

No Gender in ‘Gender Agreement’: On Declension Classes and Gender in Serbo-Croatian

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Abstract The present paper argues for a view of gender agreement without either grammatical or natural gender being represented as syntactic features. Rather than deriving declension classes in terms of realisation, I postulate them as the only relevant feature that is lexically specified on the noun. Agreement copies the declension class and triggers presuppositions. When these presuppositions clash with those already active in the discourse, default agreement is realised. The paper moreover provides a quantitative analysis of semantic correlates of declension classes and a novel analysis of SC declension classes.

Keywords Declension class. Gender. Agreement. Properties of quantity. Serbo-Croatian.

Summary 1 Introduction. – 2 Declension class in terms of realisation. – 3 Basics for a better model of declension classes. – 4 Declension Classes, Gender and Properties of Quantity: A Quantitative Corpus-based Analysis. – 5 The proposal: nouns are specified for declension classes, interpretive effects emerge in pragmatic competition. – 6 The morphology of declension classes. – 7 Conclusion.



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1 Introduction

Serbo-Croatian (SC) nouns are traditionally divided in four declension classes and three genders (e.g. Stevanović 1989). Declension classes can be designated by a pairing of the nominative and genitive singular ending, for example: class <Ø, a>, class <o/e, a>, class <a, e>, class <Ø, i>. Traditionally, they are referred to by numbers in the given order, as class I, class II, class III and class IV declension, which is also the way I refer to them in this article.¹ This is illustrated in **table 1** for the nouns *mrav* ‘ant’, *žig* ‘stamp’ (to illustrate the effect of animacy), *more* ‘sea’, *selo* ‘village’ (-e comes after soft consonants, -o otherwise), *riba* ‘fish’ and *noć* ‘night’.

Table 1 Declension class and gender in Serbo-Croatian

	Class I (<Ø, a>)		Class II (<o/e, a>)		Class III (<a, e>)		Class IV (<Ø, i>)	
	Sg	Pl	Sg	Pl	Sg	Pl	Sg	Pl
Nom	mrav-Ø	mrav-i	mor-e(sel-o)	mor-a	rib-a	rib-e	noć-Ø	noć-i
Gen	mrav-a	mrav-a	mor-a	mor-a	rib-e	rib-a	noć-i	noć-i
Dat	mrav-u	mrav-ima	mor-u	mor-ima	rib-i	rib-ama	noć-i	noć-ima
Acc	mrav-(a)(žig-Ø)	mrav-e	mor-e(sel-o)	mor-a	rib-u	rib-e	noć-Ø	noć-i
Inst	mrav-em	mrav-ima	mor-em(sel-om)	mor-ima	rib-om	rib-ama	noć-ju	noć-ima
Loc	mrav-u	mrav-ima	mor-u	mor-ima	rib-i	rib-ama	noć-i	noć-ima

The relation between SC declension classes and gender has been the subject of numerous investigations.² Grammatical gender stands for the type of agreement a noun triggers on declinable modifiers and predicates, and relies on the assumption that the agreement markers on these items correlate with the declension class of the noun, as well as with the natural gender of the referent, as illustrated in (1). Neither correlation is absolute: a noun can show an agreement pattern that fails to match the natural gender of the referent or the declension class of the controlling noun, but not both (see (1d) for a mismatch with the natural gender).

¹ Due to a high degree of syncretism, the first and the second class, i.e. classes <Ø, a> and <o, a>, are sometimes taken to be one class, yielding a classification with three classes, one of which has two subclasses.

² Stevanović 1989; Corbett 1982; Corbett 1991; Wechsler, Zlatić 2003; Despić 2017; Alsina, Arsenijević 2012a; 2012b; Arsenijević, Gračanin Yuksek 2016; Puškar 2017 among others.

(1)

a. bel-a	krava	b. bel-i	bik	c. bel-o	tele	d. mlad-a	gospoda
white-F	cow	white-MASC	bull	white-N	calf	young-F	gentlemen
‘white cow’		‘white cow’		‘white calf’		‘young gentlemen’	

Inanimate nouns are orthogonal to gender, and their agreement is fully predictable from their declension class: class I nouns trigger masculine agreement, class II nouns neuter, class III and IV nouns feminine. Furthermore, considering animate nouns, class I includes only masculine members (i.e. only nouns that denote male or gender-unspecified individuals), class II only neuter (i.e. those referring to offspring, which is arguably conceptualised as genderless), class IV takes no animates at all.³ This all suggests that gender could be eliminated from the system, by modelling agreement purely in terms of declension class: masculine gender agreement is class I agreement, neuter is class II, feminine class III and IV. The ground for relying on gender comes from the so-called hybrid gender agreement nouns, such as class III nouns triggering masculine agreement in singular as in (2), where the agreement in the singular is not the one indicated by the declension class, but arguably associated with the gender of the referents (Corbett 1991; Aronoff 1994).

(2)

moj-Ø	ded-a	prv-i	komšij-a	mlad-Ø	delij-a
my-MASC	grandpa-III.NOM.SG	first-MASC	neighbour-III.NOM.SG	young-MASC	dude-III.NOM.SG
‘my grandpa’		‘neighbour	next door’	‘young	dude’
moj-e	ded-e	prv-e	komšij-e	mlad-e	delij-e
my-FEM.PL	grandpa-III.NOM.PL	first-MASC.PL	neighbour-III.NOM.PL	young-MASC.PL	dude-III.NOM.PLG
‘my grandpas’		‘neighbours	next door’	‘young	dudes’

This step, however, introduces the question of the division of work between the two sources of information. Is agreement determined by the declension class, unless it clashes with gender, or is it determined by gender, unless a noun lacks it – in which case declension class jumps in? Or do actually all nouns, animate or not, have a gender feature, which remains uninterpreted in inanimates?

Before going deeper with the discussion, let me address some apparent exceptions to the generalisations above about the gender – de-

³ Prescriptive grammars mention nouns *kći* ‘daughter’ and *mati* ‘mother’ as class IV animates but, in most present day spoken varieties of SC, these nouns have migrated to class III, with a more or less changed shape.

clension class mapping, pointed by an anonymous reviewer. One pattern is that exhibited by two types of nouns which show endings that formally may be attributed to class II, but trigger the traditional masculine agreement. The first group are animate nouns, including proper names and derived nouns (mostly with the suffix *-ko* for expressive nouns denoting property bearers), as illustrated in (3).

(3)

a. Jan-k-o	b. Per-o	c. prljav-k-o	d. rumen-k-o
Jan-SUFF-?.NOM.SG	Per-?.NOM.SG	dirty-SUFF-?.NOM.SG	ruddy-SUFF-?.NOM.SG
'Janko'	'Pero'	'dirty little one'	'ruddy little one'
Jan-k-a	Per-a	prljav-k-a	rumen-k-a
Jan-SUFF-?.ACC.SG	Per-?.ACC.SG	dirty-SUFF-?.ACC.SG	ruddy-SUFF-?.ACC.SG
'Janko'	'Pero'	'dirty little one'	'ruddy little one'

In spite of sharing some endings with class II, these nouns rather belong to class I, since their accusative case in singular takes the ending as in class I rather than being syncretic with the nominative – as characteristic of class II nouns (see table 1). The ending *-o* in the nominative singular can be explained on a phonological ground, in the interaction of prosody and stem-final consonant clusters. In favour of the view that these nouns have an exceptional nominative singular, but otherwise belong to class I, speaks also the fact that for a subset of these nouns (those like the name *Pero* or the common noun *medo* 'little bear') in some varieties, people share the nominative singular in *-o*, but otherwise decline them in class III.

Two properties of the nouns in (3), however, point in the direction of class II. One is that they cannot have plural forms, which is a property they share with uncontroversial animate class II nouns (Arsenijević 2017). The other is that they have a hypocoristic, hence expressive meaning and, as discussed in § 5, expressive meanings are a type of markedness that triggers the assignment of declension classes of a higher degree of markedness (especially class II and III). The difference between the nominative and the accusative (not attested in uncontroversial class II animates) would then be an argument in favour of a realisational nature of declension classes. Still, this would not be in clash with the main thesis of this article: that grammatical gender is a derivative of declension classes and not vice versa. If declension classes too are derivatives of lexical semantic properties of the bases (i.e. of roots or complex structures), in particular properties of quantity, natural gender and expressiveness, this is a further step in theoretical reduction.

The second group are borrowed nouns ending in *-o* or *-e*, some of which are inanimate and therefore cannot be tested for the accusative singular, as in (4a-b) (in inanimate class I nouns, this form is syncretic with the nominative, just like in class II nouns). Still, looking at the animate among these nouns, as in (4c-d), they do show the class I pattern in the accusative (that they belong to the same class is confirmed by sharing the same pattern with accented final syllables, as in (4b, d); moreover, accented final syllables are not attested in class II). Furthermore, for most speakers, the nominative plural ending for all these nouns is the one of class I. While there are some speakers that prefer the class II ending, importantly, most of them also prefer the neuter agreement for these nouns, indicating that in their grammar they belong to class II.

(4)

a. radi-o	b. kabar-è	c. impresari-o	d. krupij-è
radio-?.NOM.SG	cabaret-?.NOM.SG	impresario-?.NOM.SG	croupier-?.NOM.SG
'radio'	'cabaret'	'impresario'	'croupier'
radi-a	kabar-è	impresari-a	krupijè-a*
radio-?.ACC.SG	cabaret-?.ACC.SG	impresario-?.ACC.SG	croupier-?.ACC.SG
'radio'	'cabaret'	'impresario'	'croupier'
radi-i	kabarè-i	impresari-i	krupijè-i
radio-?.NOM.PL	cabaret-?.NOM.PL	impresario-?.NOM.PL	croupier-?.NOM.PL
'radio'	'cabaret'	'impresario'	'croupier'

* Nouns of this type with an accented final syllable preserve this syllable as part of the stem in declension.

For speakers who agree them in masculine gender, all these nouns are hence class I nouns with exceptional endings in the nominative singular – conditioned by phonology and for some of them also the shape in the donor language, rather than being members of class II.

