

# Morphosyntactic variation in numerically-quantified noun phrases in Bulgarian

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## 1 The Bulgarian count form

Bulgarian masculine nouns have a special form – a ‘count’ form – different from singular and plural. The count form is only used when masculine nouns combine with cardinal numerals (apart from *edin* ‘one’) and with certain quantity expressions, e.g. *njakolko* ‘several’. It cannot be used in combination with other quantity expressions, e.g., *mnogo* ‘many/much’, which require the plural form. It also cannot be used on its own, outside of numerically-quantified structures. The patterns are illustrated in the examples in (1).

- (1) a. *edin stol*  
one.M.SG chair.M.SG  
‘one chair’  
b. *mnogo stol-ove / \*stol / \*stol-a*  
many/much chair.M-PL chair.M.SG chair.M-CN  
‘many chairs’  
c. *\*(pet / njakolko stol-a*  
five several chair.M-CN  
‘five/several chairs’

Feminine and neuter nouns, on the other hand, only show a singular-plural distinction and appear in their plural form when they combine with cardinal numerals other than *one* and with quantity expressions like *njakolko* ‘several’ (and with *mnogo* ‘many/much’), (2).<sup>1</sup>

- (2) *pet / njakolko mas-i / legl-à*  
five several table.F-PL bed.N-PL  
‘five/several tables’ / ‘five/several beds’

There is a difference between *a count form/a count-marked noun* and *a count noun*. Bulgarian makes a grammatical distinction between count and mass nouns, e.g., *stol* ‘chair’ vs. *krem* ‘cream’ and both count and mass nouns, if masculine, have a count form, cf. (1c), (3b).

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<sup>1</sup>The neuter plural inflection in (2) bears stress, indicated by the grave accent, which distinguishes it from the count inflection on masculine nouns, which is never stressed.

- (3) a. mnogo krem / krem-ove  
 many/much cream.M.SG cream.M-PL  
 'much cream' / 'many creams'
- b. \*(pet / njakolko) krem-a  
 five several cream.M-CN  
 'five/several creams'

Contemporary normative grammars prescribe the count form only for non-human-denoting masculine nouns (called 'masculine non-personal'). Human-denoting masculine nouns (called 'masculine personal') need to appear in their plural form, and when accompanied by lower numerals, the numerals take an additional *-(i)ma* suffix, as in (4).<sup>2</sup>

- (4) pet(-ima) / njakolko student-i  
 five(-M.H) several student.M.H-PL  
 'five/several students'

The norms are observed in formal registers, but in colloquial speech there is variation: masculine human nouns can appear in the count form and masculine non-human nouns in the plural form. The count form is fully productive and also applies to novel words. The variation, modeled as grammars in competition, was discussed in Pancheva (2018).

Numerically-quantified nominals with count-marked nouns trigger plural agreement with finite verbs and participles, (5a), and with predicative adjectives (not illustrated here). In this respect, they behave like nominals with plural-marked nouns, see (5b). External agreement thus appears to lend support to an analysis of the count form as morpho-syntactically plural. The same can be said for DP-internal concord. Attributive adjectives that modify count nouns, and that appear lower than the numeral, are also obligatorily plural, (5a), just like adjectives modifying plural-marked nouns (cf. (5b)).

- (5) a. Pet / njakolko nov-i stol-a bjaha nareden-i v redica.  
 five several new-PL chair.M.NH-COUNT be.PAST.3PL arranged-PL in line  
 'Five/several new chairs were arranged in a line.'
- b. Nov-i stol-ove bjaha nareden-i v redica.  
 new-PL chair.M.NH-PL be.PAST.3PL arranged-PL in line  
 'New chairs were arranged in a line.'

Taking stock, the distribution of the count form suggests that it is a kind of plural: it may not appear with numeral 'one', and it triggers DP-internal and external plural agreement. The fact that it is dependent on numerical expressions and is restricted to masculine nouns supports its analysis as a special plural inflection, one that is confined to specific structures through a syntactic dependency relation with the numerical quantifier. The relation could possibly be selection or agreement, but given that Bulgarian has lost almost all morphological expression of case, it probably is not case licensing. Yet, despite the plausibility of analyzing the count form as plural, this paper pursues a different approach.

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<sup>2</sup>Cinque & Krapova (2007) propose that the suffix is a bound numeral classifier (as in Hurford 2003).

## 2 The structure of the count, singular, and plural form

I argue that the count morphology is the realization of singular, not plural number. Moreover, although Bulgarian has almost entirely lost case distinctions on nouns, I suggest that the count form realizes accusative case as well. Count marking is thus analyzed as accusative singular inflection, reflected in the new gloss in (6). This idea was originally suggested in Pancheva (2018); here three additional arguments are offered in support, potential counterarguments are considered and reconciled with the proposal, and an analysis of the apparent lack of number concord seen in (6) is offered.<sup>3</sup>

- (6) tezi pet nov-i stol-a  
 this.PL five new-PL chair.M.NH-ACC.SG  
 ‘these five new chairs’

The main idea of the account developed here is that differential case and number marking results from the involvement of two null measure expressions that link numerals (and numeral quantifiers) to the nouns. The morpho-syntactic properties of one of these measure expressions is responsible for the singular number and accusative case of masculine nouns and for the ‘mixed concord’ pattern (Norris 2017) in examples such as (6).

