

Regular and honorary membership: On two kinds of deverbal nouns in Serbo-Croatian¹

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1. Introduction

Serbo-Croatian² (henceforth, S-C) deverbal nouns derived using the suffix *-VV.je* (vowel length on the preceding syllable + segmental content *je*) show a striking prosodic and semantic dichotomy, which is correlated with verb aspect and productivity (Arsenijević 2010). We illustrate this dichotomy using the examples in (1).

The nominalisations derived from imperfective verbs display:

- (a) full productivity (i.e. can be derived from any imperfective verb),
- (b) semantic transparency, and
- (c) a prosodic pattern which already exists in the paradigm of the verb.

The nominalisations derived from perfective verbs:

- (a) can be derived only from a subset of the S-C perfective verbs (1c),
- (b) tend to have lexicalised (shifted, non-transparent) semantics³, (1a-b) and
- (c) always introduce a prosodic pattern which does not exist in the paradigm of the verb: a rising span over the two final syllables.

(1) Imperfective verbs nominalised		Perfective verbs nominalised	
a. priznAAvAti	- priznAAvAAnje	a'. prIznAti	- priznAAnje
admit ^{IMPF}	admitting	admit ^{PERF}	admittance
			/ public recognition
b. rješAAvAti	- rješAAvAAnje	b'. rijEEšIti	- rješEEnje
solve ^{IMPF}	solving	solve ^{PERF}	solution
			/ resolution (admin.)

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² We are using the term Serbo-Croatian for the polycentric standard language which functions as the national and official language of Bosnia-Herzegovina (under the names 'Bosnian', 'Croatian' and 'Serbian'), Croatia (under the name 'Croatian'), Montenegro (under the name 'Montenegrin') and Serbia (under the name 'Serbian'). This unification of the four and the use of this term are by far the most common solutions in the international linguistic literature.

To be sure, it is by no means our intention to amalgamate only the national languages of Serbia and Croatia by using this term. We are also by no means opposed to other linguists using the terms they deem suitable. In this sense, all the generalisations made in this paper may be quoted as valid for 'Bosnian', 'Croatian', 'Montenegrin' and 'Serbian'.

³ Throughout the paper, we use the term lexicalised for complex lexical items which have lost their compositional semantics in favour of a rather idiomatic meaning.

c. sAAdIti plant ^{IMPF}	-	sAAdEEnje planting	c'. zasAAdIti plant ^{PERF}	-*zasadEEnjE
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This paper aims at providing a detailed empirical assessment of *-VV,je* deverbal nominalisations in S-C, and an analysis which accounts for the phonological and semantic patterns observed, and offers a correct representation of the suffix(es) involved. We argue that the match between prosodic patterns and semantic properties of the derived nouns has a role in delimiting the domain of the paradigm of the verbal stem, and, consequently the verbal domain. More specifically, we show that a particular prosodic pattern which never occurs in the verbal paradigm plays a role in marking that a particular morphological complex has been structurally flattened, assigned lexicalised semantics, and hence behaves as a new simplex nominal stem with an own paradigm.

Our analysis has deep consequences for the theory of paradigms. We are using the independently justified constraint family Lexical Conservatism (proposed in Steriade 1997), which is conceived as a force opposing the introduction of new allomorphs into the lexicon. As we will show, this concept can be put to use to model different levels of connectedness in the lexicon, and to make clear predictions on how forms converge and diverge in time. More specifically, Lexical Conservatism will be shown to be quite relentless when it comes to prosodic shapes and segmental modifications within paradigms, but much less so when new forms leave the paradigm of their base. Moreover, under specific circumstances, when a new lexical item formed from a verbal stem obligatorily leaves the paradigm (the process which we term ‘forced lexicalisation’), mechanisms are at work which make sure that its prosody is different from that of the verb forms, thereby providing a clear marking of its non-paradigmatic status. The emergent picture is that of a coconut-like architecture of the lexicon in respect of productivity. Its core contains ‘soft’ stems / patterns / constructions which form domains of paradigmatic derivations, characterised by being: (a) maximally productive, (b) semantically transparent and (c) phonologically non-demanding. The outer layers involve the domains of increasingly constrained productivity, with idiosyncratic semantics and prosodic patterns imposed by suffixes.

