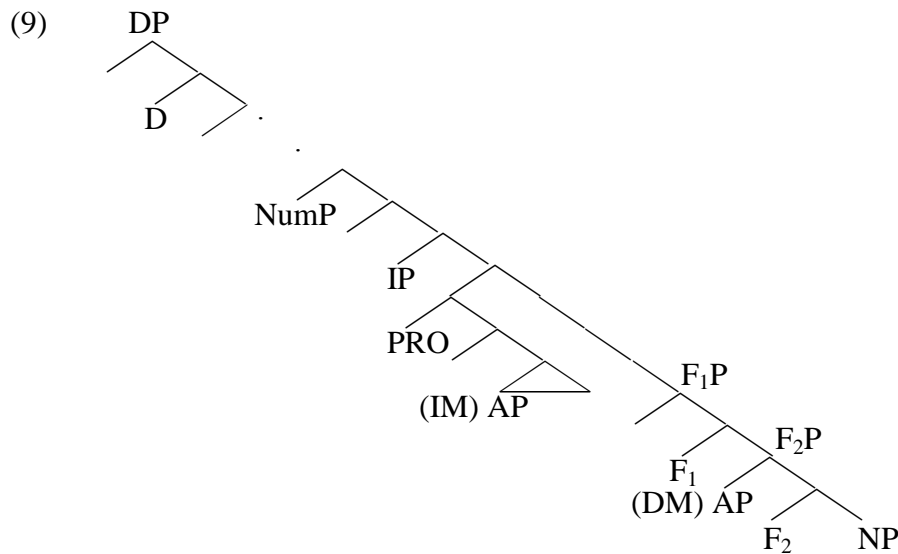
- (7) a. *the left three columns* (= the three columns which are on the left (side))
 b. *the upper three rows* (= the three rows which are on the upper end)
- (8) a. *a pleasant three days in Philadelphia*
 b. *He held his breath underwater for a staggering ten minutes.*
 c. *a beautiful four days in Berlin*
 d. *An estimated 3.3 million people have died as a result of the war making it the “tragedy of modern times”, according to a report issued by the International Rescue Committee aid agency.*

In what follows, we will show that the group of adjectives which can appear in front of numerals is actually quite diverse and larger than the above-mentioned observations from the previous literature would seem to suggest.

2. Indirect or direct modifiers?

Cinque (2010) divides adjectives in two classes and shows that they are located in two different structural positions, merged into the structure in two different ways. Direct-modification adjectives (DM As) are APs merged in the specifiers of functional heads, while

indirect-modification adjectives (IM As) are reduced relative clauses (reduced RC) merged in a functional projection hosting only reduced RCs. IM adjectives are argued to be merged higher in the structure than DM adjectives (Cinque 2010), as shown in (9).



As both (5a) and (6a) are supposedly derived from reduced RCs, Cinque suggests that IM As might have more than one merging point in the structural frame of the noun phrase, and moreover, that one of these merging points is located even higher than the merging point of the numeral phrases.

Adjectives that express some sort of location/position, such as *left*, *right*, *upper*, *lower*, *northern*, *western*, etc., easily appear to the left of cardinal numerals in English and Slovenian, (10). At least in some cases, these adjectives can also be used with ordinal numerals, in which case they seem to be located even higher than ordinal numerals, (11).

- | | | | | |
|------|----|----------------------------------|------------|--------------------------|
| (10) | a. | <i>levi trije stolpci</i> | [from www] | (Slovenian) ² |
| | | left three columns | | |
| | b. | <i>zgornje tri vrstice</i> | [from www] | |
| | | upper three rows | | |
| (11) | a. | <i>leve prve tri knjige</i> | | |
| | | left first three books | | |
| | b. | <i>zgornje prve tri alineje</i> | [from www] | |
| | | upper first three bullets | | |
| | c. | <i>the upper first four rows</i> | [from www] | |

When occurring to the right of the numeral, these As typically receive a different interpretation. It can still be related directly to location, as in (12a-b), but it is always related to a fixed idiomatic expression or a type interpretation of the adjective. Similarly, when the Slovenian *desni* “right” and *levi* “left” are used after the numeral with a noun like *politician*, they are interpreted as ‘right-wing’ and ‘left-wing’, respectively, (12c-d).³

² All subsequent non-English examples are from Slovenian, unless marked otherwise.

³ In addition, ‘left’ also has the meaning ‘incompetent’, so that (12b) can also mean ‘three incompetent politicians’.

- (12) a. *Po pomoti je kupil dve levi smučki.*
 by mistake aux bought two left skies
 ‘He mistakenly bought two left skies.’
- b. *Peter ima dve levi roki.*
 Peter has two left hands
 Lit: ‘Peter has two left hands’ = ‘Peter is lazy/incompetent.’
- c. *trije desni politiki*
 three right politicians
 ‘three right-wing politicians’
- d. *trije levi politiki*
 three left politicians
 ‘three left-wing politicians’

These adjectives cannot appear in predicative positions with their location interpretation; when used predicatively, they receive their non-locational interpretation, (13a-b). On their non-locational reading, they are acceptable in predicative position only when preceded by TA, (13c), which—in predicative position—signals the presence of a null N (cf. Marušič and Žaucer 2006, 2008). Therefore, they behave like DM As, they are not predicative adjectives, and can only modify a noun, but given their location high inside the DP—higher than cardinal and ordinal numerals—they should behave like reduced-RC adjectives.