### 2.1 Assumptions about nouns and number features

Count noun phrases, *nPs*, are complements of a Number head, whose number feature is expounded on the noun. Bare count *nPs* are predicates of atomic individuals and their sums, (7). The number feature on Number either restricts this meaning or leaves it unchanged. Given the meaning of SG in (8a), a singular-marked *nP* (e.g., *stol-∅* ‘chair-SG’) is a predicate of atomic individuals, (9a). PL is presuppositional: it checks whether a predicate is true of atoms and their sums, and if so, returns that predicate, (8b). A plural-marked *nP* (e.g., *stol-ove* ‘chair-PL’) thus denotes a predicate of atomic individuals and their sums, (9a).<sup>4</sup>

- (7)  $\llbracket [nP \textit{ stol}] \rrbracket = \llbracket [nP \textit{ chair}] \rrbracket = \lambda x. x \textit{ is a chair or chairs}$
- (8) a.  $\llbracket [SG] \rrbracket = \lambda P \lambda x. P(x) \ \& \ x \textit{ is an atom}$   
 b.  $\llbracket [PL] \rrbracket (P)$ : defined iff P is a predicate of atoms and their sums  
 $\llbracket [PL] \rrbracket (P) = P$  when defined
- (9) a.  $\llbracket [NumP \textit{ SG stol}] \rrbracket = \llbracket [NumP \textit{ SG chair}] \rrbracket = \lambda x. x \textit{ is a chair}$   
 b.  $\llbracket [NumP \textit{ PL stol}] \rrbracket = \llbracket [NumP \textit{ PL chair}] \rrbracket = \lambda x. x \textit{ is a chair or chairs}$

The morphosyntax and semantics of number continue to be debated.<sup>5</sup>

<sup>3</sup>In Pancheva (2018), the case feature is called ‘objective’; here ‘accusative’ is used, without substantive difference. Historically, the case was accusative, replacing an older partitive genitive case that was itself initially confined to numerals ‘five’ and up, but later became associated with all numerals (Mirčev 1978: 194, 283-284).

<sup>4</sup>PL may be given a different meaning, such that it creates predicates of sums (Martí 2020). Since the exact semantics of PL is not the focus of the paper, I will leave this issue open. The entry in (8b) allows a plural-marked *nP* to combine with ‘one’, contrary to fact, but the additional high PL I propose will resolve the issue.

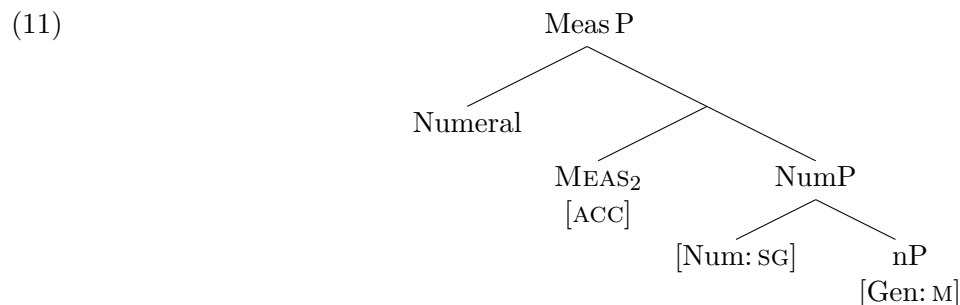
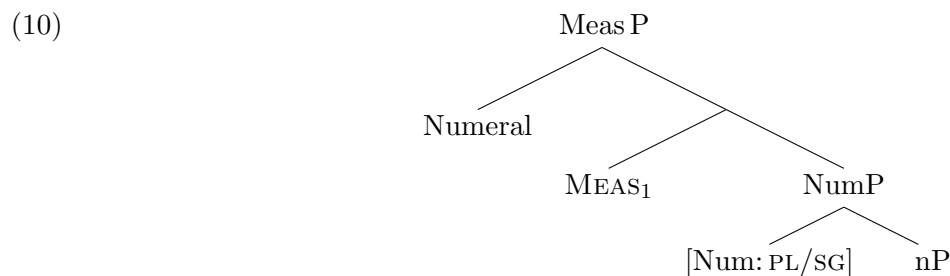
<sup>5</sup>See Sauerland (2003), Bale et al. (2011); Bale & Khanjian (2014), Scontras (2013), Harbour (2014), Ionin & Matushansky (2006, 2018), Alexiadou (2019), Martí (2020), a.o.

## 2.2 Meas<sub>1</sub> and Meas<sub>2</sub>

The idea of two null measure expressions for numerically-quantified nominals has its origins in debates of whether numerals combine with semantically plural or singular predicates. Since in Bulgarian the variation is not conditioned by the numerals themselves, unlike in e.g., Russian or Arabic, it is appropriate to model it via the measure expressions.

MEAS<sub>1</sub> and MEAS<sub>2</sub> differ with respect to the requirements they impose on their nominal argument. MEAS<sub>1</sub>, as in (10), is underspecified as to the number or gender of the noun. When the numeral is 'one', MEAS<sub>1</sub> combines with a singular-marked nP, e.g., *edin stol* 'one.M.SG chair.M.NH.SG' (or *edna masa* 'one.F.SG table.F.SG'); when the numeral is different, MEAS<sub>1</sub> combines with a plural-marked nP, e.g., *pet(-ima) student-i* 'five(-M.H) student.M-PL', *pet stol-ove* (colloq.) 'five chair.M.NH-PL', (or *pet mas-i* 'five table.F-PL'). MEAS<sub>2</sub>, as in (11), combines only with singular-marked masculine nouns.<sup>6</sup>

The more specified measure expression MEAS<sub>2</sub> additionally hosts an accusative case feature, which it shares with the (masculine singular) nouns; the accusative singular inflection is realized overtly as count-marking. Outside of numerically-quantified nominals, accusative case is overtly marked only on masculine singular nouns.