The other seemingly exceptional pattern pointed out by the reviewer are class II and IV nouns used for animate individuals, as illustrated in (5). Arguably, however, these nouns do not have animate denotation. They denote abstract notions, likely tokens of properties. Their animate use is either metaphorical, i.e. metonymic, or idiomatic – in both cases irrelevant for the productive properties of the declension classes (Moltmann 2004; Villalba 2009; Arsenijević 2012), and the use for animates, or humans (if at all they ever denote animate individuals, since for instance none of these nouns can be used referentially, e.g. as an answer to the question *Who told you that?* – see Arsenijević et al 2021 for a discussion and experimental support regarding this kind of non-referential nouns in class III).

(5)

a. lik-n-ost-∅	b. velik-an-stv-o	c. čud-ov-išt-e
person-ADJ-N-IV.NOM.SG	great-ADJ-N-II.NOM.SG	marvel-ADJ-AUGM.N-II.NOM.SG
‘personality’	‘majesty’	‘monster’

Back to the issue of gender agreement, different analyses have been proposed for it – whether specifically for SC, or for other Slavic languages (such as variation in patterns of agreement available regarding the mapping between gender and declension classes is limited, analyses for one Slavic language with declension are quite straightforwardly adapted for another). Corbett (1991), Aronoff (1994), Wechsler and Zlatić (2003) among others postulate two independent features for the two sources of information: each noun is specified for both gender and declension class (where the former may be even further split), and grammatical operations and hierarchies decide about agreement. Others, like Müller (2004), Puškar (2017) or Čaha (2021) propose to fully discard the declension classes as syntactic features or diacritics, and derive them from other features. While Müller (2004) does not identify the particular features using formal labels instead (F_1 , F_2 , ...), Puškar (2017) indicates them to centrally involve gender, and Čaha (2021) explicates a set of four relevant features: class, feminine, individuated, and a fully unmarked case feature. A significant advantage of the latter type of accounts is that they can explain regularities about intra- and interdeclension syncretism.

Alternative approaches, such as Hachem (2015), Fassi Fehri (2018), Arsenijević (2017), argue that declension classes as well as agreement reflect properties of quantity (which include animacy and gender as markers of a high degree of individuation, see e.g. Matasović 2004), rather than gender alone. Particularly relevant for the present paper is Corbett’s (1982) point that grammatical gender can be derived from the declension class.

The central goal of this paper is to develop an explicit reductionist analysis of the relation between gender and properties of quantity on the one hand, and declension classes on the other, where it is the declension class that is represented by a feature, with gender effects deriving from it, rather than the other way around as previously argued. Quantitative as well as theoretical arguments are provided in favour of the proposed view.

The paper is organised as follows. § 2 outlines the main tendencies of the previous accounts for declension classes in SC and other Slavic languages. § 3 discusses the desiderata for an analysis and where previous analyses failed to achieve them. § 4 lays out the quantitative data obtained from an annotated database of the 4,718 most frequent nouns in SC. § 5 presents a novel analysis on which declension class is lexically assigned and occurs in syntax as a feature, and ef-

facts on gender and properties of quantity associated with declension classes emerge via pragmatic competition. § 6 proposes a novel morphological analysis of the SC declension class system on which class I lacks endings all together, and is entirely realised in terms of syncretism with other classes. The other three classes are ordered according to the balance between the role played by the theme vowel and case endings, and their tendency to be realised overtly.

2 Declension Class in Terms of Realisation

Realisational approaches to morphology, such as Distributed Morphology (Halle, Marantz 1993) and Nanosyntax (Starke 2010), take syntax to operate on features (and roots) only, and resolves the problems of morphology in an interaction between syntactic structures, the lexicon and the phonology, at their interface. Hence, instead of postulating both gender and declension class as two separate features which enter grammatical interactions, these approaches offer an alternative where declension class is a matter of realisation sensitive to gender. Indeed, Puškar (2017) indicates that declension class is best modelled in terms of gender-sensitive realisation – unfortunately without developing a concrete proposal. Privizentseva (2020) offers a more concrete analysis for Russian – but she simply stipulates an opaque formal feature which together with the feature of gender determines the realisation of case. The analysis hence merely formalises the view that declension class is a function of gender, but does not pinpoint the exact additional component that completes the specification of this mapping.⁴ The only attempt to provide a transparent (in the sense that concrete, independently attestable features are used) and explicit realisational account of declension classes in Slavic languages is Caha (2021) with a model of Russian declension classes. In what follows I will give only a brief assessment of his analysis, trying to minimise the unavoidable injustice to the presented work enforced by spatial limitations.

Caha outlines the entire path of reasoning from having the relevant functional features realised by roots (or more broadly nominal stems), via a view where the roots realise a relatively small functional sequence, while the features relevant for declension classes are realised by the very endings, to a hybrid, where in some case forms the root realises a long span, while in others it shrinks and the end-

⁴ Similar in spirit is Müller’s analysis (2004), where two opaque features are introduced to capture the syncretism between Russian declension classes. However, this analysis has no ambition to derive declension class from gender via realisation, but rather considers the two features that determine it independently present in the structure.

ing realises the relevant projections.

For illustration, the singular case forms of the Russian noun *zavod* ‘factory’ receive realisations as in (6) (Caha’s (101)). In the nominative and the accusative form, the root realises the lexical content, the features REF(ERENCE), CLASS, IND(IVIDUATED), and the formal features combining to determine the particular cases. In the remaining case forms, the root shrinks, and the ending realises the features CLASS, IND, next to the relevant case features.

(6) Re-elaboration of Caha’s analysis of *zavod* ‘factory’

	xNP	REF	CLASS	IND	F1	F2	F3	F4	F5	F6
NOM	zavod									
ACC	zavod									
GEN	zavod	a								
LOC	zavod	e								
DAT	zavod	u								
INS	zavod	om								

The costs the analysis pays for its great reductionist capacity include treating all the members of one of the two bigger declension classes (the class in *-a* in the nominative singular) as idioms where the root is contextually specified to only occur in structures which include the feature FEM(ININE). Moreover, all these nouns involve mismatch between the LF and the PF, in the sense that their meaning matches the entire idiom, and their phonological realisation only the structure below FEM. Furthermore, as Caha explicitly admits, the feature FEM in his account has nothing to do with the feminine natural gender of the referent (otherwise it would not only make all the inanimate nouns in the class interpreted as female, but also those with animate male referents such as *d’ad’a* ‘uncle’ or the name *Ilya*). The natural gender is an independent factor, which is not syntactically represented, and competes for triggering agreement with the syntactic feature FEM. Recall that animate nouns with mismatches between the declension class and gender are the reason for postulating gender in grammar, in addition to declension classes. Once the feature is dissociated from the semantics of gender, the analysis is not transparent any more (i.e. the feature is no different from Privizintseva’s 2020 additional opaque feature).

Caha considers different alternative analytic strategies, pointing out various problems that they face, and indicating that a realisational analysis of Russian declension classes superior to the one he proposes is not possible considering the facts. Yet it is questionable whether the sacrifices that his analysis makes are worth the goal which is achieved.

3 Basics for a Better Model of Declension Classes

The desiderata stated in § 1 include reduction and transparency. Reduction is achieved if one of the two phenomena, declension class or gender, is derived from the other. Transparency is achieved if the phenomenon that serves as the basis for the derivation of the other one is independently attested (i.e. in other domains of syntax, or in semantics or phonology). Transparency thus further contributes to reduction.

Gender is independently attestable in semantics, but only for animate nouns. Declension classes are attested in morphology, in the endings which different nouns take for the same case form (i.e. in the same syntactic contexts). A logical step for realisational approaches is to have the former represented as a syntactic feature (because it is LF interpretable), and derive the latter from it via some realisation rules (as realisational approaches generally do with morphological realisations).

For transparency, this relation needs to be total and systematic. There should be a set of features such that each declension class is characterised by a unique subset of those features. All the members of a declension class then should share this exact specification - they should not lack any of the features from the combination, nor bear any additional ones from the set.

In this paragraph, I consider the likely candidates for semantic differences and, based on a corpus investigation, argue that while tendencies are clearly observable, no sufficiently strong contrast can be identified. This leads to the conclusion that the declension class must be a syntactic primitive, i.e. in feature-based approaches: a feature or a combination of formal features whose direct interpretation is the specification of the set of endings realising case forms of the noun. To achieve reduction, then, the only option is to derive gender from declension classes, which is the path I take in § 2.

Another important observation, which previous analyses overlook, is that what is in the literature referred to as (grammatical) gender (as discussed above regarding Caha's view) is effectively also a choice between declension classes. As already outlined in § 1, grammatical gender is identified by the agreement patterns the noun triggers. More concretely, it is identified by the set of endings the agreeing item takes. There are altogether three such sets of endings, one that is described as masculine, one as feminine and the third as neuter. But not only, as pointed out in the discussion of Caha, these endings establish a correlation with gender in animate nouns - they also fit the definition of declension classes. The only difference is that agreeing items are lexical categories that are not restricted to one declension class - they can combine with all three of them. In other words, what is referred to as grammatical gender is a declen-

sion class too: masculine is the adjectival declension class I, neuter is class II and feminine class III (this is also reflected in the shared endings between nominal and adjectival declension classes or morphological components thereof). Approaches which derive declension classes from gender thus effectively derive the declension class of the controller from the declension class of the agreeing item. There is something paradoxical about it.

One big problem for predicting the declension class from the gender feature alone is quite obvious: declension classes III and IV are both described as bearing feminine gender (i.e. they trigger exactly the same agreement patterns). Only based on gender, it is hence impossible to predict which noun will realise its case by class III and which by class IV endings.

Obvious candidates for the features that conspire with declension class to determine agreement are those that Caha (2021) employs in his model. Caha's final account however does not make use of all the four features it includes – rather, features CLASS, FEM and IND always remain together, and may for the intents and purposes of his analysis be replaced by only one feature – or it could be only one of them that plays the relevant role.

Feature REF is supposed to be common for all nouns, or at least to have the same status in all of them (Baker 2003). Feature FEM basically stipulates agreement and effectively splits the set of declension classes in two (the masculine and the neuter declension class on the one hand, and the two feminine declension classes on the other). Features CLASS and IND, which are closely related to properties of quantity (such as count, mass, atomic), should then be responsible for distinguishing at least between the former and the latter two. As two features have the potential of specifying four different classes (absence of both, only CLAS, only IND, both CLASS and IND), the question emerges whether the remaining two features are needed at all.