- (13) a. **Tista tri drevesa so desna.*
 those three trees are right
 intended: ‘Those three trees are to the right.’
- b. ?*Ta politik je desni.*⁴
 this politicians is right
 ‘This politician is right-wing.’
- c. *Te knjige so ta desne.*
 These books aux TA right
 ‘These books are the right ones (the ones on the right).’

Leaning closely on Cinque (2010: 6-16), the following subsections will go through several properties which should help us determine more systematically whether the pronominal adjectives are merged into the structure directly like APs or through a reduced RC.

2.1 Stage-level vs. Individual-level interpretation (Cinque 2010: 6)

As noted already in Bolinger (1967), when adjectives such as *visible*, *invisible*, *navigable*, etc., are used attributively, they are ambiguous between stage-level and individual-level interpretation, but when such adjectives are used predicatively, they only receive the stage-level interpretation. When we combine two adjectives of this type in pronominal position, the one receiving individual-level interpretation is located closer to the noun, (14). This leads us to conclude that the individual-level interpretation is associated with DM adjectives, which are merged closer to the noun than IM adjectives, which yield stage-level interpretation.

- (14) *the invisible visible stars*
 ‘the (inherently) visible stars that are currently invisible due to e.g. murky sky’

⁴ In these cases, the adjective most likely precedes a null N. The more common way of saying ‘he is right-wing’ is with a nominalized adjective: *On je desničar* ‘He is a right-winger’.

When we apply this test to the class of adjectives under observation, we find that the adjectives preceding numerals seem to pattern with IM, receiving stage-level interpretation, while the post-numeral adjectives receive individual-level interpretation, thus patterning with DM, (15). Interestingly, as seen in (16), the readings for Slovenian change if we use adjectives preceded by the adjectival definite article TA (see Marušič and Žaucer 2006, 2008, 2014 for details about TA). Both pre- and postnumeral adjectives receive both types of readings, which means that we find both IM and DM adjectives in both positions, i.e., both preceding and following the numerals.

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|------|----|--|---|
| (15) | a. | <i>the wrong three answers</i> | - stage-level – IM |
| | b. | <i>the three wrong answers</i> | - individual-level – DM |
| (16) | a. | <i>leva dva čevlja</i>
left two shoes
“two shoes on the left side” | - stage-level – IM |
| | b. | <i>dva leva čevlja</i>
“two left shoes” | - individual-level – DM |
| | c. | <i>dva ta leva čevlja</i>
two TA left shoes | - stage-level or individual-level – IM&DM |
| | d. | <i>ta leva dva čevlja</i> | - stage-level or individual-level – IM&DM |

2.2 Restrictive vs. Non-restrictive interpretation (Cinque 2010: 7)

As also noted already in Bolinger (1967), certain adjectives are ambiguous between the restrictive and the non-restrictive interpretation when used in prenominal position. When used postnominally, these adjectives only allow a restrictive reading, and the latter is also associated with the same adjectives used in relative clauses; therefore, restrictive interpretation suggests IM, non-restrictive interpretation suggests DM. If we apply this test to our adjectives, (17), we see that when occurring prenumerally, they pattern with IM, while they seem to be ambiguous when occurring postnumerally. We found the presence of the adjectival definite article TA to have no influence on these readings.

- | | | | |
|------|----|--|---------------------------------|
| (17) | a. | <i>Kupil je dva leva čevlja.</i>
bought aux two left shoes
‘He bought the two shoes that were left shoes.’
‘He bought two shoes, they were left shoes.’ | - restrictive & non-restrictive |
| | b. | <i>Kupil je leva dva čevlja.</i>
‘He bought the two shoes which were on the left.’ | - restrictive |
| | c. | <i>Kupil je dva ta leva čevlja.</i>
bought aux three TA left shoes | - restrictive & non-restrictive |
| | d. | <i>Kupil je ta leva dva čevlja.</i>
‘He bought the two shoes which were on the left.’ | - restrictive |

2.3 Modal vs. implicit relative clause reading (Cinque 2010: 8)

It had been noted that when used prenominally, adjectives like *possible* are ambiguous between a modal reading (‘potential’) and an implicit relative clause reading with antecedent contained deletion; postnominally, these adjectives only allow the implicit relative clause reading, (18a-b).

- | | | |
|------|----|--|
| (18) | a. | <i>Mary interviewed every possible candidate.</i>
i. ‘every potential candidate’
ii. ‘every candidate that it was possible for her to interview’ |
|------|----|--|

- b. *Mary interviewed every candidate possible.*
 i. # ‘every potential candidate’
 ii. ‘every candidate that it was possible for her to interview’ (Cinque 2010)

Testing for this distinction within the prenominal context with respect to prenumeral vs. postnumeral positions, Cinque claims that *possible* receives an implicit relative clause interpretation only prenumerally, as in (19a), suggesting that we find IM adjectives preceding numerals and DM adjectives following numerals.