Numerals denote numbers, (12), and so a measure expression is needed to link them to nominals (Hackl 2000, a.o.); MEAS combines with a predicate,  $P$ , and a number,  $n$ , and returns a predicate of individuals whose cardinality is  $n$ , (13). The two MEAS heads posited here differ in whether they introduce a pluralizing operator (the \* of Link 1983), which, when it combines with a predicate of atomic individuals, returns a predicate of the atoms and their sums (a weak plural). MEAS<sub>1</sub> doesn't, and so, if its nominal argument is a predicate of atomic individuals, its numeral argument can only be 'one'. If its nominal argument is semantically plural, then numerals other than 'one' are also possible. MEAS<sub>2</sub>, on the other hand, combines with predicates of atomic individuals, and weakly pluralizes them, via the \* operator, making them suitable for combination with any numeral.

(12)  $\llbracket \textit{pet} \rrbracket = \llbracket \textit{five} \rrbracket = 5$

<sup>6</sup>See Pancheva (2018) for further details of the distribution of the two measure expressions in the normative and colloquial grammars, and discussion of historical changes.

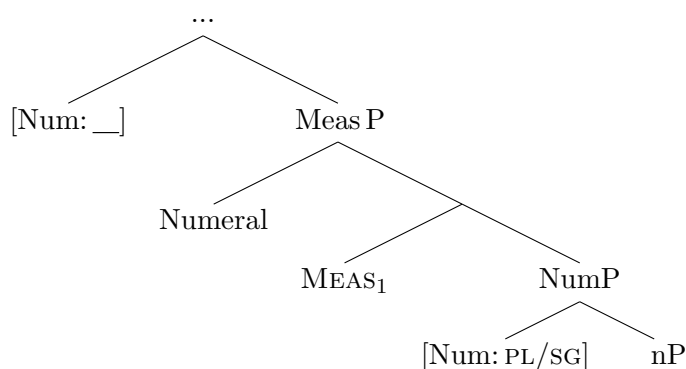
- (13) a.  $\llbracket \text{MEAS}_1 \rrbracket = \lambda P \lambda n \lambda x. P(x) \ \& \ |x| = n$   
 b.  $\llbracket \text{MEAS}_2 \rrbracket = \lambda P \lambda n \lambda x. *P(x) \ \& \ |x| = n$

### 2.3 High and low Number

Another detail of the proposal is that number is expressed more than once: below and above the numeral, as can be seen in (14) and (15). The idea that interpretable number is encoded higher than the numeral is found in Sauerland (2003), Scontras (2013), Ionin & Matushansky (2018), Martí (2020), but for these authors this high number is the sole interpretable number feature in the numerically-quantified nominal.

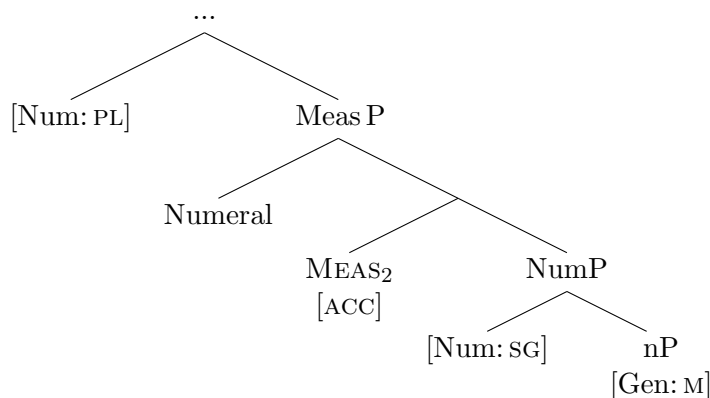
With  $\text{MEAS}_1$ , the values of the high and low number features match: they are both SG when the numeral is 'one', and they are both PL, with numerals other than 'one', displaying 'uniform concord', Norris (2017). I suggest that an Agree relation obtains between the two Number heads, and the higher number feature copies the value of the lower one. The high number feature is realized on demonstratives and some other determiners that appear higher than the numeral.

(14)



With  $\text{MEAS}_2$ , there is a mismatch: high number is plural, but the low number is singular. The external agreement facts with count nouns follow from the presence of the high plural number, above the numeral. If there is a demonstrative or another determiner that can express number features, that expression hosts the high plural number. This leads to a situation of 'mixed concord' (Norris 2017): determiners higher than the numeral, such as the demonstrative in (6) are plural, while the noun is singular-marked (the count form). The high plural feature is inherently valued. Valuation via Agree is not possible, as  $\text{MEAS}_2$  splits the DP into two syntactic domains, disallowing concord between them, and in any event, a singular high feature would not be able to compose with the semantically plural nominal (e.g., 'five chairs'). Importantly, all number features – whether matching or not, inherently valued or valued via Agree – are semantically interpreted.

(15)



## 2.4 Concord

MEAS<sub>1</sub> allows number and gender concord throughout the numerically-quantified DP. The high number feature receives the value of the low number feature, SG or PL, and expresses it on e.g., demonstratives. When singular-marked, demonstratives also agree in gender with the noun. Attributive adjectives also undergo number and gender concord; gender is expressed only on singular-marked adjectives.

MEAS<sub>2</sub>, on the other hand, disrupts concord throughout the numerically-quantified DP. It splits the DP into two domains of agreement. Thus the need for independently valued high number arises. However, the question of why attributive adjectives, which are lower than the numeral, are not singular-marked remains. Particularly relevant is a comparison with numeral systems such as those of Finnish, where nouns in combination with numerals are case-marked (partitive) and singular; see (16) from Brattico (2010).

- (16) ne kaksi pien-tä auto-a *Finnish*  
this.PL two small-PART.SG car-PART.SG  
'these two small cars'

The Finnish data confirm that numerals create two agreement domains. The attributive adjective below the numeral is marked singular, in concord with the singular noun, while the demonstrative above the numeral is plural. In Bulgarian, however, the attributive adjective is plural, despite also appearing below the numeral (cf. (6) vs. (16)). The failure of number concord with the adjective undermines the analysis of the nouns as singular.