Works like Hachem 2015, Fahri Fessi 2018 and Arsenijević 2017 follow exactly this path: they argue that the unit of counting (i.e. possibly its absence) and the type and degree of individuation are the properties behind not just declension classes, but actually also what is traditionally seen as gender. In this family of views, it is the finer division along these dimensions that plays a role: rather than reflecting mass vs. count denotations or a mere degree of individuation, the relevant features reflect particular kinds of mass, or different degrees of individuation. This view takes differences between non-atomised masses (*space, time*), atomised masses (*sand, powder*), collective denotations (*crew, clan*), vague count denotations (*ocean, field, plane*), together with the opposition between abstract and concrete denotations, animate, inanimate and human, or events, properties and individuals, as the base for the emergence of declension classes. Natural gender then presents only a fraction of the set of properties which

conspire to yield the traditional gender agreement and the division of nouns into declension classes cross-linguistically.

Arsenijević (2017) supports this view by data from SC showing that neuter nouns (which all also belong to declension class II) manifest a range of deficiencies regarding individuation. Examples as in (7) manifest that neuter agreement is not available to highly individuated plural uses such as in demonstratives used with pointing, animates generally or conjunction.

(7)

- a. Ona *(deca) su neumorna. (pointing at children)
 those.NEUT.PL child.NEUT.PL AUX.PL tireless.NEUT.PL
 ‘Those children are tireless’ / *‘Those are tireless’.
- b. dugm-e dugm-eta tel-e *tel-eta
 button-NEUT.SG button-NEUT.PL calf-NEUT.SG calf-NEUT.PL
 ‘button’ ‘buttons’ ‘calf’
- c. Sel-o i polj-e su potopljen-i / *potopljen-a
 village-NEUT.SG and field-NEUT.SG are.PL flooded-MASC.PL / flooded-NEUT.PL
 ‘The village and the field are flooded’.

On this basis, Arsenijević argues that neuter corresponds to the absence of the classifier feature, i.e. the absence of Landman’s (2011) neat generating capacity (see also Arsenijević 2017), which blocks the formation of a proper plural. He claims that the form traditionally analysed as N.PL is rather a collective plural form (a weak division over a messy quantity structure in Landman’s sense), unable to express highly individuated plural meanings.

In modelling the relation between gender, properties of quantity and declension classes, a quantitative insight into the structure of the nominal category in the language use is highly informative. Seeing what proportions of the nouns in each class are accounted by each of the approaches, and how many remain unaccounted for can give us a measure of plausibility of these accounts. This can help us both determine the minimal set of features needed to account for the facts, and the optimal direction of derivation, i.e. whether declension class should be derived from gender and properties of quantity, or it should be lexically specified, and display effects on the interpretations in the domain of gender and properties of quantity.

4 Declension Classes, Gender and Properties of Quantity: A Quantitative Corpus-Based Analysis

To empirically test the modelling options in the domain of declension classes, gender and properties of quantity, I performed a corpus-based research. The material was assembled by first excerpting the 5,000 most frequent SC nouns from the srWaC corpus (Ljubešić, Klubička 2016), and removing doubles and non-words, which reduced the material to a database of 4,718 nouns. The nouns were then annotated for the properties in **table 2** (the database is annotated for a significantly larger set of properties, but only the ones relevant for the discussion are given in the table).⁵

Table 2 Annotated properties of SC nouns in the database

Freq	Frequency (tokens per million words)
Class	Declension class (I-IV)
Gram. gender	What agreement the noun triggers (MASC, FEM, NEUT, HYB[rid])
Nat. gender	Lexical semantic restriction of the sex of the referent (NMASC, NFEM, NNEUT, Ø)
Anim	Animate (1, 0)
Count	Does the noun inflect for plural (1, 0)
Mass	Does the noun combine with mass quantifiers like <i>sve</i> ‘all’ (1, 0)
Coll	Does the Sg noun allow both Sg and Pl agreement (1, 0)
Group	Does the noun in the singular denote a group of entities (1, 0)
Name	Is it a proper name for any class of individuals (1, 0)
Suff	Does the noun have at least one suffix (1, 0)
Suff1	What is the first external (linearly last) suffix of the noun if it has any

Additionally, the mass nouns in the database have been annotated for the properties in **table 3**.

Table 3 Additional properties annotated only for mass nouns

Abstract	Is the noun abstract (1, 0)
Atomised	Does the denotation of the noun involve a level of minimal units (1, 0)
Atom-type	If atomised, what is the type of atoms (concrete, abstract, event, vague)
Mass-type	The ontological class (spatial, temporal, structure, domain, dimension, complex, assembly, substance, emotion, condition, capacity, property, event, vague count)

⁵ The database was annotated by two annotators, the author and Adisa Nanić, a master student and native speaker of SC. Inter-annotator disagreements were resolved by consulting other native speakers.

The database indicates significant differences between the sizes of declension classes. Class I and class III are the largest, with 2,259 and 1,563 member nouns, respectively. Class II is somewhat smaller, with 720 nouns, and class IV is very small with only 178 members. Moreover, it turned out that 71% of class II nouns are derived from the (predominantly deverbal) suffix *-VVje* (Arsenijević 2010; Simonović, Arsenijević 2014), and 72% of class IV nouns from the de-adjectival suffix *-ost*. There are hence only 51 nouns of class IV which are not derived from the suffix *-ost* in our sample. The proportion is probably even more drastic in the aggregate lexicon, as the suffix is highly productive, thus implying a large number of hapaxes.

Quantitative analyses have been performed for the relation of declension class with the properties Gender, Anim, Mass, as well as the within-mass properties Abstract, Atomised and Atom-type. The remaining annotated properties either did not show a significant effect, or their effect could be subsumed under that of one or a combination of the discussed properties.

Grammatical gender establishes a very tight match with declension classes. Class I systematically agrees with masculine, class II with neuter, class IV with feminine gender. The only locus of incomplete match lies in class III, which has a number of human members showing hybrid gender agreement: masculine in singular and feminine in plural (see (2)). In the sample of 4,718 nouns, with 1,563 class III nouns, 46 such nouns are identified (0.97% of the database and 2.94% of class III nouns). Grammatical gender is hence a very good predictor of declension class, and assuming that each gender value is represented as a different feature (combination), a realisational account based on it covers a very large portion of the data. In order to cover the small subset of class III nouns that trigger hybrid agreement, one first needs to see whether there is a feature that all of them share. Of all the properties annotated in the database, two are shared by all these nouns: they are all animate, and none of them is specified for feminine natural gender (i.e. 14 are male proper names, 8 are nouns denoting male roles such as *čika* 'uncle' or *papa* 'pope', and the remaining 24 are gender-general, like *sudija* 'judge' or *arhitekta* 'architect'). A realisational account is hence possible where +GMASC (i.e. grammatical masculine gender) triggers class I realisation, except in the context +GMASC +HUM-NFEM +SG (grammatical masculine, human, non-natural-feminine, singular), which triggers class III realisation. Inversely, grammatical gender can be derived from the combination of the declension class and the remaining features above (+HUM-NFEM +SG).

An additional problem for a realisational account of the declension class is that not just a majority of class III forms trigger feminine agreement, but also all the nouns in class IV. Hence, a noun specified for +G_FEM is underspecified between class III and class

IV realisations. Yet, as the discussion of other properties in a quantitative perspective below shows, class III is open for all the values of all the considered properties, which means that there is no property which could be represented as a distinctive feature or a distinctive set of contexts for the two declension classes. Note that, if declension class is specified and gender agreement is realisational, no ambiguity arises as feminine agreement can be specified to be realised in both types of contexts: class IV and class III with the exception of III +HUM-NFEM+SG, where it is the masculine agreement that gets realised. Recalling further that the actual substance of gender agreement is declension class assigned to the agreeing item, it gets even more plausible to consider declension class of the noun as the primitive, rather than gender agreement.

Natural gender posed a problem for annotation, in there being different strengths of gender presuppositions. Among those nouns that qualify for it (all the animate nouns), some have a relatively weak presupposition, others moderate and yet others a strong one. Any test that was tried faced this issue, including the one eventually implemented, illustrated in (8).

(8)

- | | | | |
|--|--|---|---|
| a. ženski jaguar
female jaguar. ^I
'female jaguar' | b. ženski sudija
female judge. ^{III}
'female judge' | c. ?ženski papa
female pope. ^{III}
'female pope' | d. #ženski deda
female grandpa. ^{III}
'female grandpa' |
| e. ženka-jaguar
female-jaguar. ^I
'female-jaguar' | f. žena-sudija
woman-judge. ^{III}
'woman-judge' | g. ?žena-papa
woman-pope. ^{III}
'woman-pope' | h. #žena-deda
woman-grandpa. ^{III}
'woman-grandpa' |

The problem for annotation actually only reflects the fact that the natural gender of a noun is not a discrete value, as it is strongly influenced by cultural constructs. Whether an animal will be prototypically represented as a male or a female, how immanent a property of a pope it is that it is a male, and how immanent it is for a grandpa – are not questions that render clear-cut categories. Generally, the degradation is stronger for humans than for animals, and for nouns with an established minimal pair in gender than for those without it. It is also typically stronger in singular than in plural. In the annotation, therefore, only human nouns were annotated for natural gender,⁶ and it was specified for any noun that causes degradation

⁶ Very few animal-denoting nouns caused degradation in combination with the adjective *muški* 'male' (*svinja* 'pig', *krava* 'cow', *ovca* 'sheep', *koza* 'goat', *mačka* 'cat'), i.e.

when combined with the adjective *muški* 'male', i.e. in a (semi-)compound with *muškarac* 'man' (as +NFEM) or *ženski* 'female', i.e. *žena* 'woman' (as +NMASC), irrespective of the strength of degradation.

Even though in the annotation the mapping of this property onto discrete values was forced, looking only at the singular forms, the insights above suggest that natural gender cannot be a grammatical feature, as grammatical features are stable discrete formal objects, rather than continuous scalar ones, which moreover change depending on other features (number in this case).

There are two more reasons why natural gender is unlikely to be a feature. One is that it often emerges as a consequence of the existence of a minimal pair of lexical items specialised for the opposite genders (see also Merchant 2014; Sudo, Spathas 2019). This indicates that lexical competition in pragmatics is a possible source of natural gender, even if the lexical semantics does not necessarily include it (this is supported by the effect of number, as in plural, gender-general interpretation figures more prominently in the pragmatic competition, see also Puškar 2018; Mitić, Arsenijević 2019).