- (19) a. *She always goes to see every possible first two games.*
 b. *She always goes to see every first two possible games.* (Cinque 2010)

We find these judgements to be less clearly distinct in Slovenian. As shown in (20), both the prenumeral and postnumeral position seems to license both IM and DM adjectives.⁵

- (20) a. *Marija je izprašala možne prve tri kandidate.* DM & IM
 Marija aux interviewed possible first three candidates
 i. ‘M. interviewed the first 3 candidates that it was possible for her to interv.’
 ii. ‘M. interviewed the first 3 potential candidates.’
 b. *Marija je izprašala prve tri možne kandidate.* DM & IM
 Marija aux interviewed first three possible candidates
 i. ‘M. interviewed the first 3 candidates that it was possible for her to interv.’
 ii. ‘M. interviewed the first 3 potential candidates.’

2.4 Intersective (IM) vs. Nonintersective (DM) (Cinque 2010: 9)

Another familiar ambiguity of attributive adjectives is that of intersective and nonintersective interpretations. In (21), *beautiful* can either have the intersective interpretation (Olga is both a dancer and she is beautiful) from (i) or the non-intersective interpretation (Olga need not be beautiful, beautiful refers to her dancing) from (ii).

- (21) *Olga is a beautiful dancer.*
 i. ‘Olga dances beautifully’ - non-intersective = DM
 ii. ‘Olga is a dancer and she is beautiful’ - intersective = IM

Testing for this property on prenumeral adjectives, we can see that prenumerally, the only interpretation available is the intersective one, while postnumerally, both are available, (22).

- (22) a. *Videl sem tri (ta) čudovite plesalce.* - IM & DM
 saw-I aux three TA wonderful dancers
 ‘I saw three beautiful dancers.’
 b. *Videl sem ta čudovite tri plesalce.* - IM
 saw-I aux TA wonderful three dancers
 ‘I saw the beautiful three dancers.’⁶

⁵ A reviewer notes that the implicit relative clause reading is never available in Serbo-Croatian. At this point our focus is on Slovenian, so we will not explore the observed cross-linguistic differences.

⁶ Both reviewers point out that in Serbo-Croatian, a prenumeral adjective can also get the non-intersective reading, as in (i). As noted above in fn5, we are limiting the discussion to Slovenian and leaving the cross-linguistic aspects for future research.

(i) *fenomenalna tri plesača* (Serbo-Croatian)
 phenomenal three dancers
 ‘the phenomenal three dancers’/‘three phenomenal dancers’

2.5 Relative to a comparison class (IM) vs. Absolute (DM) (Cinque 2010: 10)

As described by Cinque (2010), attributive adjectives are ambiguous in that they can receive either an absolute interpretation, or else can be understood relative to a comparison class. The noun phrase in (23) can thus refer to an elephant that is small for elephants (relative to a comparison class) or it can refer to an elephant that is small in absolute terms (e.g. a toy elephant).

(23) *a small elephant*

Looking at pronominal adjectives, we observe that both interpretations are available in both positions. With the adjective ‘big’ following the numeral, as in (24b), the noun phrase can either refer to a group of 4 persimmons that are big for persimmons or to a group of four persimmons that are big in absolute terms. Similarly, with the adjective preceding the numeral, as in (24a), we can either be referring to a big unit of 4 persimmons or to a unit of four persimmons that is big for units of four persimmons.

- (24) a. *veliki štirje kakiji* IM & DM
big four persimmons
b. *štirje veliki kakiji* IM & DM
four big persimmons

2.6 Evaluative (DM) vs. Epistemic (IM) reading of ‘unknown’ (Cinque 2010: 14)

Cinque discusses the difference between evaluative and epistemic readings of the adjective ‘unknown’. He observes that the sentence in (25) has both the reading from (i) and the reading from (ii). The reading in (i) is associated with indirect modification, while the reading in (ii) is associated with direct modification.

- (25) *Mary lives in some unknown village.*
i. ‘It is not known in which village’ – IM
ii. ‘The village, where she lives is not well-known’ – DM

As shown in (26), when Slovenian *neznane* “unknown” follows the numeral, it is ambiguous between the two readings, so the postnumeral position—as expected—hosts both indirect and direct modifiers. But when *neznane* appears pronominally, only the indirect modification reading seems to survive. If using *neznane* “unknown” with *ta*, the direct modification interpretation is the only one available in both pronominal and postnumeral positions.

- (26) a. *prebrala je neznane tri romane* IM
read aux unknown three novels
b. *prebrala je tri neznane romane* IM or DM
c. *prebrala je ta neznane tri romane* DM
read aux TA unknown three novels
d. *prebrala je tri ta neznane romane* DM

2.7 NP-dependent (DM) vs. Discourse Anaphoric (IM) reading of ‘different’ (Cinque 2010: 15)

Another adjective that has two readings associated with two types of modification, according to Cinque (2010), is *different*. The so-called NP-dependent reading from (27i) is a result of

direct modification, whereas the discourse Anaphoric reading from (27ii) arises from indirect modification.