I suggest that the adjectives do undergo number, gender and case concord with the noun, but singular masculine adjectival inflection in the context of case-marking is identical in its surface realization to plural inflection. Supporting evidence for this idea comes from vocatives, another environment where nouns may still have case inflection in Bulgarian. Notably, attributive adjectives appear in the so-called 'augmented' form, (17a), when they modify masculine singular nouns that are marked vocative (e.g., Stoyanov 1993: 166, 173). The *-i* suffix of the augmented adjective, i.e., the exponence of masculine gender, singular number, and case is syncretic with the plural *-i* suffix that is expressed on adjectives in vocative and non-vocative contexts, see (17b) (plural nouns do not express vocative case, and plural adjectives do not express gender). A second piece of evidence comes from adjectives modifying definite masculine singular nouns in nominative and accusative case environments. In such cases it is the adjective that hosts the case and definiteness morpheme, and importantly, the adjective is also augmented with the *-i* suffix, (17c).

- (17) a. star-i prijatel-ju  
old-AUG friend.M.H-VOC.SG  
‘old (male) friend (vocative)’
- b. star-i prijatel-i  
old-PL friend.PL  
‘old friends (vocative/non-vocative)’
- c. star-i-jat / star-i-ja prijatel  
old-AUG-SG.DEF.NOM old-AUG-SG.DEF.ACC friend.M.H.SG  
‘the old friend (nominative/accusative)’

Thus, in all other environments where morphological case is realized in Bulgarian, (17a) and (17c), adjectives modifying masculine singular nouns, and only such nouns, have the *-i* augment. This supports the proposal that attributive adjectives modifying count-marked nouns are in a context where case is assigned and the nouns themselves are singular-marked. The *-i* suffix on the adjectives is the augment, not the plural. There is no failure of number and gender concord in the lower domain of MEAS<sub>2</sub>.

A potential challenge for analyzing the count form as accusative singular comes from the fact that the accusative case is realized on the noun itself, even in the presence of attributive adjectives, (6), whereas in definite nominative and accusative structures, it is the first adjective that expresses case, (17c). However, note that vocatives behave just like DPs with count-marked nouns: the noun is case-marked, while the adjective appears with just the *-i* augment, (17a). The reason why (17c) is set apart is the definite feature: it is a clitic, and the case feature follows the placement of the clitic (e.g., Stoyanov 1993: 171).

### 3 Arguments that the count form is accusative singular

#### 3.1 Distribution and phonological identity of the suffixes

Bulgarian marks morphological case on full pronouns (nominative and accusative) and on clitics (nominative, accusative, and dative). Apart from vocative case (which is often felt to be archaic), case has been lost on nouns, with one key exception: definite masculine singular nouns show a distinction between nominative and accusative case. Example (18a) shows the form of the masculine singular *stol* ‘chair’ in subject position, and examples (18b)-(18c) show the same noun as a direct object and as the object of a preposition.

- (18) a. Stol-ăt se sčupi  
chair.M.NH-NOM.SG.DEF refl break-PAST.3SG  
‘The chair broke.’
- b. Sčupiha stol-a  
break-PAST.3PL chair.M.NH-ACC.SG.DEF  
‘They broke the chair.’
- c. na stol-a  
on/of chair.M.NH-ACC.SG.DEF  
‘on/of the chair.’

Feminine and neuter nouns do not show such a case distinction, and neither do masculine plural nouns. As can be seen in (19), the form that masculine plural nouns take as subject, direct object, and object of preposition, is indeed invariant.

- (19) a. Stol-ove-te                    se    sčupi-ha  
 chair.M.NH-PL-DEF refl break-PAST-3PL  
 ‘The chairs broke.’
- b. Sčupiha                    stol-ove-te  
 break-PAST.3PL chair.M.NH-PL-DEF  
 ‘They broke the chairs.’
- c. na    stol-ove-te  
 on/of chair.M.NH-PL-DEF  
 ‘on/of the chairs.’

Masculine human nouns behave the same as the masculine non-human nouns: the singular ones exhibit the nominative/accusative distinction (e.g. *student-ăt* ‘student.M.H-NOM.SG.DEF’ vs. *student-a* ‘student.M.H-ACC.SG.DEF’), but the plural ones don’t (*student-i-te* ‘student.M.H-PL-DEF’). So the only nouns to have a nominative and accusative form are masculine singular nouns (when definite), and the only nouns to have a count form are also masculine singular nouns. Moreover, the accusative suffix and the count suffix are phonologically the same: *-a*, or its phonologically-conditioned variant *-ja*. This argument is offered in Pancheva (2018) as evidence that the count form is accusative singular.

Next I offer two additional pieces of evidence in support of the accusative singular analysis of the count form. These arguments refute the idea that the count suffix and the accusative singular suffix are merely homophonous.

## 3.2 Stem identity

First, the count stem and the (definite) accusative singular stem are always identical, and are always the same as the (indefinite) singular stem but may differ from the plural stem. The stem regularity of the count form and the possible irregularity of the plural has been noted in traditional grammars and by e.g., Ionin & Matushansky (2018), Franks (2018), Pancheva (2018). The new observation here is that the same regularity holds for the accusative singular form. The patterns can be seen in Table 1. Three types of stem changes may be observed between the singular and the plural form: stress shift to the plural suffix, vowel deletion in the plural stem, and deletion of the stem suffix *-in*, a singulative, before the plural suffix. None of these changes affect the count form nor the accusative singular form, whose stems remain identical to the singular stem.