The other reason is the quantity of nouns carrying natural gender. In the entire database, 192 nouns are annotated as restricted regarding natural gender (139 to male and 53 to female referents). This makes 4.07% of the database. It is not just unusual, but also uneconomic that a system employs a feature marked for either of its two values on such a small fragment of the targeted lexical category. **Animate** nouns are most frequent within class I, with 32.64%. Class III is second with 10.71% of animates. In classes II and IV, animate nouns have a marginal presence with 5 (0.69%) and 4 animate members (2.25%), respectively. Even among these nine members, one in class II and two in class IV are collective nouns that are not traditionally considered proper animates. Moreover, as shown in Arsenijević (2017), even animate diminutives, which would add a couple of dozens of lower frequency animates to class II if the sample were expanded, all show a defective behaviour, manifested for example in failing to inflect for plural. Assuming that the seven exceptions are idiomatically stored, declension classes can be divided in two carrying or realising a -ANIM feature (class II and IV, assuming the animates are lexically stored as idioms) and two without it (class I and III).

All together there are 542 count animate common nouns and 377 personal names in the database - in sum 919 count animate nouns, i.e. 19.48% of the sample. Only these nouns are candidates to carry natural gender features, as they can only be interpreted on animates. In the remaining over 80% of nouns, gender features may only

ženski 'female' (*konj* 'horse', *pas* 'dog'). All of them have specialised nouns for the gender denoted by the adjective used for testing.

occur as purely formal. Nothing predicts their presence or absence, and they basically stipulate the agreement patterns, i.e. the declension classes of the agreeing items.

Finally, there is also a number of animate nouns controlling feminine agreement, which do not trigger female, and even tend to trigger male presuppositions, such as *pijanica* 'drunkard', *budala* 'fool', *spavalica* 'sleeper'. An approach stipulating the feature FEM on these nouns would correctly predict their agreement, but would incorporate a problematic property, namely that an animate noun carrying feature FEM triggers male presuppositions. Even worse, hybrid nouns like *komšija* 'neighbour', *gazda* 'master', *vladika* 'bishop' would need to be specified for not bearing the feature FEM in the singular, but receiving it in the plural, while triggering male presuppositions in both sets of forms.⁷

(9)

a. tešk-a	pijanic-a	b. naš-∅	komšij-a	c. naš-e	komšij-e
heavy-FEM	drunkard-III	our-MASC	neighbour-III	our-FEM.PL	neighbour-III.PL
'heavy alcoholic'		'our neighbour'		'our neighbours'	

Mass nouns in the broad sense determined by our test make up 81,63% of class IV and 72,67% of class II nouns. Among class I and class III nouns, they are represented with only 7,16% and 26,21%, respectively.

In class II, this is mostly due to the productivity of the suffix *-VVje* and the abstract mass individual-to-property denominal suffix *-stvo* (9,32%), as these suffixes derive almost only mass nouns.

Due to the productivity of the suffix *-ost*, the percentage for class IV is expected to significantly increase when lower frequency nouns are included.

However, the optimism from the sharp contrasts is relativised by the fact that still a quarter of class III and 162 nouns from class I have mass denotations and would need to be idiomatically stored in case mass semantics were used as a feature that takes part in deriving the declension class.

Collective nouns, which I take in the narrow SC-specific sense of nouns that denote groups of entities and allow both singular and plural number agreement, are generally rare - no class reaches 1% of collective members. Still, differences indicate a clear split in the

⁷ One may, of course, always introduce an additional gender feature, such that one is responsible for agreement, the other for the interpretation (see e.g. Puškar 2017), but this is a costly methodological choice - especially considering that an additional account is still needed for how these two features determine the realisation of the inflection (i.e. the declension class).

tendencies. It seems that class I is closed for collectives: even though it is the largest class, it does not have a single collective member. Class III has 0.19% collective members, class IV 0.56% and class II 0.83%. Part of the reason is that class II and class IV have morphological operations deriving collective nouns (suffix *-VVje* with nominal bases and suffix *-ad* with class II nouns as bases, respectively).

Together, mass and collective nouns indicate 1) that classes II and IV are much more likely to be homogeneous (i.e. cumulative and divisive) in mereological terms (e.g. Krifka 1989), i.e. to have non-atomised and/or messy semantics in terms of Landman (2011), 2) that class I has a strong tendency for quantised, i.e. neat atomised semantics, and 3) that class III is open for all types of meaning. Similar can be concluded from animacy, considering that animacy ranks high on the individuation hierarchy, as opposed to mass and collective meanings. In all these properties, class III ranks in the middle, indicating that it is permissive for all the observed properties.

Let us now skip to the properties annotated for mass nouns only. Note that the test used to identify mass nouns is whether the noun combines with the mass quantifier *sav* 'all'. This quantifier combines not only with proper mass nouns, but also with all the nouns that have a vague quantity interpretation. The annotation aimed to identify as mass only those nouns that combine with the quantifier in their dominant interpretation, i.e. without accommodating the vagueness. Still, the nouns identified as mass ended up including a number of count vaguely bounded nouns, as illustrated below – where it was hard to put the boundary between dominant and non-dominant interpretations. The annotation of the type of atomisation identifies this subclass, thus splitting the broad class of mass nouns into a big part which is quite reliable, and a smaller one with compromised reliability.

The property **atomised** was annotated with three values: as atomised, when the noun denotes a homogeneous assembly of atomic units (*pasulj* 'beans', *pesak* 'sand', *društvo* 'society') or an assembly of units varying in the relevant properties (*divljač* 'game [wild animals]',⁸ *smeće* 'trash', *komšiluk* 'neighbourhood'); as count vague, when the noun in the singular denotes a singular entity without internal atomisation, but with vague boundaries (*dah* 'breath', *svemir* 'space', *oblast* 'area'); or as non-atomised, when the noun denotes a proper mass: homogeneous, unbounded, without internal atomisation (*tečnost* 'liquid', *komfor* 'comfort', *ambicija* 'ambition').

Event-denoting nouns presented an additional challenge for annotation, as it is hard to properly map them onto the classification above. The following strategy was opted for nouns denoting states, and pure processes without any specification of a culmination like

8 The latter two types were separated in the property type of atom.

čekanje ‘waiting’, *egzistencija* ‘existence’, *rad* ‘work’ were annotated as narrow (i.e. non-atomised) mass. Those denoting single instances of a rather bounded eventuality like *isplata* ‘payment’, *podsticaj* ‘encouragement’, *bekstvo* ‘escape’, were annotated as vague, as they indeed have plurals and are characterised by vague boundaries like vague count nouns above. Finally, nouns preserving the secondary imperfective semantics and therefore having an iterative interpretation (*ispaljivanje* ‘firing’, *izvrtnje* ‘turning inside out’) were annotated as atomised – assuming that single iterations of the eventuality constituting potentially unbounded assemblies are equivalent to atoms constituting a homogenous unbounded mass. The aggregate distribution is given in **table 4**.

Table 4 The distribution of types of atomisation among mass nouns (%)⁹

	Class I	Class II	Class III	Class IV
atomised	12,55	38,86	21,64	5,91
vague	31,39	13,90	11,56	18,34
mass	56,05	47,23	66,79	75,73

Relative to other classes, class I has a higher proportion of vague count nouns, nouns that only marginally display mass semantics and essentially are weakly quantised. Regarding the remaining two options, class I has a distribution matching the overall average ratio for these two atomisation values. This additionally supports the treatment of this class as highly individuated. One may wonder why there are non-fully-individuated nouns in this class in the first place – but recall that we are anyway dealing with tendencies, and that the percentage of such nouns in the class was very low. Class II has a significantly higher proportion of atomised mass nouns than other classes, and class IV the opposite: a larger number of non-atomised, i.e. narrow mass nouns. This now provides a contrast, even if only tendential, between class II and IV. While they both have a tendency for mass interpretations, class IV tends to have a proper mass interpretation, and class II rather tends to be atomised. Class III is close to the average overall distribution again, except that it has a somewhat lower participation of vague nouns. This confirms again that this class does not take part in the competition in the domain of properties of quantity.

To make sure that the choices made regarding the annotation of event-denoting nouns did not distort the distribution, I consider also the distribution when event nouns are disregarded, as given in **table 5**.

⁹ $\chi^2 = 113,9331$, $p < 0,00001$.

Table 5 The distribution of types of atomisation among mass nouns without event nouns (%)

	Class I	Class II	Class III	Class IV
atomised	15,90	22,22	26,33	4,87
vague	32,38	35,85	10,97	17,68
mass	51,70	41,91	62,69	77,43

Only class II shows a notable difference, in particular in the increase in vague count nouns at the expense of the other two types. The percentage of vague count nouns has actually tripled, and makes class II the richest of all classes in this type of nouns. Considering that in class II pretty much all event-denoting members are derived by one suffix, the distribution without it is possibly more telling about the class.¹⁰ Crucially, however, the change only makes stronger the contrast between class II and class IV regarding narrow mass meanings on the one hand, and the atomised interpretations on the other. Finally, the property **abstract** had the distribution in **table 6**.

Table 6 The distribution of abstractness among mass nouns (in %)¹¹

	I	II	III	IV
abstract	64,12556	85,09213	76,49254	89,34911
concrete	35,87444	14,90787	23,50746	10,65089

Once again, the grouping is into class II and IV as more abstract, in class I as more concrete and in class III as having average distribution. Considering that abstractness is lower in the individuation hierarchy than concreteness, this too supports the view on which classes II and IV tend towards lower values of individuation, class I towards the higher end, and class III is open for various degrees of individuation. The strong contribution of the suffix *-VV,je* to class II has a significant influence regarding this property too. As the suffix almost only derives event nouns and events are abstract entities, without these nouns, this class ranks very low in abstractness (but other per-

10 Since in derived nouns it is the suffix that determines the declension class, the entire set of nouns derived by one suffix might need to be counted as one member of the declension class (this is even more obvious on certain views of derivational morphology, e.g. Lowenstamm 2014; Simonović 2020 for South Slavic). This principle of quantification makes the system even more sharply divided in two small and two large classes (class IV would have 41 members, class II 102, class I 1,559 and class III 699). Since, however, the same suffix does not necessarily assign the same properties of quantity, I chose counting each noun separately as the general approach, leaving an investigation along the lines above for the future, specifically for topics where issues that more strictly correlate with suffixes will be in focus.