- (27) *Detmar and Kordula live in different cities.*
 i. ‘Detmar lives in a different city from Kordula’ DM
 ii. ‘D & K live in a city that is different from some salient city’ IM

The same ambiguity is observed with Slovenian adjectives *drugačen* “different” and *isti* “same”, as shown in (28).

- (28) a. *Peter in Metka bereta drugačne knjige.*
 Peter and Metka read different books
 i. ‘Peter reads different books from Metka.’
 ii. ‘P&M read books that are different from some salient books.’
 b. *Peter in Metka bereta iste knjige.*
 Peter and Metka read same books
 i. ‘Peter reads the same books as Metka.’
 ii. ‘P&M read books that are the same as some salient books.’

Going to pronominal adjectives, we observe that ‘different’ and ‘same’ reveal this ambiguity both in pronominal and postpronominal positions.

- (29) a. *Peter in Metka sta prebrala tri drugačne knjige.* IM & DM
 Peter & Metka aux read 3 different books
 ‘Peter and Metka read 3 different books.’
 b. *Peter in Metka sta prebrala drugačne tri knjige.* IM & DM
 Peter & Metka aux read different 3 books
 ‘Peter and Metka read 3 different books.’
 c. *Peter in Metka sta prebrala iste tri knjige.* IM & DM
 Peter & Metka aux read same 3 books
 ‘Peter and Metka read 3 different books.’
 d. *Peter in Metka sta prebrala ta iste tri knjige.* IM & DM
 Peter & Metka aux read TA same 3 books
 ‘Peter and Metka read 3 different books.’

2.8 Recap

In the preceding subsections we saw that for the most part pronominal adjectives behaved like indirect modifiers while postpronominal adjectives were ambiguous as expected. In some cases, direct modifiers also preceded the numeral; this was observed in sections 2.3, 2.5, 2.6, and 2.7. In these cases both pre- and postpronominal positions were able to host both direct and indirect modification adjectives. Unlike what is concluded about such adjectives in Cinque (2010), we take the availability of both types of adjectives in both positions as the norm.⁷

Finding direct modification adjectives in pronominal positions is not surprising if they are hosted in their expected positions within a (partially) repeated *f*-sequence, i.e. a binominal structure. Obviously, if we are talking about a binominal structure with two *f*-sequences and

⁷ In most sections we gave two sets of examples, one set with a bare adjective and another with the adjectival definite article added to the adjective. In our view, TA only affects the internal structure of the AP, but has no direct influence on the external syntax, i.e. the merging point of the AP (cf. Marušič and Žaucer 2014). Thus, we see no reason to treat these two sets of examples separately. This further means that we are providing both types of examples wherever they are possible primarily to get the widest possible arrange of readings.

thus two positions for both direct and indirect modifiers, we will need to explain why we do find cases where direct modification adjectives in prenumeral position do not seem to be available, as is the case in 2.4. We believe that the absence of prenumeral direct modification adjectives in those cases is not unexpected on our proposal, although for reasons of space, we will have to leave a demonstration of this claim for another occasion.

Two further issues (one of them brought up by the reviewers) need to be addressed. In our discussion of the various readings we sometimes simplified the presentation of the facts by not describing some of the expected readings in enough detail. If, as we claim, prenumeral adjectives actually modify the entire “nominalized” compound of the number and the noun, the expected readings should always be about the group of items described by the combination of the numeral and the noun. In some cases, e.g. in sections 2.1 and 2.5, this is clearly the case, but in some other cases, like in section 2.6, this becomes difficult to appropriately test and thus more difficult to control for. And secondly, our initial observation was that spatial adjectives like *left* do not get spatial interpretation when they are positioned prenumerally, which suggests that the two positions are really different. If all prenumeral adjectives were positioned inside the repeated *f*-sequence, and the two readings depended on different locations inside the *f*-sequence (and the way adjectives were merged into the nominal phrase), we would expect to get both spatial and non-spatial interpretations both prenumerally and postnumerally. Given that we do not (we will return to this point later), there is still ground to claim that we are dealing with two different types of prenumeral adjectives, those that appear inside a repeated *f*-seq and those whose location inside the *f*-sequence is simply higher than that of the numeral.

3. Adjectives to the left of numerals are ...

3.1 Detour: Possessive Adjectives

Before we proceed to our proposal, let us have a look at another class of adjectives that can appear both before and after the numeral with a clear interpretational difference. When a possessive adjective, such as *Martini* “Marta’s”, appears after the numeral, as in (30a), the entire noun phrase refers to three children that are all in some way related to Marta (say, Marta is their mother, their school teacher, their baby-sitter, etc.). But when such a possessive adjective appears before the numeral, as in (30b), there is an additional presupposition that Marta only has three children (i.e., she is the mother/school teacher/baby-sitter/etc. of three and only three).