### 3.2.1 Stress change in plural

In the first section of Table 1 we have several examples of plural suffixes which shift the stress away from the masculine stem. (Stress is indicated by a grave accent mark, as customary in Bulgarian grammars.) No stress shift is observed when the count and accusative singular suffixes are added to the same stems. These facts are consistent with an analysis of the count suffix as accusative singular: this single accusative singular suffix does not attract the stress, unlike the plural suffixes. Yet if considered on their own, the stress shift facts could be set aside as inconclusive. There could be two featurally distinct but homophonous count and accusative singular suffixes, neither of which has the marked property of attracting stress, which only plural suffixes have. Not affecting a change need not be a unifying property. But the other two types of stem changes, discussed below, are harder to dismiss as evidence against the homophony account.



	sg	pl	count	def. acc. sg	
<i>stress change in plural</i>	kon	kon-è	kòn-ja	kòn-ja	‘horse’
	kral	kral-è	kràl-ja	kràl-ja	‘king’
	stol	stol-òve	stòl-a	stòl-a	‘chair’
	sin	sin-ovè	sìn-a	sìn-a	‘son’
<i>stem vowel deletion in plural</i>	orèl	orl-ì	orèl-a	orèl-a	‘eagle’
	ovèn	ovn-ì	ovèn-a	ovèn-a	‘ram’
	cìkāl	cìkl-i	cìkāl-a	cìkāl-a	‘cycle’
	teàtār	teàtr-i	teàtār-a	teàtār-a	‘theater’
<i>stem suffix deletion in plural</i>	vjàtār	vetr-ovè	vjàtār-a	vjàtār-a	‘wind’
	seljan-in	seljan-i	seljan-in-a	seljan-in-a	‘villager’
	boljar-in	boljar-i	boljar-in-a	boljar-in-a	‘boyar’
	bālgar-in	bālgar-i	bālgar-in-a	bālgar-in-a	‘Bulgarian’
	gospod-ín	gospod-á	gospod-ín-a	gospod-ín-a	‘mister’

Table 1: Count stem = accusative singular stem = nominative singular stem  $\neq$  plural stem

### 3.2.2 Stem vowel deletion in plural

The ‘vowel-zero’ alternations in stems (‘stem vowel deletions’) seen in Table 1 can be explained through an appeal to two abstract vowels, front and back yers, which were historically attested, and which may be assumed to still be present in the lexical entries of roots and suffixes. These abstract vowels are vocalized as /ε/ (written ‘e’) or /ɤ/ (written ‘ǎ’) in strong positions, and deleted in weak positions. Weak positions are at the end of words, or in a syllable preceding a syllable with a non-yer vowel; other positions are strong. See Lightner (1965) for an early formal analysis and Scheer (2011) for a more recent overview of Slavic yers, and Scatton (1975), Mirčev (1978): 122-123, Hristova (1995), Bojadžiev et al. (1998): 256-264 for yers in Bulgarian specifically.<sup>7</sup>

The masculine singular suffix, i.e., the exponence of SG number in the context of M gender (gender is assumed here to be introduced by the categorizer  $n$ ), is a yer,  $\mathfrak{b}$ . Since it is in a word-final position, it is not phonetically realized. However, its presence in the underlying representation has the effect of making the preceding syllable a strong position for any yers, conditioning their vocalization.

In some of the forms in Table 1, the nominal stem has an underlying front yer  $\mathfrak{b}$ , e.g.,  $ov\text{-}\mathfrak{b}n$  ‘ram’, where  $\text{-}\mathfrak{b}n$  is the exponence of the categorizing head  $n$ .<sup>8</sup> This yer is phonetically realized as /ε/ ‘e’ in strong positions, and deleted in weak positions. In the context of singular number  $\mathfrak{b}$ ,  $\mathfrak{b}$  is in a strong position and is vocalized, (20a), and in the context of plural number, a non-yer vowel, it is in a weak position and is deleted, (20b).

- (20) a.  $[[\sqrt{ov\text{-}} \ [n_{[M]} \text{-}\mathfrak{b}n]] \text{ SG}] \rightarrow ov\text{-}\mathfrak{b}n\text{-}\mathfrak{b} \rightarrow ov\text{-}\varepsilon n\text{-}\emptyset \rightarrow ov\varepsilon n$   
b.  $[[\sqrt{ov\text{-}} \ [n_{[M]} \text{-}\mathfrak{b}n]] \text{ PL}] \rightarrow ov\text{-}\mathfrak{b}n\text{-}\mathfrak{b} \rightarrow ov\text{-}\emptyset n\text{-}\mathfrak{b} \rightarrow ovn\mathfrak{b}$

Now, the argument for the identity of the count and accusative singular inflection is as follows. If

<sup>7</sup>The treatment of yers adopted here helps illustrate the main argument about the count inflection particularly well, but it is not meant as an endorsement over alternative analyses the phenomenon of ‘vowel-zero’ alternations. See Gouskova (2012), Becker & Gouskova (2016), Scheer (2019) a.o., for recent theoretical approaches.

<sup>8</sup>Bojadžiev et al. (1998): 260-261 has a list of (unproductive) nominal suffixes that contain a front yer. Some of them are likely to be conceptualized by speakers as being part of the root (e.g.,  $or\text{-}\mathfrak{b}l$  ‘eagle’), but this does not affect the argument.

the count form was added to the nominalized root directly, as in (21a), the predicted form would be the unattested \**ovn-a*, with a stem yer deletion, in parallel to *ovn-í* in (20b). Instead, the correct form is predicted by the structure in (21b). The count suffix is added not to a nominal stem unmarked for number, but to a singular-marked stem. It may still be possible to maintain that this structure exists as separate and distinct from the structure of the accusative singular in (21c), though the two are realized phonologically the same. Yet, given that the count suffix attaches to singular number, it may not be given an analysis as a special plural, which is how it has traditionally been analyzed, nor as an adnumerative number marker distinct from singular or plural Ionin & Matushansky 2018, or a countability marker Stepanov & Stateva 2018. The most straightforward account is that the count suffix spells out accusative case in the context of singular number: i.e., the count form is the accusative singular form.