The paper is organised as follows. Section 2 introduces the central empirical issue of the paper by discussing the existing accounts of S-C deverbal nominalisations in traditional grammars and resolving some of the methodological issues concerning the representations of S-C prosody and paradigms. Section 3 brings a detailed overview of the behaviour of the suffix *-VV,je* in S-C. We are showing how the different derivational patterns in which the suffix participates constitute a continuum in terms of semantic transparency, prosodic dominance and productivity with one clear cut-off point: it is only with imperfective verbs that *-VV,je* combines productively, with predictable semantics and recessive prosody. This is, we argue, the single domain in which the suffix *-VV,je* is paradigmatic. We also provide an analysis of the prosodic pattern which categorically surfaces in deverbal nouns based on perfective verbs (a right-aligned rising span),

arguing that thing pattern is the post-lexical pattern for this class of nouns (where there is prefinal length, in this case coming from the suffix). This analysis is then additional evidence that perfective verbs constitute separate lexical items and fall out of the paradigm of the verb. In section 4, we consider a range of nouns displaying the non-paradigmatic prosodic pattern showing how in each case there are good reasons to assume that they are separate lexical items, unrelated to verbal paradigms. Section 5 concludes the article and examines some theoretical consequences.

2. Traditional analyses and basic assumptions

2.1 Previous analyses

The first issues to set clear for any analysis are a) whether the ending employed in nominalisations is, as we argue, *-VV.je*, added to the passive participle which always ends in *-n* or *-t* (the combinations *n+j* and *t+j* in S-C are fused into *nj* [ɲ] and *ć* [tɕ], respectively), or, as most traditional grammars have it: *-nje/-će* added to verb stems, and b) whether the nouns derived using these suffixes are members of the paradigm of the verb or new words with their own paradigms.

The class of nominalisations examined here are one of the typical problematic cases for the division between inflectional and derivational morphology. They seem to both belong to the paradigm of the verb, and introduce new paradigms of their own, in particular their declensions, which are by definition not included in verbal paradigms. Reviewing the descriptive grammars of S-C, Kovačević (2006) summarises that most of them analyse *-nje/-će* as one/two of the many S-C nominalising suffixes. There are, however, also grammars which consider *-nje/-će* nominalisations as belonging to both verb inflection and noun derivation (Klajn 2003), and one reference even considers these deverbal nouns as part of verb conjugation (Brabec et al. 1968).

The central argument in support of setting the deverbal nouns outside of the verbal paradigm is their nominal nature, i.e. their own nominal paradigm. If a deverbal noun is a member of the paradigm of the verb, then its case forms are also members of the verbal paradigm. As by definition case is a feature of the nominal paradigm, and not of the verbal paradigm, then deverbal nouns are not part of the paradigm of the verb. The problem with this view is that participles also have cased forms, but they must be paradigm members, as they take part in building complex verb forms (e.g. the perfect tense, the passive voice etc.).

The central argument of the opposite camp is the fact that the distribution of the variants of the nominalising suffix (together with the preceding vowel), *-(a/e)-nje* and *-(u/e)-će*, segmentally (though not prosodically) fully matches the distribution of the variants of the passive participle suffixes *-(a/e)-n* and *-(u/e)-t*. Moreover, there is a more broadly used nominalising suffix *-VV.je*, yielding exactly the morpho-syntactic and semantic effects observed in deverbal nominalisations *-(nominalising words or phrases, deriving semantically homogeneous nouns etc.)*.

Another point of division is the interpretation of the fact that *-nje/-će* deverbals are more productive than the passive participle from which they appear to be derived. In particular, unergative and unaccusative verbs do not form passive participles, but they do derive *-nje/-će* nouns.

(2) *-nje/-će* nouns from verbs without the passive participle form

a.	zeva-ti yawn-Inf	*zeva-n yawn-PPcpl	zeva-n(-)je yawning
b.	vrišta-ti scream-Inf	*vrišta-n scream-PPcpl	vrišta-n(-)je screaming
c.	svanu-ti rise-Inf (sun)	*svanu-t rise-PPcpl	svanu-t-je > svanuće rising (of the sun)

The camp that analyses *-nje/-će* as suffixes takes this as evidence that deverbals do not derive from the passive participle, as even the verbs that do not have passive participles can derive the respective deverbals. As an analysis is also possible under which the suffix *-VV.je* rescues the derivation (e.g. by filling in for the missing direct object necessary for the derivation of the passive participle), this argument cannot be taken as decisive.