- | | | | | |
|------|----|-----------------------------|----|-----------------------------|
| (30) | a. | <i>trije Martini otroci</i> | b. | <i>Martini trije otroci</i> |
| | | three Marta’s kids | | Marta’s three kids |
| | | ‘three kids of Marta’s’ | | ‘Marta’s three kids’ |

This “exhaustive” reading is not absolute but linked to a context, so for example, in a context where Marta has three kids, (31) below is nevertheless perfectly fine as long as Marta’s third kid no longer goes to school and is thus outside of the relevant context.

- (31) *V šoli sta manjkala Martina dva otroka.*
 In school aux lacked Marta's two kids
 ‘Marta’s two kids were absent from school.’
 = ‘The two kids of Marta’s that go to school were absent from school.’

As shown in (32), the same interpretational difference is observed also with possessive pronouns. When a possessive pronoun like *svoj* ‘one’s own’ precedes a numeral like ‘two’, as in (32b), the presupposition is that Peter only has two classmates. When it follows the numeral, however, there is no such presupposition.

- (32) a. *Peter je srečal dve svoji sošolki.*
 Peter aux met two one’s-own classmates
 ‘Peter met two classmates of his.’
 b. *Peter je srečal svoji dve sošolki.*
 Peter aux met one’s-own two classmates
 ‘Peter met his two classmates.’

Interestingly, the same type of interpretational difference is also found in cases like (33), where the quantity is not expressed with a numeral but with a noun (the numeral in (33) is a noun). Here too the interpretation of (33b) is that Marta is the mother of three kids, while in the case of (33a), she could have more than three kids.

- (33) a. *trojica Martinih otrok* b. *Martina trojica otrok*
 triplet Marta’s kids Marta’s triplet kids
 ‘A triplet of Marta’s kids’ ‘Marta’s triplet of kids’

We believe that (30b) and (33b) are not comparable only in their interpretation but also in their structure. We submit that in (30b), the numeral-noun complex essentially acts as a noun. The structure we propose involves a null noun, as shown in (34). This null noun takes the lower noun phrase as its complement. This proposal is quite close to Keenan (2013), although as we will explain in subsequent sections, some of the details differ.

- (34) Marta’s [NP N_{NULL} [three kids]]

3.2 Locational and other similar adjectives

We said above that locational adjectives like ‘left’ or ‘right’ appear before the numeral. This is just part of the story, however, since they can in fact also appear *after* the numeral, (35).

- (35) a. *levi trije stolpci* b. *trije levi stolpci*
 left three columns three left columns
 c. *zgornja dva zobka* d. *dva zgornja zobka*
 upper two teeth two upper teeth

Again, the two orders show a clear interpretational difference, comparable to the one observed above with possessives. When the adjective precedes the numeral, we get the exhaustive interpretation: in (35c) there are only two teeth that are *upper*. On the other hand, when the adjective is used after the numeral, there can be other *upper* teeth. In this case the adjective is interpreted as a type adjective.

- (36) a. *ta zgornja dva kozarca*
 TA upper two glasses
 ‘the two unique glasses that are somewhere high’

- b. *dva ta zgornja kozarca*
 two TA upper glasses
 ‘two glasses that have some sort of a predefined property of being
 ‘zgornji’ – no uniqueness involved

Again in parallel to what we saw above with possessives, the uniqueness/exhaustive reading is linked to context, so that (37) is fine in a context where the person has more than the two upper teeth as long as we had agreed to extract only two (and some lower ones). In parallel to the structure proposed in the context of possessive adjectives in (34), these cases will thus have the structure in (38).

- (37) *Zgornja dva zoba smo že spulili.*
 upper two teeth aux already extracted
 ‘We have already extracted the upper two teeth.’

- (38) upper [_{NP} N_{NULL} [two teeth]]

3.3 The wrong GROUP OF

A parallel situation holds with other similar cases. As shown in (39) below, these examples are easily paraphrasable with a noun like *group* between the adjective and the following numeral. So if the adjective *wrong* precedes the two numerals, we are talking about the group of first three answers. If the adjective *wrong* follows *first* and precedes *three*, the appropriate paraphrase involves the noun *group* again following *wrong* and preceding the second numeral.

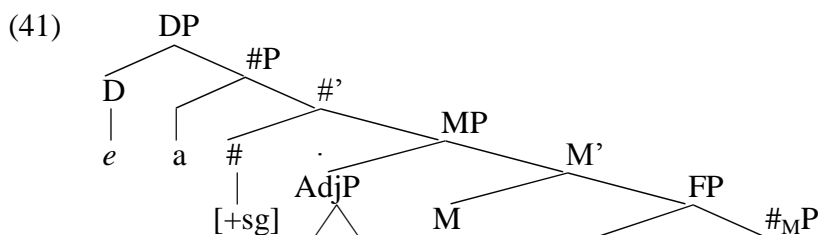
- (39) a. *the wrong GROUP OF first three answers*
 b. *the first wrong GROUP OF three answers*
 c. *the first three wrong answers*

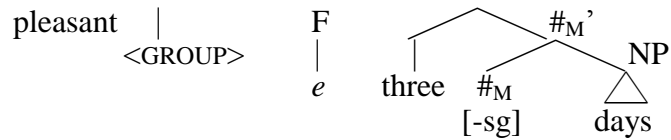
3.4 Partitives and pseudopartitives

Keenan (2013), among others, discusses a set of examples that is close to the ones presented above, such as (40), dubbing the construction AANN (Article + Adjective + Number + Noun).