- (21) a.  $[[[\sqrt{\text{ov-}} \ n_{[M]} \text{-ьн}]] \text{ CN}] \rightarrow \text{ov-ьн-a} \rightarrow \text{ov-}\emptyset\text{-a} \rightarrow * \text{ovna}$   
 b.  $[[[[\sqrt{\text{ov-}} \ n_{[M]} \text{-ьн}]] \text{ SG}] \text{ CN}] \rightarrow \text{ov-ьн-ь-a} \rightarrow \text{ov-èn-}\emptyset\text{-a} \rightarrow \text{ovèna}$   
 c.  $[[[[\sqrt{\text{ov-}} \ n_{[M]} \text{-ьн}]] \text{ SG}] \text{ ACC}] \rightarrow \text{ov-ьн-ь-a} \rightarrow \text{ov-èn-}\emptyset\text{-a} \rightarrow \text{ovèna}$

The same reasoning applies to the ‘vowel-zero’ alternation seen with *teàtär* ‘theater’, except that the root yer is the back yer *ь*.<sup>9</sup> In strong positions it is vocalized as /ɤ/ ‘ä’; this happens in the nominative singular, the count, and the accusative singular forms, as seen in (22). The proposal advanced here unifies these environments: they all share the singular suffix. Combination with singular-marked stems is unexpected on the analysis of the count form as a plural marker, an adnumerative number marker or a countability marker.

- (22) a.  $[[[\sqrt{\text{teatär}} \ n_{[M]}] \text{ CN}] \rightarrow \text{teàtär-a} \rightarrow \text{teàt}\emptyset\text{-a} \rightarrow * \text{teàtra}$   
 b.  $[[[[\sqrt{\text{teatär}} \ n_{[M]}] \text{ SG}] \text{ CN}] \rightarrow \text{teàtär-ь-a} \rightarrow \text{teàtär-}\emptyset\text{-a} \rightarrow \text{teàtära}$   
 c.  $[[[[\sqrt{\text{teatär}} \ n_{[M]}] \text{ SG}] \text{ ACC}] \rightarrow \text{teàtär-ь-a} \rightarrow \text{teàtär-}\emptyset\text{-a} \rightarrow \text{teàtära}$

### 3.2.3 Stem suffix deletion in plural

We turn next to the distribution of the *-in* suffix. It is a singulative suffix, whose output is a masculine human noun, and it is in complementary distribution with plural suffixes (Manova, 2011, p.153-155), a.o., see (23). There are at least two plural suffixes that may appear with stems that also combine with the singulative suffix, i.e., *-i* and *-á*, and in each case the singulative suffix may not be present (e.g., \**bălgar-in-i*, \**gospod-in-á*). This suggests that the traditional account of the count form as a special type of plural is not correct: if the count suffix were a type of plural, we would not expect it to be added to the singulative suffix (just like plural *-i* and *-á* are not), yet the count form includes the singulative suffix, see (24a)-(24b). In this respect the count form is identical to the (definite) accusative singular form, (24c), and both of their stems are the same as the stem of the (indefinite) singular form, i.e., the stems include singulative *-in*. This is another piece of evidence that the count suffix spells out accusative case in the context of singular number, i.e., the phonological identity of the count and accusative singular forms is not due to accidental homophony of the inflectional affixes.

- (23) a.  $[[[\sqrt{\text{bălgar}} \ n_{[M]}] \text{ SG}] \rightarrow \text{bălgar-in}$   
 b.  $[[[\sqrt{\text{bălgar}} \ n_{[M]}] \text{ PL}] \rightarrow \text{bălgar-i}$   
 (24) a.  $[[[\sqrt{\text{bălgar}} \ n_{[M]}] \text{ CN}] \rightarrow * \text{bălgar-a}$

<sup>9</sup>In some cases, the alternating vowel is not part of the root, but of a nominalizing suffix, e.g.,  $\sqrt{\text{vjat-är}}$  ‘wind’ (see Bojadžiev et al. (1998): 258).

sg	pl	count	def. acc. sg	
păt	păt-i	—	—	‘time’ (measure)
bašt-à	bašt-ì	—	—	‘father’
vojvòd-a	vojvòd-i	—	—	‘military leader’
sădi-jà	sădi-ì	—	—	‘judge’
handžì-ja	handžì-i	—	—	‘inn keeper’
čìč-o	čìč-ovci	—	—	‘uncle’

Table 2: No count form  $\Leftrightarrow$  no accusative singular form

- b.  $[[[\sqrt{\text{bălgar}}\ n_{[M]}]\ \text{SG}]\ \text{CN}]\ \rightarrow\ \text{bălgar-in-a}$   
c.  $[[[\sqrt{\text{bălgar}}\ n_{[M]}]\ \text{SG}]\ \text{ACC}]\ \rightarrow\ \text{bălgar-in-a}$

### 3.2.4 Summary: stem identity

We saw three different pieces of evidence that the stem to which the count suffix *-a* attaches is the same as the stem of the *-a* suffix of definite masculine singular nouns, whose nominal phrases are complements of verbs and prepositions. Two of the arguments – the ‘vowel-zero’ alternations and the distribution of the singulative suffix – directly point to the fact that the count and the accusative *-a* suffixes attach to stems marked for singular number, unlike the plural suffixes, which attach to stems not already marked for number. The third argument – the stress shift facts – also shows that the count and the accusative *-a* suffixes attach to the same stem, and that stem is identical to the singular marked stem in the nominative. Taken together, the three pieces of evidence point to a uniform treatment of *-a* as an accusative inflection in the context of singular-marked masculine nouns.

### 3.3 Paradigm gaps

The second new argument, in addition to stem identity, in support of the proposal that the count inflection is the accusative singular inflection comes from paradigm gaps. Nouns that do not have a count form also do not have an accusative singular form that is distinct from the nominative singular form. Instead, the plural form is used with numerals, and the nominative singular form is used in definite complements to verbs and prepositions.