The data in (2) can also be used as additional evidence in favour of counting deverbals as members of the paradigm of the verb - the fact that there are verbs that derive *-nje/-će* deverbals but not passive participles implies that, at least in the domain of imperfective verbs, deverbals are more productive than passive participles. Since passive participles are agreed to belong to the verbal paradigm, and since paradigm members tend to be more productive than non-members, then deverbals qualify as more prototypical paradigm members than passive participles.

At this point, however, the prosodic patterns occurring in the passive participles and deverbals can be used as a counterargument – the prosodic patterns which occur in the passive participle are always attested elsewhere in the verbal paradigm, whereas there are nominalisations which introduce a prosodic pattern foreign to the verbal paradigm. These nominalisations are all and only the nominalisations derived from perfective verbs. We will use this as an argument for departing from the existing accounts and distinguishing between two types of nominalisations – arguing that the aspect of the base verb predicts the paradigmaticity of the deverbals.

Having evaluated the most relevant arguments, we follow Brabec et al. (1968), Klajn (2003) and Arsenijević (2007), and take that deverbals under discussion are derived from passive

participles by the suffix *-VV.je* (hence we refer to them as *-VV.je* deverbal nominalisations), and that in the default case they are members of the verbal paradigm. We argue, however, that the latter point holds with a restriction to imperfective verbs only. In other words, *-VV.je* nominalisations derived from perfective verbs systematically leave the paradigm of their source verbs. The specific lexical and semantic behavior of *-VV.je* nominalisations of perfective verbs is then a consequence of their leaving the paradigm of the verb, i.e. forming a nominal paradigm of their own.

2.2 Technical and terminological issues

In this section we resolve the technical issues concerning S-C prosody and the structure of paradigms.

The traditional view is that there are four ‘accents’ in S-C, differentiated by length and contour.

(3) Traditional diacritics for S-C accents and the notation used here (between brackets)

short rising: <i>vòda</i> (<i>vOdA</i>) ‘water-nominative’	short falling: <i>vòdu</i> (<i>vOdu</i>) ‘water-accusative’
long rising: <i>túga</i> (<i>tUUgA</i>) ‘sorrow’	long falling: <i>škôla</i> (<i>škOOla</i>) ‘school’

The rising accents are tonal spans over the accented syllable (which also hosts stress) and the syllable following it. In the falling accents, on the other hand, both stress and tone are restricted to a single syllable. All generative analyses of S-C prosody (for a recent overview, see Werle 2009) share a few important assumptions. First, the surface rising spans imply underlying tones on the rightmost syllable of the span, so that *vòda* (*vOdA* in the notation used here) is analysed as /*voda_H*/. Whenever there is an underlying tone hosted by a non-initial syllable, it will create a rising span over the originally tone-bearing syllable and the one preceding it (hence *vòda/vOdA*) and the stress will be located on the left syllable of the span. This, in combination with the general ban on final stress explains why all non-initial accents are rising (at least in native words), so that a form like **vodA* is excluded. This is also the reason why minimal pairs between rising and falling accents can only occur on initial syllables (e.g. *vEčEra* ‘dinner-nominative’ vs. *vEčera* ‘have dinner-3rd person aorist’). Second, the falling accents, which can occur only on the initial syllable of a word, are the underlying Hs on that syllable, so that *vòdu* (*vOdu*) corresponds to /*vo_Hdu*/. Finally, the initial falling accent is assigned post-lexically to words which have not acquired a stress/tone in the derivation (Inkelas & Zec 1988, Zec 1999). Consequently, /*vo_Hdu*/ corresponds to the toneless /*vodu*/ on yet a deeper level. In section 3.3., we will show that some refinement is necessary in the theory of post-lexical prosody, and present some arguments that the right-aligned rising span is the post-lexical pattern when the underlying representation of the stem has a long final vowel (e.g. in *priznAA_{nj}E* in 1a).

Present paper looks at S-C prosody from the perspective of a model which is focussing on surface prominence and how it is copied throughout paradigms. For this reason, we are using the

following format to represent S-C prosody: capital letters are used to mark all the syllables which get surface prominence (stress and tone) and double vowels to mark long vowels. Note that lone capitalised vowels (the falling accent, where tone and stress co-occur) will be encountered only on the first syllable (in native words). Any two adjacent capitalised syllable nuclei stand for a rising span with the stress on the leftmost syllable of the span. In sum, the capital letters can be read as indicators of tone-bearing syllables, whereas the distribution of stress is predictable from that of tone (e.g. *tatAtA* stands for *ta'tAtA*, whereas *tAtata* stands for *'tAtata*).