- (40) a. *a pleasant three days in Philadelphia*
 b. *I ate a delicious three courses at my friend's restaurant this evening.*
 (Keenan 2013: 87-89)

According to Keenan (2013), examples of her construction obligatorily exhibit an indefinite article (which is not a D element), an adjective and an internal indefinite number phrase, and the construction is said to (typically) occur with nouns that measure. Keenan claims that these cases represent a pseudopartitive construction and proposes the structure in (41).





The construction seems comparable to the Slovenian cases we presented in the previous sections, although its properties—at least as they are reported in Keenan (2013)—partly differ from those of the Slovenian cases from above. Specifically, unlike what is reported by Keenan for her AANN, the Slovenian cases do not require the entire DP to be indefinite, the internal NP does not need to have a noun that measures, and when the noun-modifying numeral is ‘two’, ‘three’ or ‘four’, singular agreement on the verb is impossible.

Although Keenan’s (2013) intuition that the higher adjective modifies a null N appears to be on the right track also for the Slovenian cases, trying to simply apply her proposal proves problematic. In Slovenian partitive and pseudopartitive constructions, the lower noun always carries genitive, (42). As shown in (43), this holds even when the partitive element is not present in overt syntax.

- | | | | | |
|------|----|---|----|--|
| (42) | a. | <i>zbirka unih zgodbic</i>
collection those stories
‘a collection of those stories’ | b. | <i>zbirka zgodbic</i>
collection stories
‘a collection of stories’ |
| | c. | <i>zbirka desetih zgodbic</i>
collection ten stories
‘a collection of ten stories’ | | |
-
- | | | |
|------|----|--|
| (43) | a. | <i>Prinesel mi je kave.</i>
brought me aux coffee
‘He brought me some coffee.’ |
| | b. | <i>Črt je prinesel ta malo košaro breskev, Jan pa ta veliko hrušk.</i>
Črt aux brought TA small basket peaches Jan PTCL TA big pears
‘Črt brought a small basket of peaches, while Jan brought a big basket of pears.’ |

In contrast, prenumeral adjectives do not trigger genitive on the following noun, as shown in (44), so the close parallel between the prenumeral-adjective construction and (pseudo)partitives that the application of Keenan’s (2013) analysis would establish does not appear to hold up.

- | | | |
|------|----|--|
| (44) | a. | <i>napačni prvi trije odgovori</i>
wrong _{NOM.PL} first _{NOM.PL} three _{NOM.PL} answers _{NOM.PL}
‘the wrong first three answers’ |
| | b. | * <i>napačni prvi treh odgovorov</i>
wrong _{NOM.PL} first _{NOM.PL} three _{GEN.PL} answers _{GEN.PL} |

We should note that Keenan (2013: 95) does mention that even in English, her constructions with prenumeral adjectives lack *of*, the usual case marker from partitive and pseudopartitive constructions, suggesting that *of* is a “case marker between two overt nominals” and that with the upper nominal unpronounced, there is no need for an overt mediator. However, as we have shown in (44), absence of an overt partitive element does not void the requirement for genitive on the lower noun in Slovenian, which suggests that the structure of our prenumeral-adjective construction must be at least minimally different from the structure of standard

(pseudo)partitives. In 3.6 below, we will propose a binominal structure with a partially repeating *f-seq* under a single DP.

3.5 More on case and agreement

Agreement properties of our construction can be seen as a piece of evidence for the claim that the construction has a mono-DP structure. Looking at our adjectives that precede the numeral, we see that they agree with the noun, just like adjectives following a numeral, (45)-(46). In addition to adjectives, other elements that precede the numeral, such as demonstratives and the universal quantifier, exhibit such agreement as well, (47).

- (45) a. *šest levih stolpcev*
 six left_{GEN.PL} columns_{GEN.PL}
 ‘six left-hand columns’
- b. *levih šest stolpcev*
 left_{GEN.PL} six columns_{GEN.PL}
 ‘left-hand six columns’
- (46) a. *trije zgornji zobki*
 three_{NOM.PL} upper_{NOM.PL} teeth_{NOM.PL}
 ‘three upper teeth’
- b. *zgornji trije zobki*
 upper_{NOM.PL} three_{NOM.PL} teeth_{NOM.PL}
 ‘upper three teeth’
- (47) a. *tistih pet rdečih avtomobilov*
 those_{GEN.PL} 5 red_{GEN.PL} cars_{GEN.PL}
 ‘those 5 red cars’
- b. *vseh 7 dirkalnih biciklov*
 all_{GEN.PL} 7 racing_{GEN.PL} bikes_{GEN.PL}
 ‘all 7 racing bikes’
- c. *vsi trije dirkalni konji*
 all_{NOM.PL} 3 racing_{NOM.PL} horses_{NOM.PL}
 ‘all 3 racing horses’