11 $\chi^2 = 56.7812$, $p < 0.00001$.

centages would drop too, because event-denoting nouns are a significant group in all declension classes).

In summary, grammatical gender has a high capacity in predicting declension class, but due to the same agreement pattern of classes III and IV, the capacity is higher when the relation is inverted, i.e. when declension class predicts gender. Natural gender helps accounting for just over 4% of the data.

Properties of quantity have a broader coverage. Class I has a very strong tendency for individuation: it tends to include animate nouns, is an unlikely class of mass nouns in the broad sense – and when it includes them, it goes for the vague count and atomised, as well as for concrete, rather than non-atomised and abstract nouns. Still, this is a tendency and not a rule – class I includes 176 mass members, and 94 others that are ambiguous between a strict count and a mass interpretation in the broader sense.¹² The significance of these quantities is strengthened by the fact that class I is syncretic with class IV in the most frequent forms (NomSg, AccSg, NomPl) and with class II in almost all the remaining ones, and that nouns not only switch between class I and class IV, i.e. class II, but there are some that at least for some speakers may be declined in two classes (*bol* 'pain', *ološ* 'scam', *polen* 'pollen', i.e. *auto* 'car', *radio* 'radio', *dinamo* 'dynamo'). This latter fact might actually be offering a partial answer too: class IV is almost closed (see Simonović 2020) and its members are gradually switching to class I, probably exactly due to a reanalysis based on the frequent syncretic forms. Class I is possibly taking mass members due to a gradual disappearing of class IV and the syncretism between them, which drives the reanalysis.

Class I could hence in principle be modelled in terms of feature specification as +ATOM +NEAT (Landman 2011). For this, its 270 members that (also) have mass interpretations need to be treated as idioms, i.e. as class I members stored in the lexicon with a mass or vague interpretation in spite of the strict count feature specification that they bear. Already these numbers, received on a sample of 4,718 nouns, present quite a large quantity of nouns to be stored, and the actual numbers for an average speaker are likely five to ten times higher.

Classes II and IV are inanimate (the 7 overall individuated animate nouns they include are plausibly stored), with a strong tendency for

¹² The reason why the regularities are only tendential is that they probably emerge as surface generalisations motivated by heterogeneous factors including language use. Their base is the interaction between the lexicon, grammar and pragmatics in language use, and they are restricted by various properties of the grammar and the lexicon (such as the gradual loss of class IV, the general preference to assign less marked declension classes, phonological properties of the stem favouring one declension class or another, specification of the derivational suffix for derived nouns or the shape of the noun in the donor language for the borrowed ones).

mass interpretations in the broad sense. When it comes to properties of quantity, class IV is tendentially specialised for non-atomised meanings, especially for property-denoting abstract nouns, and class II for atomised mass, especially for event-denoting abstract nouns. Class IV could hence be modelled as bearing the -NEAT feature, and class II as bearing the -ATOM feature. Again, this requires that proper count nouns in class II and atomised nouns in class IV be represented as idioms interpreted differently than indicated by their feature specification. Even though the percentage of these exceptions is higher, due to the small size of the classes, the absolute numbers are similar to class I. In the sample of 4,718 nouns, this yields 197 class II and 50 class IV nouns. Due to a high productivity of the suffixes *-VVje* and *-ost*, the percentage of exceptions is likely to fall with the expansion of the sample to a speaker's entire lexicon, and the absolute numbers should not grow as much as in class I, but they are still several times higher than those attested.

The fatal hit for a realisational approach based on the properties of quantity comes from class III, which is open for all types of interpretations. If modelled in terms of features, this class can be characterised as lacking any of the relevant features, i.e. as having them all, and being realised based on the superset, i.e. subset principle. The problem is that there is no noun for which this class does not compete with at least one other class which is more specific and hence must win as the realisation of the declension class of the noun. The only way for this class to ever win is that its feature specification is irrelevant (hence probably absent), and all its members are stored as idioms (similar to Caha's 2021 proposal). Effectively, this means that, by extremely conservative means, at least 40% of the nouns in the lexicon are effectively assigned a declension class in whatever storage the framework postulates for idiomatic nouns, and at most 60% receive their declension class via realisation based on their feature specification. It is hard to argue that a model employing both realisation and an equivalent of lexical specification is better than one which entirely relies on the lexical assignment of the declension class as a feature. In the next paragraph, I propose an alternative model, in which declension class is a feature assigned in the lexicon, weakly depending on a range of semantic properties, some of which are independently represented in terms of other features (such as ATOM or NEAT), others being a matter of LF interpretation (such as gender). Tendential regularities discussed in this paragraph then must represent surface generalisations constituting the operation of declension class assignment, which has independently been argued to be sensitive to various often clashing factors (segmental phonology, prosody, properties of quantity, natural gender, borrowed suffix), see e.g. Nessel 1994. A tentative analysis would have all these interactions captured simply in terms of markedness: more marked values

of one feature (declension class) tend to match with more or with less marked values of other features.

5 The Proposal: Nouns are Specified for Declension Classes, Interpretive Effects Emerge in Pragmatic Competition

I have so far provided 4 major arguments against a realisational treatment of declension classes:

1. gender agreement is effectively the declension class displayed by the agreeing item, and hence the grammatical gender is effectively also a declension class specification on an item which can be specified for any of the three agreeing declension classes available;
2. the mapping from grammatical gender to declension classes is not fully defined, since feminine gender may map onto class III as well as class IV; the mapping from declension classes to gender (i.e. from the declension class on the noun to the declension class on the agreeing item) does not suffer from this problem;
3. grammatical gender needs the information about the natural gender to predict the declension class of hybrid gender agreement nouns, but natural gender is not a likely syntactic feature (it is not discrete, and the corresponding meaning may emerge via pragmatic competition);
4. properties of quantity also have a power to predict a significant portion of declension classes, but also with a non-marginal set of exceptions and with a particular problem to capture class III and its diachronic stability.

Instead, I argue, declension classes are better represented as features in the nominal projection forming a markedness hierarchy as follows: IV < I < II < III.¹³ Agreement then unfolds in the following way, which is similar in spirit to the analysis proposed by Kučerova (2018), but with declension classes as the basic feature and with a more conventional rescue strategy (she postulates look-ahead outside of the language faculty, into the conceptual-intentional system). Syntax first determines the syntactic domain for the controller of agreement. Then, it inserts copies of a declension class value from this domain onto the agreeing item (as no copy can be inserted for class IV,

¹³ The formality of representation may be further increased by a Nanosyntax style of representation, where, for instance, class I is represented as just the class feature in the respective projection, class II as the absence of this projection (see Arsenijević 2017), class IV as the class feature and a mass feature adjacent to each other, and class III as two consecutive class projections.

this class resorts to class III as the most marked). Ideally, it copies the features of the projecting noun, but there are alternative options too which I do not discuss in this paper (but see for instance Willer Gold et al. 2016 and Arsenijević et al. 2021). The structure is eventually spelled out and interpreted at PF and LF. In contexts in which the declension class is interpretable, it triggers presuppositions at LF. When these presuppositions clash with stronger presuppositions that are active in the discourse, the derivation crashes. Upon a crash, syntax may replace the declension class with the default and spell it out again. If no clash emerges, the derivation converges. Let me illustrate this on a pair of examples.

In both sentences in (10), the subject is a human-denoting nominal expression from class III. Therefore, this class is copied onto the agreeing item, and it is spelled out. Feature HUMAN causes the declension class feature to trigger gender presuppositions at LF. The gender presupposition triggered by class III is female. Here, the presupposition is not the content of the declension class, nor a property assigned to it – but rather a pragmatic mechanism relying on the procedure of declension class assignment in the lexicon, which includes natural gender as a parameter. When a declension class shows a strong tendency regarding some natural gender, pragmatics takes the occurrence of this declension class in agreement as a source of weak presupposition of the respective natural gender (similar holds for the properties of quantity). In (10a), this presupposition clashes with the presupposition independently available about the referent (here, a strong male presupposition is triggered by the fact that the noun *komšija* stands as the unmarked member in the natural gender opposition with the feminine *komšinica* ‘female neighbour’; for various degrees of strength of the gender presuppositions depending on the source, and for additional, experimental evidence for this view, see Arsenijević et al. 2021).¹⁴ The derivation crashes. As an attempt of repair, syntax now spells the structure out with the default declension class I on the agreeing item. This declension class triggers a male or gender-unspecified presupposition and the derivation converges. In (10b), all is the same until the structure is spelled out with the class III specified on the agreeing item. Here, however, the noun *sestra* ‘sister’ triggers a strong female presupposition due to being the marked member in the natural gender opposition with the noun *brat* ‘brother’. Presupposition triggered by agreement matches the independently available strong presupposition, and the derivation converges.

¹⁴ In the perspective of Distributed Morphology (Halle, Marantz 1993), the relevant information is whether there is a lexical realisation available for a more marked counterpart that may saliently realise the female gender. This information does not need access to the vocabulary as it is arguably available in the encyclopedia.

(11)

Sel-o i polj-e su potopljen-i / *potopljen-a
 village-NEUT.SG and field-NEUT.SG are.PL flooded-MASC.PL / flooded-NEUT.PL
 ‘The village and the field are flooded’.

Here, again, syntax first copies class II onto the participle. This triggers the presupposition of a messy quantity structure, which clashes with the strong presupposition of a neat quantity structure triggered by the conjunction of two count singulars. The derivation crashes, and syntax repairs it by inserting the default class I feature on the agreeing item. The derivation then converges.

The correlations that declension classes display with grammatical gender (i.e. with declension classes on agreeing items), natural gender and properties of quantity are best captured in terms of pragmatic competition between the degrees of markedness of declension classes sensitive to the degrees of markedness of natural gender, i.e. of properties of quantity. There are two different domains in which this competition shows effects. One is the lexical assignment of declension classes to nouns, where the competition contributes to the selection of declension class assigned to the noun. The other is the assignment of declension class to the agreeing items, traditionally referred to as gender agreement, where the competition determines the presuppositions triggered in the domain of gender and/or properties of quantity. Let me briefly assess each of the relevant cases.