(4) Representations of S-C tones used here, preceded by the corresponding underlying structure with marked Hs

- (tata_Hta →) tAtAta – short rising span over first and second syllable
- (taata_Hta →) tAAAta – long rising span over first and second syllable
- (tatata_H →) tatAtA – short rising span over second and third syllable
- (tataata_H →) tatAAAtA – long rising span over second and third syllable
- (tatata → ta_Htata⁴ →) tAtata – short falling accent on the first syllable
- (taatata → taa_Htata →) tAAatata – long falling accent on the first syllable

A brief clarification is also due in respect of our understanding of the notion of paradigm. In Arsenijević & Simonović (2013Onli, 2014SinFo), we introduced a somewhat non-traditional concept of paradigm, orthogonal to the notions of inflection and derivation, and rather based on the properties of productivity and compositionality. On this view, paradigms are bound to stems, and the paradigm of a stem is the maximal domain of forms derived from that stem, within which the stem shows systematic productivity (possibly restricted by grammatical features, but without idiosyncratic gaps) under semantic transparency (i.e. compositional derivation). As a consequence, a paradigm may have a complex hierarchical structure, in the sense that two distinct complex stems S' and S'' may be derived from a simpler stem S, yielding a situation in which the paradigms P' and P'' of S' and S'' respectively, both appear as sub-paradigms of the macro-paradigm P of the stem S.

(5) An illustration for the hierarchical organisation of paradigms

Stems:	S: glEdaa	S': glEda-l (> glEdao)	S'': glEdaa-n
	V-stem	active participle stem	passive participle stem
Paradigms (P' ⊃ P & P'' ⊃ P):	P	P' (act. pcpl. paradigm)	
	P'' (pass. pcpl. Paradigm)		
Further derivations:	glEdaa-h	glEda-l-e	glEdaa-n-a
	watch-Impf1Sg	watch-APcpl-NomFPl	watch-PPcpl-NomFSg
	'watch' (Impf)	'watch' (APcpl)	'watch' (PPcpl)

⁴ We refer the interested reader who is wondering about rationale behind the assignment of the initial high tone to toneless words to Zec & Zsiga (2009) for a recent account.

gledaa-m watch.1Sg 'I watch'	glEdA-l-ac watch-APcpl-N _{Ag} 'watcher'	glEdaa-n-je watch-PPcl-N _{Ev} 'watching'
glEda-ti watch-Inf 'to watch'	glEda-l-iište watch-APcpl-N _{Loc} 'room for spectators'	gledAA-n-ost watch-PPcl-N _{Prop} 'property of being watched'

3. Suffix -VV_{je} and the deverbal nominalisations in S-C

3.1 Suffix -VV_{je} in S-C

As for the semantic content of -VV_{je}, we follow Arsenijević (2007) in treating its meaning in terms of a universal grinder: it takes a predicate over (count!) individuals and gives back a predicate over masses. Morphosyntactically, S-C suffix -VV_{je} is a nominalising suffix which combines with nouns, adjectives, NPs, PPs and passive participles to derive nouns with particular semantic and morpho-syntactic properties.

(6)	-VV _{je} noun	related word/phrase
a.	grAAAn-je 'branch' (collective)	grAAAn-A 'branch' (NomSg)
b.	poštEEn-jE 'honesty'	pOštEn 'honest'
c.	svet-O-sAAv-lje / svEt-o-saav-lje 'the way of saint Sava'	svEEtii SAAvA 'saint Sava'
d.	tr-O-knjIIž-je 'three volume set'	trII knjIge 'three books'
e.	prEEd-sOOB-lje 'anteroom'	pred sOboom / prEd sOboom 'in front of the room'
f.	pIIsAAAn-je 'writing'	pIIsaan 'written'

When combined with nouns, the suffix derives collective plurals. As the examples in (7) show, such plurals always have a prosodic pattern which is different from that displayed by the singular and regular plural form.