Assuming, uncontroversially, that the postnumeral adjectives above are part of the noun phrase of the head noun, we take this parallelism between agreement in prenumeral and postnumeral adjectives as suggestive of the fact that the cases with prenumeral adjectives also represent constructions with a single set of the higher parts of the extended nominal projection.⁸

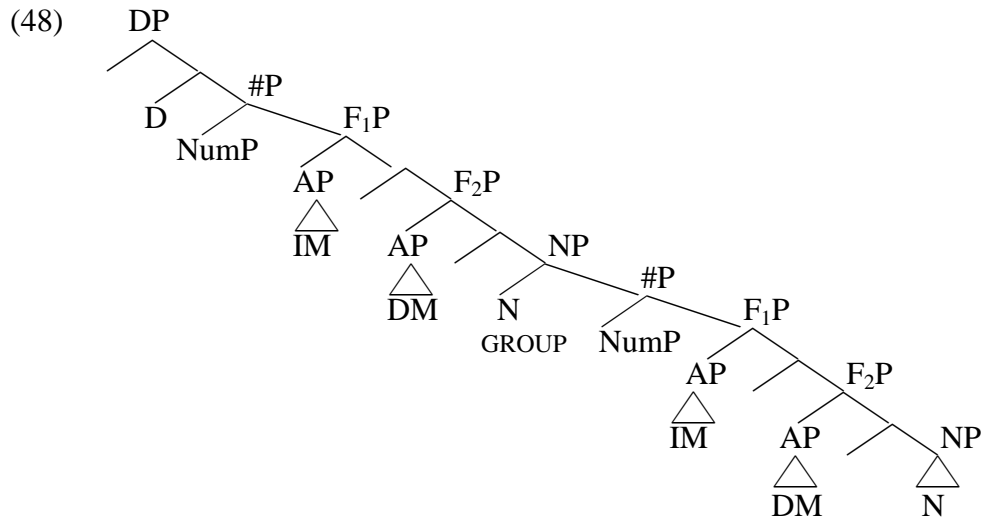
4 The structure

To capture the characteristics of our prenumeral-adjective construction described in the previous sections, we propose a binominal structure with a partially repeating *f-seq* under a single DP, as in (48). The two instantiations of the *f-seq* are connected by a null noun; given

8 There exist cases where agreement does not carry from the noun over the numeral to the adjective, (i), with the prenumeral adjective exhibiting a constant, nonagreeing adverbial-like morphology. From what we can tell, there is no semantic difference between cases where prenumeral adjectives carry this type of “adverbial” agreement and their counterparts in which the adjective agrees with the noun, (ii). This type of “adverbial” agreement can also be found with other type of prenumeral elements, and has also been noticed in Russian (Babby 1985). At this point, we do not know what to make of this pattern.

- (i) a. *leve dva kabla*
 left_{ADV} two_{NOM.DU} cables_{NOM.DU}
 ‘left two cables’
- b. *z leve dveh kablov*
 from left_{ADV} two_{GEN.DU} cables_{GEN.DU}
 ‘from the left two cables’
- (ii) a. *leva dva kabla*
 left_{NOM.DU} two_{NOM.DU} cables_{NOM.DU}
 ‘left two cables’
- b. *z levih dveh kablov*
 from left_{GEN.DU} two_{GEN.DU} cables_{GEN.DU}
 ‘from the left two cables’

that our prenumeral-adjective cases do not seem to be limited to meanings of measure, we do not encode this by making the null noun a quantity/measure noun (unlike Keenan (2013)), but rather see it as carrying a broader meaning close to that of ‘group’. This null noun selects for the #P, which is the top projection of the lower *f-seq*. Whereas both *f-seqs* seem incomplete, they nonetheless both have number marking and both have the relevant adjective-hosting projections (as we saw that both types of adjectives are possible both before and after the numeral).



As has been amply demonstrated above, the construction can exhibit a numeral between the two sets of adjectives; indeed, this type of data constituted our point of departure. In the proposed structure, this numeral is hosted in the #P between the two sets of adjective-hosting FPs. If above the #P, the *f-seq* restarts with a new adjective-hosting F₂P, we expect that (unless there is further restarting) it will then continue with all the F₂P-dominating projections of the *f-seq*, including a #P dominating the second set of adjective-hosting FPs. If so, we predict that it will be possible to have a numeral above the higher set of adjectives as well. Whereas this may not be obviously the case, it seems to us that the ‘problem’ with such cases is more one of imagining a suitable context for the use of such a string; but if a suitable context is invoked, this does seem to be possible. Imagine a stack of ten bookshelves, from which I want to get the leftmost three books from three of the shelves; or imagine an excel file with multiple spreadsheets for two of which, or for the first two of which I want the leftmost two columns filled in. In such contexts, (49) and (50) seem possible.⁹

- (49) *A mi daš tri ta leve tri knjige?*
 Q I_{DAT} give_{2P} three_{ACC} TA left_{ACC} three_{ACC} books_{ACC}
 ‘Can you pass me three of the left three-book sets?’
- (50) a. *V excel fajlu moraš izpolniti dva leva dva stolpca.*
 in Excel file must_{2P} fill-in_{INF} two_{ACC} left_{ACC} two_{ACC} columns_{ACC}
 ‘You need to fill in the left two columns in two of the spreadsheets.’