When it comes to properties of quantity, I assume the four types of meanings already considered in § 4 to be ordered regarding markedness in the following way: non-atomised mass < atomised mass < vague count < strict count. The extreme values on the scale map onto the first two declension classes: non-atomised mass to class IV, strict count to class I. The remaining two values: atomised mass and vague count, which are also quantitatively more marked (i.e. they form significantly smaller classes in the lexicon, see § 4), target the next declension class in the hierarchy: class II. Hence, class IV tends to take mass non-atomised nouns, class I strict count nouns, and class II tends to take mass atomised and vague count nouns. Class I is more likely to take a vague count or an atomised mass noun than a non-atomised mass noun, and class IV is more likely to take an atomised mass noun or a vague count noun than a strict count noun. For reasons yet to be investigated, class III remains outside this mapping and receives members based on other properties, such as expressiveness, segmental phonology, prosody. Note that it is independently clear that other properties play a role, from the fact that even classes I, II and IV do not fully map to properties of quantity, but rather show a tendency. Two of those additional properties, natural gender and expressiveness, are discussed below.

To illustrate this, consider the nouns in (12). The base *konj* ‘horse’ denotes an animate individual, hence with properties atomised and neat, and sitting relatively high in the individuation hierarchy. This supports the assignment of class I. The base *sen* ‘hay’ denotes an atomised mass, which supports the assignment of class II, and the suffix *-ost* introduces the nominal category for a base that denotes a property, supporting the assignment of class IV. Finally, it remains unclear on the proposed account why the suffix *-b* is specified for selecting class III, as both semantically and phonologically (i.e. to secure a vowel after the consonant cluster which it typically forms), it could as well take class II.¹⁵

(12)

konj	sen-o	mlad-ost	ber-b-a
horse.I	hay-II	young-N.IV	pick-N.III
‘horse’	‘hay’	‘youth’	‘harvest’

In agreement, as stated above, the declension class copied from the controller is the first option, but the default is an available option too. Hence, the competition is more intensive than at declension class assignment, as the choice of the declension class is made anew in every context (a noun is assigned class once and keeps it in all its uses). In salient contexts, the selection of a marked declension class triggers the presupposition of the holding of a marked property along the respective dimension. This is the reason for the agreement quirks of class II nouns reported in Arsenijević (2017), including those reported in (7), repeated as (13). Class II is the most marked class when it comes to properties of quantity – a class latently mapped with vague count and atomised mass nouns. Hence, it triggers the presupposition of the corresponding meaning. The pointing context, animate plurals, as well as conjunction, imply assemblies of highly individuated entities, yielding a clash. The pointing is resolved by using the class I form of the demonstrative (*oni* ‘they.II’) and the agreeing form of the predicate, the plural by using the collective plural form from class IV (*telad* ‘calves.COLL’), and the conjunction again by resorting to class I, this time on the agreeing item only.

¹⁵ An anonymous reviewer suggests that arbitrary choices and mismatches of the type discussed could be a trace of diachronic processes. If it is correct that declension class assignment proceeds in the interaction of grammar, pragmatics and the lexicon in language use, it is indeed plausible that current assignments are traces of some earlier stages in which they were the optimal choices – under the condition that the later stages of development did not render them (strongly) suboptimal.

(13)

- a. Ona *(deca) su neumorna. (pointing at children)
 those.II.PL child.II.PL AUX.PL tireless.II.PL
 'Those children are tireless' / '*Those are tireless'.
- b. dugm-e dugm-eta tel-e *tel-eta tel-ad
 button-II.SG button-II.PL calf-II.SG calf-II.PL calf-SUFF.IV.SG
 'button' 'buttons' 'calf'
- c. Sel-o i polj-e su potopljen-i / *potopljen-a
 village-II.SG and field-II.SG are.PL flooded-I.PL / flooded-II.PL
 'The village and the field are flooded'.

Natural gender is a property of animate nouns. Moreover, it only shows on the strictly count ones among them – as natural gender is a property of an individual, not of a group. Since strictly count animates are very high on the individuation hierarchy, and since, due to the mapping to properties of quantity, classes II and IV do not take nouns so high on this hierarchy, the opposition in natural gender only establishes competition between classes I and III. Regarding markedness, masculine natural gender is unmarked and feminine is marked. The mapping is such that the value of gender characterised by higher markedness maps onto the declension class that is more marked. As a result, all the nouns denoting females are assigned class III, and a majority of nouns denoting males are assigned class I (of the 139 natural masculine gender nouns in the database, 12 belong to class III, together with all the 52 natural feminine nouns). Again, class III turns out to be open for all the values, while class I is exceptionless in not taking one of the values – the feminine natural gender.

To illustrate this, in the respective culture, the prototypical ant is represented as male, and the prototypical bee as female. As the only two classes that can take a (non-diminutive) animate noun are class I and III, class I wins for the *ant* because it does not clash with the male presupposition and is the default class, and class III for the *bee*, as it does not clash with the female presupposition. The agentive suffix *-ar* derives the human denoting noun *rudar* 'miner' and, as the prototypical human in the culture is conceptualised as a male, the noun receives class I. The phonologically empty suffix *-k* is added to this noun to derive a marked minimal pair. This markedness can be interpreted along several lines: as a diminutive, as the opposite gender, as an expressive variant (a similar observation is made in Cahá 2021; see Potts 2007 for a discussion of expressive semantics). In the particular case, the functional load determines the marked gender, i.e. female interpretation as the relevant dimension. Since the corresponding presupposition matches class III, this is the class assigned to the noun.

(14)

mrav	pčel-a	rud-ar	rud-ar-k-a
ant	bee-III	mine-er.I	mine-er-k-III
'ant'	'bee'	'miner'	'she-miner'

In agreement too, the competition only emerges with humans and entities higher than that in the hierarchy. Hence, the competition is between classes I and III only. The more marked class, class III, triggers the presupposition of the more marked natural gender value, feminine (since the opposition is binary, class I favours the masculine gender by antipresupposition). When the declension class is copied in agreement, since agreement is reinterpreted for presupposition in each context as discussed above, a clash may emerge, which gets resolved by the spell out of the default declension class.

Caha (2021, 37) generalises affectiveness as a property of male-denoting members of the Russian counterpart of class III. Indeed, expressiveness occurs to be a third dimension of markedness that interacts with declension classes that arguably enters a mapping of the above type. Assuming that nouns with expressive meanings are marked compared to those without them, a mapping can be established where the marked value of expressivity maps higher rather than lower on the declension-class-markedness scale. Unfortunately, the database does not yet have a complete annotation of the nouns for expressivity, but of the 26 hybrid gender class III nouns in the database, 15 have a clear expressive meaning, ranging from the positive (*deda*, *deka* 'grandpa', *čika*, *teča* 'uncle', *beba* 'baby'), via the ambivalent (*voda* 'leader', *gazda* 'master', *pristalica* 'supporter'), to the negatively biased ones (*ubica* 'murderer', *budala* 'fool', *ustaša* 'member of the Croatian Nazi movement').¹⁶

Consider the examples in (15). The noun *čovек* 'man' and the proper name *Petar* refer to men. Therefore, they are assigned declension class I. However, their hypocoristic forms *čova* and *Pera* (a typical nickname for the name used by close persons), which also denote men, are assigned class III because of their expressive component.

(15)

čovек	čov-a	Petar	Per-a
man.I	man-III	Petar.I	Per-III
'man'	'man (hypocoristic)'	'Petar'	'Petar (hypocoristic)'

¹⁶ The noun *ustaša* in fact has also been bearing a positive expressive value for certain speakers, but it has never been neutral.

Similarly, as already presented in (3) above, an expressive component may trigger a noun to display mixed class I/II behaviour, as illustrated in **table 7** below (note that in the nominative and accusative of class II, the endings *e* and *o* are in phonologically conditioned alternation), where the expressive hypocoristic noun *smrdljivko* ‘stinky-SUFF-II’, unlike its neutral counterpart *smrdljiv-ac-Ø* ‘stinky-SUFF-I’, shares with class II its typical nominative singular ending and the lack of plural forms for animate nouns, while having the accusative ending characteristic for class II and showing class II agreement behaviour.

Table 7 Expressivity-induced hybrid between classes I and II

	Class I (<Ø, a>)		Expressive noun		Class II (<o/e, a>)	
	Sg	Pl	Sg	Pl	Sg	Pl
NOM	<i>smrdljiv-c-Ø</i>	<i>smrdljiv-c-i</i>	<i>smrdljiv-k-o</i>	/	<i>pil-e</i>	/
GEN	<i>smrdljiv-c-a</i>	<i>smrdljiv-c-a</i>	<i>smrdljiv-k-a</i>	/	<i>pil-et-a</i>	/
DAT	<i>smrdljiv-c-u</i>	<i>smrdljiv-c-ima</i>	<i>smrdljiv-k-u</i>	/	<i>pil-et-u</i>	/
ACC	<i>smrdljiv-c-a</i>	<i>smrdljiv-c-e</i>	<i>smrdljiv-k-a</i>	/	<i>pil-e</i>	/
INST	<i>smrdljiv-c-em</i>	<i>smrdljiv-c-ima</i>	<i>smrdljiv-k-om</i>	/	<i>pil-et-om</i>	/
LOC	<i>smrdljiv-c-u</i>	<i>smrdljiv-c-ima</i>	<i>smrdljiv-k-u</i>	/	<i>pil-et-u</i>	/

Declension class assignment is sensitive to other factors too, such as phonology (bases with final consonant clusters tend to take declension classes with overt endings in the nominative rather than those with null morphology) or the shape of the noun in the donor language for loan nouns (nouns ending in *-a* in the donor language take class III declension, considering that there are no obstacles for such assignment, since class III is semantically flexible), but I do not discuss these aspects here beyond observing that an account realising declension class from gender is not likely to capture them in a transparent way.

The presented view is parsimonious compared to the alternatives, as it only specifies nouns for one relevant feature (class) instead of at least two (grammatical and natural gender, let alone the role of atomisation and neat vs. messy structure). It derives grammatical gender, i.e. the declension class on the agreeing item, from that on the controller of agreement rather than the other way around and does not face the problem of ambiguity of feminine agreement between class III and IV realisation. It is compatible with the findings regarding the pragmatic competition between minimal pairs (Merchant 2014; Sudo, Spathas 2019). Finally, it does not have to store a significant amount of lexical material or forms as idioms interpreted contrary to their feature specification or otherwise face a large number of exceptions. The approach is similar in spirit to Kučerova’s (2018), in invoking a semantic evaluation of agreement, but differs both in the scope and in the technical implementation.