The masculine human nouns in Table 2 are atypical because their singular form doesn’t end in a consonant (or rather, in an yer in weak position, which is subsequently deleted). For some of them, the masculine singular inflection is *-a/-ja* (with or without stress), for others it is *-o* (as typical of feminine and neuter nouns, respectively). Given the evidence seen so far that the count affix is the exponence of accusative case in the context of singular number, the unattested count and accusative singular forms would have the overt inflection *\*-a-a/\*-ja-ja* or *\*-o-a*. Most likely these are ruled out for phonological reasons. The fact that the gap obtains both for the count and the accusative singular form supports the analysis of the two as having the same inflectional features, expounded by the same suffix. Note that if the count suffix were a special plural, as traditional accounts would have it, the count *-a/-ja* suffix would not be added to, but would instead replace the masculine singular *-a/-ja* or *-o* suffix, avoiding the vowel-vowel sequence, and predicting acceptable count forms, contrary to what is the case. The gap would also be predicted to obtain only for the accusative singular, again contrary to the observed facts.

The inflectional gap for the measure word *păt* ‘time’ appears to not be phonologically-based but purely accidental. Its homophone *păt* ‘road’ does have both an accusative singular and a count

sg	count	def. acc. sg	def. nom. sg	
sìn	sìn-a	sin-à	sin-ǎt	‘son’
kràk	kràk-a	krak-à	krak-ǎt	‘leg’
nòs	nòs-a	nos-à	nos-ǎt	‘nose’
vǎlk	vǎlk-a	vǎlk-à	vǎlk-àt	‘wolf’

Table 3: Stress differences between the count and the accusative singular form

form, as seen in (25b), (25c). Other measure words of similar phonological shape, e.g., *fut* ‘foot’, *vat* ‘watt’, *volt* ‘volt’ all have the two forms as well. A novel measure word *băt* would productively inflect with the count and accusative singular suffix: e.g., *dva băt-a* ‘two băt-s’.

- (25) a. pet păt-i  
 five time-PL  
 ‘five times’  
 b. po păt-ja  
 on road-ACC.SG.DEF  
 ‘on the road’  
 c. pet păt-ja  
 five road-CN  
 only: ‘five roads’ / not: ‘five times’

If the count and the accusative singular inflection were independent (though homophonous), for both to be inapplicable to *păt* ‘time’ would be too much of an accident. Their joint absence is expected, on the other hand, if the count suffix is the exponence of accusative case in the context of singular number.

### 3.4 Summary: arguments that the count form is acc. sg.

The count suffix *-a* is phonologically the same as the *-a* suffix that masculine singular nouns have when their nominal phrases are arguments of verbs and prepositions, i.e., in accusative case environments. The possibility that this is just accidental homophony is undermined by the following arguments. First, only masculine nouns have a count form and an accusative form. Second, the stems to which the two *-a* suffixes attach are the same, even when the corresponding plural forms combine with different stems. This is seen in the case of stress shifts, ‘vowel-zero’ alternations, and distribution with respect to the singulative *-in* suffix. Third, the paradigm gaps of the two forms coincide: when a masculine noun lacks a count form, it also lacks an accusative singular form that is distinct from the nominative singular form. Taken together, these arguments suggest that Bulgarian masculine nouns express accusative case and singular number in the context of numerical quantifiers.

## 4 A challenge for the analysis of the count form as acc. sg.

A few nouns have different stress in their count and definite accusative singular forms. The count form has the same stress as the (indefinite) nominative singular form, but the stress shifts in the (definite) accusative singular form. At first, this appears to present a problem for the proposal that the count and the accusative singular inflection are formally identical.

However, this is only an apparent counterexample. Recall that only definite (masculine singular) nouns show a nominative/accusative distinction to begin with. There is independent evidence that the definite feature is responsible for the stress shift. The shift in stress occurs also in the nominative form, as can be seen in Table 3.

Thus we can maintain that the same suffix is involved in the count form and the accusative singular form in Table 3. The reason for the difference in stress is that the latter also spells out a definite feature. This definite feature always shifts the stress with these particular nouns, not only in their accusative form but also in their nominative form, as can be schematized in (26).

- (26)
- a. SG, ACC  $\Leftrightarrow$  *-a* no stress shift
  - b. SG, ACC, DEF  $\Leftrightarrow$  *-a* stress shift
  - c. SG, NOM, DEF  $\Leftrightarrow$  *-ǎt* stress shift

## 5 Alternative analyses of the count form

The standard view, found in traditional grammars and descriptions (e.g., Mirčev 1978: 195, Stoyanov 1993: 108-109, Pašov 2015: 69-71, Hristozova 2012: 301, Mikova 2017) and assumed in theoretical accounts (e.g., Tasseva-Kurktchieva 2006, Cinque & Krapova 2007, Wellwood et al. 2012), holds that the count form is a special type of plural, one that also reflects a featural dependency on the numeral. The dependency could be one of case or agreement, but given that Bulgarian has lost the productive expression of morphological case on nouns, the implicit assumption is that the relevant feature is some kind of agreement feature, with its identity left unspecified. For concreteness, let's call the feature  $\alpha$ . The  $\alpha$ -featural dependency would explain why the count form can only appear in combination with certain numerical expressions, and not with others or on its own: only those numerical expressions have the  $\alpha$ -feature. The question of why only masculine nouns realize the  $\alpha$ -feature is not addressed; presumably this type of account would say that the  $\alpha$ -dependency is universal but the exponence of  $\alpha$  on feminine and neuter nouns is phonologically null. In addition to  $\alpha$ , there is also a plural feature on the noun, which is shared with other expressions in the DP via number concord, explaining both the plural marking on attributive adjectives and demonstratives and the external agreement facts seen in (5a)/(6).