(7)	noun	regular plural	collective plural
a.	kAmen-a 'stone-Gen'	kAmen-ov-i 'stones'	kAmEEn-je 'stones'

b. pRsten	pRsten-ov-i	pRstEEn-je
‘ring-Gen’	‘rings’	‘stones’
c. prUUt-A	prUUt-Ov-i	prUUt-je> prUUće
‘stick-Gen’	‘sticks’	‘stones’

With other categories, *-VV.je* derives collective nouns (i.e. with the grammatical properties of mass nouns), which show a tendency to receive idiomatic, possibly count interpretations – as is the case in (6d-e) and a prosodic pattern which cannot be predicted from the prosody of the base. In terms of prosody, the only exceptionless generalisation that can be made is that the syllable preceding *-je* is always long. This is why we represent this suffix as *-VV.je*, thus specifying that the length of the preceding syllable is part of its representation.

In most cases, the suffix is also stress/tone-affecting. The only exceptions are deverbal nominalisations from imperfective verbs (as discussed in more detail in section 3.2).

We argue, relying also on the discussion in Arsenijević & Simonović (2013), that the stress/tone attracting capacity of the suffix matches its use in unproductive patterns. These are the derivations in which the resulting stems are no longer members of the paradigms of the bases. The stress-attracting property of the suffix in those cases marks that the derived forms establish new paradigms, i.e. that they stand at the top of their own hierarchical paradigm domain. Note that even the matching English translations to the illustrating examples involving deadjectival nominalisations in (8) are non-paradigmatic: both are Latinate, and the one in (8b) involves a stem which even segmentally differs from the one in the adjective.

(8)	original stem	non-member (idiosyncratic)	member (paradigmatic)
a.	pOštEn	poštEEnjE	pOštEnoost
	‘honest’	‘honesty’	‘honestness’
b.	OčaaJan	očajAAAnjE	Očajnoost
	‘desperate’	‘despair’	‘desperateness’

The implication of the phonological behaviour of *-VV.je* is thus that the paradigmatic domain of the suffix (i.e. the domain in which it derives nouns which remain members of the paradigm of the base) are passive participles of imperfective verbs. Indeed, in this domain it is highly productive and strictly interpreted with the homogeneous semantics.

In the other domains (nouns, adjectives, NPs, PPs) – it is highly idiosyncratic: a restricted number of stems derived from nouns, adjectives, NPs and PPs may combine with the suffix *-VV.je*, illustrated in (9a-c), and the interpretations in most of these cases are clearly idiomatic, see the examples in (9d-f).

- (9) a. stol-je *stolje
table-je
- b. bez-hran-je *bezhranje
without-food-je
- c. šesto-kuć-je *šesto-kuć-je
six-house-je
- d. sa-zvEEzd-je sAAzvEEžde
with-star-je ‘star constellation’
- e. bez-pUUt-je bEspUUće
without-road-je ‘wilderness’
- f. četvoro-vlAAst-je četvorOvlAAšće
four-authority-je ‘tetrarchy’

Let us now take a closer look at the behaviour of the suffix *-VV.je* in deverbal nouns – the narrow topic of this paper.

3.2 Deverbal -*VV.je* nouns in S-C

As we have already concluded in section 2, the segmental content of the deverbal noun is derived concatenating the passive participle of the verb and the collective/mass suffix *-VV.je*

(10) Verb	PParticiple	Suffix	Deverbal Nominalisation
voljeti ^{IMPF} ‘love’	voljen	+ <i>je</i>	voljenje
pridruživati ^{IMPF} ‘conjoin’	pridruživan	+ <i>je</i>	pridruživanje
pridružiti ^{PERF} ‘conjoin’	pridružen	+ <i>je</i>	pridruženje
uganuti ^{PERF} ‘sprain’	uganut	+ <i>je</i>	uganuće

If the prosodic behavior of the nominalisations is taken into consideration, it becomes obvious that they are not as homogeneous a class as their morphology suggests. Prosody follows the division along the dimension of aspect. The generalisation that can be derived is that when derived from an imperfective verb, the deverbal noun copies the prosodic pattern (in particular the distribution of the tone) of another verb form (in the examples in (11) either the infinitive or the passive participle).