6 The Morphology of Declension Classes

In this paragraph, I propose a novel morphological analysis of declension classes in SC, which supports the markedness ordering assumed in the discussion and models provided in the preceding paragraphs: IV < I < II < III. The analysis capitalises on the fact that class I has not a single ending that is not syncretic with at least one other class, counting only same case and number counterparts, as obvious from table 1, repeated as table 8. In the singular, class I nominative and accusative are syncretic with class IV, class I genitive, dative/locative and instrumental with class II. In the plural, nominative is syncretic with class IV, accusative with class III, genitive with both classes II and III, and dative/locative and instrumental with classes II and IV. I take this as an indication that class I has no endings of its own: it is always realised by the endings from other declension classes.

Table 8 Declension classes in Serbo-Croatian

	Class I (<∅, a>)		Class II (<o/e, a>)		Class III (<a, e>)		Class IV (<∅, i>)	
	Sg	Pl	Sg	Pl	Sg	Pl	Sg	Pl
NOM	mrav-∅	mrav-i	mor-e(sel-o)	mor-a	rib-a	rib-e	noć-∅	noć-i
GEN	mrav-a	mrav-a	mor-a	mor-a	rib-e	rib-a	noć-i	noć-i
DAT	mrav-u	mrav-ima	mor-u	mor-ima	rib-i	rib-ama	noć-i	noć-ima
ACC	mrav-(a) (žig-∅)	mrav-e	mor-e(sel-o)	mor-a	rib-u	rib-e	noć-∅	noć-i
INST	mrav-em	mrav-ima	mor-em(sel-om)	mor-ima	rib-om	rib-ama	noć-ju	noć-ima
LOC	mrav-u	mrav-ima	mor-u	mor-ima	rib-i	rib-ama	noć-i	noć-ima

Moreover, I use the same feature, DIV, to represent both the genitive case and the plural (see Arsenijević 2005 for an elaboration). Genitive plural has the feature twice, once in the head realising grammatical number and once in the head realising the case.

- (16) GEN SG: [_{KP} DIV [_{NumP} ∅]] NOM PL: [_{KP} ∅ [_{NumP} DIV]] GEN PL: [_{KP} DIV [_{NumP} DIV]]

This accounts for the fact that the genitive singular forms of classes II, III and IV are identical to their nominative plural forms. Class I takes the plural form of class II for reasons to be briefly assessed. It also explains why genitive plural forms have the form of the nominative plural with a doubled ending (class I and III take the form from class II), again for reasons to be briefly discussed.

Finally, accusative is syncretic with the nominative, except in class III singular, where it has its own ending. I leave aside the differen-

tial object marking in class I, where animates have an accusative ending that is not copied from the nominative cell, but rather from the more marked genitive. Similarly, in plural, class I takes an accusative plural that is not identical to the nominative plural that it takes from class IV, plausibly due to a tendency to pick a more distinctive marking.

Assume further that class II has a mid vowel (V_{mid}) as its theme vowel, class III simply a vowel (V), and class IV *i*. By default, V_{mid} is realised as *o* (as confirmed by its realisation after a vowel),¹⁷ but after palatal consonants it gets realised as *e*. By default, V is realised as *a*. When the case ending starts with a vowel, in those forms that attach with a theme vowel, the theme vowel remains in the form of a zero vowel, and blocks the phonological interaction of the stem with the suffix. In some forms this is subject to variation, as illustrated in (17), where speakers of one grammar do and speakers of the other do not (drop the zero theme vowel and) palatalize final velars in class II in front of endings with an initial front vowel.¹⁸

- (17) pazuh-ima → %pazusima / %pazuhima (i.e. pazusima / pazuhVima)
klupk-ima → %klupcima / %klupkima (i.e. klupcima / klupkVima)

If all observable instances of syncretism are coded, we arrive at **table 9**, where all instances of syncretism between declension classes are marked by reference to the declension class and by the background colour in the respective cell, and endings are otherwise labelled according to their primary feature content (theme vowels are indexed for the class). The table is purely descriptive, for the purpose of establishing the amount of intra- and interclass syncretism in each class. No theoretical significance is intended (e.g. how the instances of syncretism emerge is not implied), assuming without further evidence that all various approaches to morphology available can derive it one way or another.

¹⁷ I am grateful to Marko Simonović (personal communication) for this piece of evidence, as well as that in (17).

¹⁸ See Arsenijević et al. (2021) for the same effect of a theme vowel without a full vocalic realisation preventing the preceding consonant from undergoing palatalization in the verbal domain, as illustrated in (i).

(i)

za-jah-a-ti	→	za-jah-V-iv-a-ti	→	zajahivati / *zajašivati
hind-ride-TH-INF		hind-ride-TH-IPF-TH-INF		
‘to mount.PRF’		‘to mount.IPF’		

Table 9 Sebo-Croatian declension class system re-analysed

	C13Sg	C12Sg	C11Sg	C14Sg	C13Pl	C12Pl	C11Pl	C14Pl
NOM	Th ₃	Th ₂	Class4	∅	Pl	Pl	Class4	Th ₄
GEN	Th ₃ -Acc	Nom	Class4	Nom	Nom	Nom	Class3	Nom
DAT	Th ₃ -Pl	Th ₂ -Pl	Class2	Th ₄	Class2/4	Plx2	Class2	Plx2
ACC	Dat	Th ₂ -Dat	Class2	Th ₄	Th ₃ -Inst	Th ₂ -Class4	Class4	Th ₄ -Inst
INST	Th ₃ -Inst	Th ₂ -Inst	Class2	Th ₄ -Inst	Th ₃ -Inst	Th ₂ -Class4	Class4	Th ₄ -Inst

As the table shows, class III only has one syncretic slot, genitive plural, where it takes a class II or class IV ending.¹⁹ Class II ending is the default, and class IV ending is conditioned on particular phonological environments (see e.g. Simonović, Baroni 2014). The selection of the class IV ending does not violate the hierarchy. The default ending is taken from the closest declension class. When a phonological context requires a different ending, the alternative is taken from the next closest class with a different ending. As class I is syncretic with class II in this form, the only remaining choice, i.e. the closest declension class with a different ending for genitive plural, is class IV. Class III has the lowest amount of syncretism within itself and with other classes, and the highest number of different own endings. Class IV only participates in syncretism relations as a donor.

Other interesting generalisations include that nominative has no ending in any singular form, but while in classes II and III it involves the theme vowel of the class in a strong realisation (i.e. as a full vowel), in class IV it even lacks this component. The instrumental case universally has the ending *-m* in the singular and *-ma* in the plural, except for the singular form of class IV, where it reduces to *-u*.²⁰ Otherwise, class IV has very few endings generally, but also never (observably) reduces the theme vowel, i.e. it generally relies more on the theme vowel than on endings to realise case forms.

There is only one instance of syncretism under this analysis which skips one declension class in the hierarchy: the genitive plural form in class I which is taken from class III. However, since the accusative on the proposed analysis tends to be a function of the nominative rath-

¹⁹ I thank an anonymous reviewer for reminding me of the fact that a number of nouns of this class with stem-final consonant clusters take the ending of class IV.

²⁰ This alternation is also observed in 1st person singular of the present tense, where the ending is *-m*, but several verbs realise the ending as *-u*, as well as between the adjectival and the nominal declension where in classes I and II the former takes *-m* and the latter *-u* in the dative/locative singular (*bel-o-m zid-u* 'white-TH-DAT wall-DAT'). It is obviously far-fetched to make any claims, but it is thinkable that in certain contexts *-m* occurs as the default when *-u* realises the marked alternation.

er than an independent ending, this instance of syncretism is plausibly a property of the function rather than a syncretic ending skipping the hierarchy. For instance, it could be that the accusative poses a requirement for the plural number feature to be visible, which is not satisfied by the two neighbouring candidates, as class IV only has a theme vowel in this slot, which also occurs in the singular, and class II has a deficient plural (see Arsenijević 2017), but is satisfied by class III. The analysis therefore may well feed models with further decomposition and reduction, such as for instance Caha's (2009).

The reason why class I avoid class II nominative in the plural is probably also the reason why both class I and class III take the genitive plural ending from class II. Genitive plural involves a double division, once in the number projection and one more time by the genitive case, as in (16) above. Classes I and III include highly individuated members (e.g. animate and human nouns), and their plural is hence interpreted as a neat division over the restriction. For different possible reasons which may involve avoidance of effective higher order divisions or the fact that classes I and III also have members with messy semantics, a weaker plural is preferred in the context of its double implementation. This is exactly what class II plural does, as it is accommodated to the messy semantics of this class (recall that a majority of its members have messy semantics, in particular as atomised masses or as vague count denotations). I leave a deeper elaboration of this question for future research.

The analysis in table 7 confirms the hierarchical ordering of declension classes as introduced in § 5: IV < I < II < III. Not only is this supported by the patterns of syncretism, where the given order involves no skipping (under a derivational realisation of the accusative), but also the numbers of different endings monotonically decrease, and the occurrences of the theme vowel monotonically increase from left to right.

7 Conclusion

I argued, based on the data from SC, against both views that independently represent both declension classes and grammatical gender as features of the noun, and those that try to derive the declension class from the combination of grammatical gender and other features. The arguments that I put forth include the fact that gender is predictable from the declension class of the noun in almost 96% of the nouns (on a sample of the 4,718 most frequent nouns) while gender needs additional information to distinguish between the classes III and IV; that gender boils down to the declension class of the agreeing item and hence cannot be a more basic property of a noun than its own declension class; and that at least four families of properties corre-

late with declension classes (agreement, natural gender, properties of quantity, expressivity) but none correlates absolutely. This last argument is supported by a detailed quantitative study of the relevant properties on a database of annotated SC nouns.

An alternative model is proposed, where the declension class is assigned to nouns in the lexicon and get copied in agreement from the noun onto the agreeing item. Exceptions emerge when the copied value triggers false presuppositions regarding the natural gender, properties of quantity or expressive content, in which case the default declension class I is inserted instead.