The assumption that the adnumerative feature  $\alpha$  is not case, because case is generally absent in Bulgarian, is made explicit in Ionin & Matushansky (2018): 199-204, who suggest that the count form is the overt realization of syntactic number agreement with the numeral, expressing a morpho-syntactic number feature that is distinct from singular and plural. Ouwayda (2014) similarly analyzes the count form as a special number in agreement with the numeral. According to both accounts, there is also another, plural number feature, encoded high in the nominal projection. That plural feature is responsible for the plural external agreement.

Stepanov & Stateva (2018) also reject an analysis of the count form in Bulgarian in terms of case, specifically invoking the loss of morphological case on nouns in the modern language. They do not, however, propose an analysis in terms of agreement either; instead they suggest that the count morphology is an instantiation of a countability functional head, which makes the noun, which on its own denotes a kind, 'atomized', i.e., interpreted as a predicate of atomic individuals, and thus semantically suitable for counting. In a sense, as they note, the count morphology is 'an affixal classifier'. An interpreted plural number (in their terms [-singular]) is expressed higher in the functional domain but not overtly realized on the count noun. And as to the plural form of attributive adjectives, Stepanov & Stateva (2018) suggest that adjectives are merged higher than the numeral, and so agree with the local high plural feature; the surface word order, with the adjective following the numeral, arises because the numeral moves higher than the adjective.

## 6 Broader significance

The analysis of the count form as accusative and singular has implications beyond the grammar of Bulgarian. It provides another test case for syntactic analyses of concord and case-licensing in structures with numerals and for semantic analyses of the meaning of numerals and of number inflection.

On the account proposed here, the Bulgarian numerically-quantified noun phrases with masculine nouns turn out to be the same, including in concord, as those of Finnish, where all nouns in combination with numerals are case-marked and singular. The singular number on nouns in such structures raises questions for the uniform treatment of the semantics of numerals cross-linguistically, given that in other non-classifier languages plural marking is obligatory. It has sometimes been suggested that singular-marked nouns, in at least some of the relevant languages (e.g., Turkish, Western Armenian), are semantically number neutral (i.e., weakly plural), denoting predicates of atomic individuals and their sums (see Bale et al. 2011; Bale & Khanjian 2014). This however, cannot be the case for Finnish (and has also been disputed for Turkish, see Sağ 2021) and so the question remains as to why Finnish differs from English in not allowing plural-marked nouns to combine with numerals. One alternative approach posits that the variation between singular number, as in Finnish, vs. plural number, as in English, is due to the absence vs. presence of number agreement, a purely syntactic parametric variation (see Ionin & Matushansky 2018, Alexiadou 2019). Bulgarian presents a complication to such a view: plural inflection on feminine and neuter nouns would need to manifest one type of agreement, while singular inflection on masculine nouns would need to realize a different type of agreement, with precedence for the (realization of the) latter agreement over the former. Such a system would be further complicated by the fact that it is the same numerals that need to trigger singular agreement with masculine nouns but plural agreement with feminine and neuter nouns. Alternatives could be devised (e.g., agreement with numeral in one case vs. agreement with a higher number feature), at the cost of further complication, and while still maintaining that number realized on nouns is not interpretable. Instead, I would suggest that the Bulgarian facts call into question the analysis of variation in singular vs. plural number marking in terms of uninterpretable syntactic agreement. The proposal advanced here, appealing to two different null measure expressions linking numerals and nouns, provides a simpler alternative, not just for Bulgarian, but also cross-linguistically, and allows for morphological number on nouns to be semantically interpreted.

The analysis of the Bulgarian count form as accusative and singular also has implications for the grammatical status of nominal inflection in Russian numerically-quantified noun phrases, given the shared historical origins of the two Slavic systems. Specifically, the present analysis lends support to the analysis of ‘paucal’ noun phrases in Russian – those with paucal numerals ‘two’, ‘three’ and ‘four’ – in terms of genitive case and singular number, see (27), as opposed to other, extensively debated alternatives. One of the arguments against analyzing the Russian nouns combining with paucal numerals as singular-marked is that such an analysis would need to explain the lack of number concord with the attributive adjective. Given that it was demonstrated here that in Bulgarian the attributive adjectives are singular-marked, rather than plural-marked, despite appearances, the strength of the argument against singular number for Russian nouns is diminished (though a full analysis still awaits).

- (27) èti tri nov-yx stol-a *Russian*  
this.PL three new-GEN.PL table.M.-GEN.SG  
‘these three new tables’

Finally, the analysis also places Bulgarian among an understudied group of languages, where singular vs. plural marking on nouns in numerically-quantified noun phrases varies by noun class (e.g., Miya (Chadic), see Ionin & Matushansky 2018: 94-98). Such languages posit particular challenges for the syntactic and semantic analysis of number inflection. Understanding the Bulgarian system better helps illuminate the phenomenon of differential number marking.

The main claims of the account for Bulgarian extend to the Finnish and Russian numerically-quantified nominals. The distributed representation of number, and the interpretability of singular number on nouns holds in these languages as well. In Finnish, however, there is a single null measure expression linking numerals and nouns, resulting in no variation as to noun class or type of numeral, and no issues arise for the realization of number concord. In Russian, the two covert measure expressions are distinguished both with respect to their nominal argument, singular or plural, and with respect to their numeral argument, paucal or not.

Overall, the broader conclusions are as follows: (i) variation in number marking in combination with numerals is not simply a case of presence vs. absence of uninterpretable syntactic agreement; rather there is genuine interpretative variation in the kind of predicates that numerals, or rather, the null measure expressions linking numerals and nouns, can combine with, with consequences for the typology of numeral systems; (ii) mismatches in number between attributive adjectives and nouns are not evidence of non-local agreement.

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