(11) Imperfective verb	PParticiple	Suffix	Deverbal Nominalisation
vOljEti ‘love’	vOljen	+ <i>VV.je</i>	vOljEEnje/vOljeenje
pridrUžIIvAti ‘conjoin’	pridrUžIIvaan	+ <i>VV.je</i>	pridrUžIIvAAnje
rješAAvAti ‘solve’	rjEšAAvaan	+ <i>VV.je</i>	rješAAvAAnje

When derived from a perfective verb, the prosody of the deverbal noun is never the same as that of any form in the verb's paradigm

(12) Perfective verbs	PParticiple	Suffix	Deverbal Nominalisation
pridrUUžIti 'conjoin'	prIdrUUžen	+ VV. <i>je</i>	pridružEEEnjE 'accession'
ugAnUti 'sprain'	UgAnuut	+ VV. <i>je</i>	uganUUĆE 'sprain'
rijEEšIti 'solve'	rijEEšen	+ VV. <i>je</i>	rješEEEnjE '(re)solution'

Another division is observed in respect of the opposition between semantic transparency and idiosyncrasy. While the nouns derived from the imperfective verbs have a transparent gerund semantics, denoting the state or process for atelic verbs and the process component for the telic imperfective ones, the nouns derived from perfective verbs have resultative (i.e. factitive) semantics (Ignjatović 2013) and display a strong tendency to be lexicalised, i.e. to receive idiomatic interpretations. This points in the direction of the following generalisation:

(13) The nouns derived from imperfective verbs are members of verbal paradigms, whereas the ones derived from perfective verbs form paradigms of their own.

The effect of enforcing the prosodic patterns which are attested elsewhere in paradigms (i.e. existing prosodic allomorphs) is fully expected under Lexical Conservatism (Steriade 1997, Simonović 2012), the constraint family which militates against the proliferation of allomorphs. In (14), we provide the full definition of the Lexical Conservatism conditions as proposed by Steriade.

(14) The form of lexical conservatism conditions: Lex (P)

Let $T(\mu)$ be the allomorph of μ appearing in a form under evaluation.

Let $L(\mu)$ be a listed allomorph of μ .

Let P be a phonological property.

$T(\mu)$ is characterized by P only if some $L(\mu)$ is characterized by P .

(Steriade 1997)

Similar observations have already been made in other domains of S-C morphology: deadjectival nominalisations preserve the prosodic pattern of the base adjective within the paradigm, and replace it for a particular fixed pattern otherwise (Arsenijević & Simonović 2013). Arsenijević & Simonović provide a detailed overview of this phenomenon, and present an analysis of the prosody-semantics matches couched in Optimality Theory (Prince & Smolensky 1993).

3.3. The nature of the non-paradigmatic prosodic pattern in deverbal nominalisations

The pattern which surfaces in non-paradigmatic deverbal nouns sweeps away all prosodic information (stress, tone and length) of the stem. As can be read off the examples in (12), even

the distinction between the long and short final syllables of the participles (UgAnuut vs. prIdrUUžen) is neutralised in the nominalisations, presumably because the suffix always lengthens the syllable preceding it. As we already argued in section 3.1., the pattern which arises in all nouns from perfective verbs (rising span over the two final syllables) results from the stress/tone-attracting property of the non-paradigmatic variant of the suffix -VV.*je*. This indeed seem to be the only possible outcome give the general S-C constraints against (a) multiple stressed syllables, (b) more than two syllables carrying H(igh tone), and (c) pre-tonal length.

While it is clear on functional grounds why such a constellation has emerged in a language with much interaction between morphosyntactic and prosodic structures, it still remains a stipulation that the respective variant of the suffix is stress/tone attracting, and it just reformulates the question into: why is the non-paradigmatic domain marked by the stress/tone attracting property on the suffix? In other words, does this mean that S-C has a morpheme for marking non-paradigmaticity?

The question is additionally stressed by the fact that the pattern with a stress/tone-attracting suffix is not generally considered the prosodic default in SBC. If there is a prosodic default in S-C established in the literature, it's the falling accent on the initial syllable: the post-lexical pattern displayed by all the items which lack any tone specification in the lexicon (Zec 1999, Simonović 2012). On the other hand, the stress pattern which emerges in non-member deverbals is the one which occurs in the morphologically simplex nouns with a stem-final long syllable and a H in the underlying representations.⁵

This begs the question why we get *prIdružEEEnjE* and not *prIdruužeenje*, with what is established to be the post-lexical prosodic pattern? We offer two tentative explanations, one rather functional and one formal, leaving their testing and discussion for future work.

Our functional explanation has it that the falling post-lexical pattern would not be able to distinguish between the member and the non-member pattern, since there are relatively numerous verb stems without any tone specification in the lexicon, and which have the initial falling tone in all forms.