Finally, I offered a novel analysis of the SC declension classes, in which the optimal arrangement to capture the patterns of syncretism and the roles of the theme vowels and case endings yields exactly the hierarchy of markedness postulated in the analysis of the mapping of declension classes to natural gender and properties of quantity: $IV < I < II < III$.

Bibliography

- Alsina, A.; Arsenijević, B. (2012a). "Hierarchies and Competing Generalizations in Serbo-Croatian Hybrid Agreement". Butt, M.; King, T.H. (eds), *17th International Lexical Functional Grammar Conference (LFG 2012)*. Bali: Udayana University, 6-22.
- Alsina, A.; Arsenijević, B. (2012b). "The Two Faces of Agreement". *Language*, 88, 369-79.
- Arregi, K.; Nevins, A. (2012). *Morphotactics: Basque Auxiliaries and the Structure of Spellout*. Dordrecht: Springer.
- Arsenijević, B. (2007). "Značenje srpskog imenskog sufiksa -je" (The Meaning of the Serbian Nominal Suffix -je). *Jezik i društvena kretanja* (Language and social transitions). Kragujevac: FILUM, 71-176.
- Arsenijević, B. (2017). "Gender, Like Classifiers, Specifies the Type of Partition: Evidence from Serbo-croatian". *CLS*, 52, 21-37.
- Arsenijević, B. (forthcoming). "Adjectives as a Lexical Category – a Story of Striving for Extension". Mitrović, M.; Panagiotidis P. (eds), *A²: The Lexical Status of Adjectives*. Amsterdam: Jon Benjamins.
- Arsenijević B.; Mitić, I.; Puškar-Gallien, Z. (2021). "Serbo-Croatian Hybrid Gender Agreement: Availability of the Restrictive Use Predicts Agreement" [unpublished manuscript] University of Graz.
- Arsenijević, B.; Gračanin-Yuksek, M. (2016). "Agreement and the Structure of Relative Clauses". *Glossa: A Journal of General Linguistics*, 1(1), 17. <http://doi.org/10.5334/gjgl.12>.
- Arsenijević, B.; Mitić, I. (2016a). "Effect of Animacy and Agentivity on the Processing of Agreement in Serbo-Croatian". Halupka-Rešetar, S.; Martínez-Ferreiro, S. (eds), *Studies in Languages and Mind, Selected papers from third Novi Sad Workshop on Psycholinguistics, Neurolinguistic and Clinical Linguistic Research*. University of Novi Sad: Faculty of Philosophy, 41-77.

- Arsenijević, B.; Mitić, I. (2016b). "On the (In)dependence of Gender with Respect to Number in Agreement with Coordinated Subjects". *Journal of Slavic Linguistics*, 24(1), 41-60.
- Arsenijević, B. (2012). "Semantic Ontology of Deadjectival Nominalizations". *Recherches Linguistiques de Vincennes*, 40, 53-72.
- Baker, M. (2003). "Nouns as Bearers of a Referential Index". *Lexical Categories: Verbs, Nouns and Adjectives*. Cambridge: Cambridge University Press, 95-189. <http://doi.org/10.1017/CB09780511615047.003>. Cambridge Studies in Linguistics.
- Caha, P. (2021). "Modeling Declensions Without Declension Features". <https://doi.org/10.1556/2062.2021.00433>.
- Caha, P. (2009). *The Nanosyntax of Case* [PhD dissertation]. Tromsø: University of Tromsø.
- Corbett, G. (1991). *Gender*. Cambridge: Cambridge University Press.
- Despić, M. (2017). "Investigations in Mixed Agreement: Polite Plurals, Hybrid Nouns and Coordinate Structures". *Morphology*, 27(3), 253-310. <https://doi.org/10.1007/s11525-017-9301-3>.
- Fassi Fehri, A. (2018). *Constructing the Feminine to Mean. Gender, Number, Numerical, and Quantifier Extensions in Arabic*. New York: Lexington Books.
- Fortson, B.W. IV (2010). *Indo-European Language and Culture: An Introduction*. 2nd ed. Oxford: Wiley-Blackwell.
- Hachem, M. (2015). *Multifunctionality. The Internal and External Syntax of D- and W-Items in German and Dutch*. Utrecht: LOT-Publication.
- Halle, M.; Marantz, A. (1993). "Distributed Morphology and the Pieces of Inflection". Hale, K.; Keyser, S.J. (eds), *The View from Building 20*. Cambridge (MA); MIT Press, 111-76.
- Krifka, M. (1989). "Nominal Reference, Temporal Constitution and Quantification in Event Semantics". Bartsch, R.; Van Benthem, A.K.; Van Emde Boas, P. (eds), *Semantics and Contextual Expressions*. Dordrecht: Foris: 75-115.
- Kučerová, I. (2018). "φ-Features at the Syntax-Semantics Interface: Evidence from Nominal Inflection". *Linguistic Inquiry*, 49(4), 813-45. https://doi.org/10.1162/ling_a_00290.
- Landman, F. (2011). "Count Nouns – Mass Nouns – Neat Nouns – Mess Nouns". Glanzberg, M.; Partee, B.H.; Škilters, J. (eds), *Baltic International Yearbook of Cognition, Logic and Communication*, 6. <https://doi.org/10.4148/biyclc.v6i0.1579>.
- Ljubešić, N.; Klubička, F. (2016). "Serbian Web Corpus srWaC 1.1, Slovenian Language Resource Repository CLARIN.SI". <http://hdl.handle.net/11356/1063>.
- Lowenstamm, J. (2014). "Derivational Affixes as Roots: Phasal Spell-out Meets English Stress Shift". Alexiadou, A.; Borer, H.; Schafer, F. (eds), *The Syntax of Roots and the Roots of Syntax*. Oxford: Oxford University Press, 230-59. <https://doi.org/10.1093/acprof:oso/9780199665266.003.0011>.
- Moltmann, F. (2004). "Properties and Kinds of Tropes: New Linguistic Facts and Old Philosophical Insights". *Mind*, 113, 1-41. <https://doi.org/10.1093/mind/113.449.1>.
- Matasović, R. (2004). *Gender in Indo-European*. Heidelberg: Winter.
- Merchant, J. (2014). "Gender Mismatches Under Nominal Ellipsis". *Lingua*, 151, 9-32. <https://doi.org/10.1016/j.lingua.2014.01.008>.

- Mitić, I.; Arsenijević, B. (2019). "Plural Conjuncts and Syncretism Facilitate Gender Agreement in Serbo-Croatian: Experimental Evidence". *Frontiers in Psychology*, 10, 65-79. <https://doi.org/10.3389/fpsyg.2019.00942>.
- Müller, G. (2004). "On Decomposing Inflection Class Features: Syncretism in Russian Noun Inflection". Müller, G.; Gunkel, L.; Zifonun, G. (eds), *Explorations in Nominal Inflection*. Berlin: Walter de Gruyter, 189-228. <https://doi.org/10.1515/9783110197501.189>.
- Nesset, T. (1994). "A Feature-Based Approach to Russian Noun Inflection". *Journal of Slavic Linguistics*, 2, 214-37.
- Potts, C. (2007). "The Expressive Dimension". *Theoretical Linguistics*, 33, 165-97.
- Privizentseva, M. (2020). "Declension Tracks Gender: Insights from Mixed Agreement in Russian". Talk given at NELS 51. <https://bit.ly/3rhvGfC>.
- Puškar, Z. (2017). *Hybrid Agreement: Modelling Variation, Hierarchy Effects and Phi-feature Mismatches* [PhD dissertation]. Leipzig: University of Leipzig.
- Puškar, Z. (2018). "Interactions of Gender and Number Agreement: Evidence from Bosnian/Croatian/Serbian". *Syntax*, 21(3), 275-318. <https://doi.org/10.1111/synt.12154>.
- Simonović, M. (2020). "Categories, Root Complexes and Default Stress: Slovenian Nominalizations Revisited". *Linguistica*, 60(1), 103-17. <https://doi.org/10.4312/linguistica.60.1.103-117>.
- Simonović, M. (2015). *Lexicon Immigration Service - Prolegomena to a Theory of Loanword Integration*. LOT Publication 393.
- Simonović, M.; Arsenijević, B. (2014). "Regular and Honorary Membership: On Two Kinds of Deverbal Nouns in Serbo-Croatian". *Lingue e linguaggio*, 13(2), 185-210.
- Simonović, M.; Baroni, A. (2014). "Lexicon, Markedness and Grammar in the Serbo-Croatian Wobbly a". Stanković, B.; Janić, A. (eds), *SinFoniJA 6 Proceedings*, 217-42. https://izdanja.filfak.ni.ac.rs/zbornici/2019/download/1878_4a637f0f1783cc70d10b818a1ebe29f6.
- Starke, M. (2010). "Nanosyntax: A Short Primer to a New Approach to Language". *Nordlyd*, 36(1). <https://doi.org/10.7557/12.213>.
- Stevanović, M. (1989). *Savremeni srpskohrvatski jezik* (Contemporary Serbo-Croatian Language). Belgrade: IRO Naučna knjiga.
- Sudo, Y.; Spathas, G. (2019). "Natural Gender and Interpretation in Greek: Comments on Merchant (2014)". *Glossa: A Journal of General Linguistics*. <https://doi.org/10.5334/gjgl.1173>.
- Villalba, X. (2009). "Definite Adjective Nominalizations in Spanish". Espinal, M.T.; Leonetti, M.; McNally, L. (eds), *Arbeitspapier*, vol. 124. Konstanz: Fachbereich Sprachwissenschaft, Universität Konstanz, 139-53.
- Wechsler, S.; Zlatić, L. (2003). *The Many Faces of Agreement*. Stanford: Center for the Study of Language and Information.
- Wechsler, S.; Zlatić, L. (2012). "The Wrong Two Faces". *Language*, 88, 380-7.
- Willer-Gold, J.; Arsenijević, B.; Batinić, M.; Čordalija, N.; Kresić, M.; Leko, N.; Marušić, F.; Milićev, T.; Milićević, N.; Mitić, I.; Nevins, A.; Peti-Stantić, A.; Stanković, B.; Šuligoj, T.; Tušek, J. (2016). "Morphosyntactic Production of Coordination Agreement in South Slavic – A Comparative Study". *Journal of Slavic Linguistics*, 24(1), 187-224.