⁹ For some speakers, the first numeral in (46) would preferably be substituted for by *troje* ‘three’, which is a form of the numeral used for counting the groups when partitioning regular plurals into groups, as in *troji stoli* (three_{PL,NOM} chair_{PL,NOM}) ‘three (contextually defined) groups of chairs’ vs. *trije stoli* (three_{PL,NOM} chair_{PL,NOM}) ‘three chairs’, or *troji čevlji* (three_{PL,NOM} shoe_{PL,NOM}) ‘three pairs of shoes’ vs. *trije čevlji* (three_{PL,NOM} shoe_{PL,NOM}) ‘three shoes’ (for many speakers, this is also the only numeral form used with pluralia-tantum nouns, such as *vrata* ‘door’). If the meaning of the bottom part of our prenumeral-adjective construction is, as we suggest, always something along the lines of *group*, such a preference is not surprising.

- b. *V excel fajlu moraš izpolniti prva dva leva dva stolpca.*
 in Excel file must_{2P} fill-in_{INF} first_{ACC} two_{ACC} left_{ACC} two_{ACC} columns_{ACC}
 ‘You need to fill in the left two columns in the first two spreadsheets.’

We should also mention that as can be seen from (49)-(50), the two numerals must be of the same grammatical number; in (49), both numerals are plural, and in (50), they are both dual. Although all three examples in (49)-(50) in fact contain two instances of the very same numeral, the restriction is actually to the same grammatical number, not to the same numeral, so that a combination of, say, ‘four’ and ‘three’, which both require plural agreement, is fine: for example, (49) is fine also with *štiri ta leve tri knjige* ‘four TA left three books’. However, a combination such as *tri leva dva stolpca* ‘three left two columns’, in which ‘three’ requires plural and ‘two’ requires dual, is not possible. Given that the proposed structure contains just one DP, the fact that the construction exhibits the restriction on agreeing grammatical number need not be surprising; it is in line with the fact that there must be concord/agreeing gender, number and case throughout any DP.

One aspect of our proposed structure that may leave doubts is the fact, mentioned in section 3.4 above, that unlike in (pseudo)partitives, the overt/bottom noun of our prenumeral-adjective construction does not surface in the genitive. As section 3.4 showed, the bottom noun of Slovenian (pseudo)partitives is genitive-marked even when the partitive element is covert. Given that the structure in (48) contains a null noun, we might expect the overt/bottom noun to surface in genitive case, contrary to fact. We see two avenues that can be pursued in order to find an answer to this puzzle. One is related to the nature of the null noun, that is, to the claim that unlike in the proposal advanced for her AANN in Keenan (2013), the null noun in (48) is not a measure noun whose complement would naturally be expected (in Slovenian) to carry genitive, the standard case of quantification, but rather a noun with a broader meaning close to that of ‘group’. This may do the trick, although we acknowledge the worry that regardless of quantification, the default case of noun complements is also genitive and so regardless of the nature of the null noun in (48), we might expect the overt noun to surface in the genitive. The other option that comes to mind is a version of (48) that does away with the null noun, and retains only a restarted *f-seq*, along the lines of the “inflectional shells” that Bjorkman and Cowper (2013) have proposed in their analysis of the English causative *have*, with a restarted *f-seq* above VoiceP: [TP [EventP [VoiceP [EventP [VoiceP [VP]]]]]]. The fact that the interpretation turns out to be one of ‘group’ may not be problematic, such an interpretation may actually be derivable from the mere fact that there is a higher-level adjective modifying a lower part comprising a quantified structure of numeral and noun. We must leave this issue for future work.

5 Conclusion

We discussed a group of adjectives which precede numerals in prenominal position and thus challenge both Greenberg’s (1963) crosslinguistic generalizations and Cinque’s (2005) influential theory. Leaning closely on tests from Cinque (2005), we argued that in general both prenumeral and postnumeral positions allow direct and indirect modification, and proposed to account for this by positing a partially restarted *f-seq*. Although we said that our proposal is different from Keenan’s (2013) proposal for AANN, they share many similarities. Both propose an essentially binominal structure with two nouns (one null) heading two *f-seqs*, though under a single DP. Keenan’s higher, null noun is deficient and does not even sit in a regular NP but in a *Measure* phrase, and so the *f-seq* above it also does not contain all of the FPs that are found in the lower *f-seq*. In our version, the *f-seq* dominating the null noun is not

deficient. The basic possibility for deriving pronominal adjectives is shared by both version, though having a deficient versus a full-fledged higher *f-seq* results in different predictions. We showed that our account is supported by data even with respect to some predictions that at first sight seem false, such as the co-occurrence of two numerals. On both analyses, we may be faced with the problem of why the lower noun of our pronominal-adjective construction does not surface in the genitive.

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