(15) H-less verb paradigms

glEdati ^{IMPF}	‘watch’	glEdaan + VV. <i>je</i>	glEdaanje
rAtovati ^{IMPF}	‘be at war’	rAtovaan + VV. <i>je</i>	rAtovaanje

In sum, because assigning the falling pattern to non-member nominalisations would make

⁵ For instance, Zec (1999) makes the distinction between the nouns which have a floating H e.g. /violiiin+a,H/ which surfaces as [violIIInA] ‘violin’ and the ones which have no H /presud+a/ [prEsuda] ‘judgement’.

**prIdruužeenje* prosodically equivalent to *rAtovaanje*, a tone-attracting suffix is an optimal strategy of prosodic differentiation of the derived word from the paradigm it is not a member of, and, as a result *prIdružEEnjE* surfaces. Again, this explains why this kind of constellation would emerge, but it tells little about how it is represented in modern S-C speakers' grammar and lexicon.

Our formal explanation relies on the notion of *forced lexicalisation*, briefly discussed also in Simonović & Arsenijević (2014), which will offer good reasons to reconsider the established post-lexical default.

There is a peculiar gap in S-C prosody, which, as far as we know, has not been spotted in the literature. In the classes which have no bare forms (verbs, feminine and neuter nouns), there are no stems which surface the prosodic pattern of a falling accent followed by one or more unstressed long syllables (of course, unless the lengths are provided by suffixes). What is usually analysed as simplex H-less neuter nouns always displays shapes like *kOsovo*, never like **kOsoovo* (16).

(16) Simplex H-less neuter nouns

kOsovo 'Kosovo' *no internal structure*
lAstovo 'Lastovo' *no internal structure*
Ostrvo 'island' *no internal structure*

All the nouns which have the configuration falling accent + length are derived (17).

(17) Derived H-less neuter nouns

a. <i>glEdaanje</i>	<i>gled+an + VV.je</i>
'looking'	<i>look+PPcpl + je</i>
b. <i>prEdiivo</i>	<i>pred + iivo</i>
'weft'	<i>weave + ivo</i>
c. <i>sklAdiiste</i>	<i>sklad + iiste</i>
'storage'	<i>order + iste</i>

In sum, what we see on the surface gives us no indication as to what a simplex stem of the type /*kosoov+o/* (or /*čekaa+ti/*) would surface as, although it is clear that it gets neutralised with another type of prosodic structure. From the existing accounts, it follows that this neutralised pattern should be the one with an initial falling accent (i.e. that phonology somehow deletes the lexical length). The fact that rising spans headed by a long stressed syllable are ubiquitous in S-C non-paradigmatic domain (see section 4 and Simonović & Arsenijević 2014SinFo) may offer a clue for looking in a different direction. This may mean that there is room for amending the

theory of post-lexical prosody in S-C, to the effect that the pattern in *pridružEEŋE* (rising span over the two final syllables) would be post-lexical in cases where there is pre-final length and no derivational structure. In other words, a lexical item of the type /kosoov+o/, would then surface as [kosOOvO], which is also the optimal output for /kosoov+o, H/ (see footnote 3).

In consequence, *pridružénje* has the representation /pridružeenj+e / (which can also be reanalyzed into /pridružeenje,H/). This in turn is a consequence of the fact that non-paradigmatic nouns undergo forced lexicalisation: they are forced to lose their internal structure and lexicalise as stems. What then characterises non-paradigmatic nominalisations is not a special morpheme they all have in common, but rather the fact that they are all forced to lexicalise as separate items, which, together with the fact that they are all derived using the same suffix -VV*.je*, leads to the same prosodic shape – the rising span aligned with the right edge of the word and headed by a long syllable.

We take the mechanism of forced lexicalisation to be an instantiation of what the literature on grammaticalisation refers to as obligatorification (e.g. Tsai 2006, Norde 2012). This term refers to a component of grammaticalisation consisting in a change from a frequent optional occurrence of a particular class of items in a given context, characteristic of the lexical material, towards obligatory occurrence, property of grammatical items. In the case at hand, obligatorification, i.e. forced lexicalisation, effecting in a one-to-one match between certain prosodic patterns and the complex items bearing it undergoing fusion (and losing any relation to the paradigm of their base), is the crucial step which turned a relatively high probability for a derived item not being member of the paradigm of its base to have modified phonological representations in respect of all the members (due to being less accessible to LC), into an absolute rule, and thus a reliable marking of paradigm non-membership.

Finally, we need to explain why nominalizations of perfective verbs have reached a sufficiently high frequency of lexicalised items to trigger obligatorification. A vast majority of perfective verbs are telic (our corpus examination showed that over 99.97% of occurrences of perfective verbs are telic). On most analyses, the perfective value of the grammatical, or viewpoint aspect, is modelled as a relation between the even time and some perspective time (or reference time), such that the latter temporally follows the former. In other words, it specifies that the eventuality denoted by the VP is viewed from an interval that comes after the eventuality (Comrie 1976, Arsenijević 2006 for S-C). Thus, VPs involving perfective telic verbs result in the fact that the immediately referentially accessible parts of the eventuality are its final parts, i.e. its parts involving the culmination / termination / telos, i.e. the component best referred to as the phase transition (from a range of values involved in the process, for accomplishments, or preparation stage, for achievements, to the result value corresponding to the result state). The imperfective value of the viewpoint aspect is modelled as a relation in which the temporal perspective interval

is within the event time, i.e. for telic verbs – it is within the interval of the process component, for accomplishments, or the preparatory stage for achievements, of the aggregate eventuality.⁶

We can show that this view is correct by looking at the entailments of sentences involving the passive participle (the base for *-VV.je* nominalisations) in (18).

(18) Perfective verbs access the phase transition and imperfective verbs access the process

- a. Vidim da je platno izbjeljeno, #a da nikad nije doseglo punu bjelinu.
 see.1Sg Comp is canvas whitened^{PERF}, without ever reaching the full whiteness.
- b. Vidim da je platno izbjeljeno, a da ga nikad niko nije bijelio.
 see.1Sg Comp is canvas whitened^{PERF}, without anyone ever having whitening it.
 (i.e. it might have become white by miracle, or by an event which is not a bleaching event)
- c. Vidim da je platno bijeljeno, a da nikad nije doseglo punu belinu.
 see.1Sg Comp is canvas whitened^{IMPF}, without ever reaching the full whiteness.
 (i.e. the process of bleaching never reached complete whiteness)
- b. Vidim da je platno bijeljeno, #a da ga nikad niko nije bijelio.
 see.1Sg Comp is canvas whitened^{IMPF}, without anyone ever having whitening it.

The sub-predicate referring to the phase transition component of the aggregate predicate denoted by the VP is a quantized predicate, and the sub-predicate referring to the process component or preparatory stage of the aggregate predicate denoted by the VP is a quantized predicate. Recall that the suffix *-VV.je* derives nominalisations with homogeneous semantics, i.e. it homogeneously refers to the referent of the stem it attaches to. With imperfective verbs, this is straightforward – it refers to the process component of the eventuality. With perfective verbs, however, there is no way to homogeneously refer. The referent is the phase transition – it is a by definition a point in time, with no homogeneously describable component.

In effect, *-VV.je* nominalisations of perfective telic verbs never can be compositionally interpreted. Either the homogeneous semantics of the suffix or the quantized semantics of the stem have to be compromised (coerced). Whichever option taken, the nominalisation derived cannot remain within the paradigm of the verb, as per definition the paradigm presupposes compositionality. While this only holds of telic verbs, the fact that there are barely any perfective atelic verbs guarantees a frequency sufficient to trigger the oblicatorification. One may wonder why the strategy of introducing a different suffix is not resorted to – but as argued in Simonović

⁶ It is also possible that the imperfective VP refers to an unbounded series of iteration of the telic eventuality, where the temporal perspective interval is within the interval taken by the iterations (but overarching at least two iterations so the iteration can be epistemically verified). The semantic consequences for *-VV.je* nominalisations nominalisation are fully equivalent. Perfective VPs cannot refer to iterations. The analysis adopted in this paper also excludes it, as, in the perfective temporal perspective, only one phase transition can be immediately accessible.

& Arsenijević (2013), it is actually more economical to deal with only one suffix, as long as there is marking of its paradigmatic and non-paradigmatic uses. In the present case, this marking consists in the prosodic patterns for the non-paradigmatic domain which is guaranteed to differ from any prosodic pattern found in the paradigmatic domain.

4. Beyond regular nominalisations

In this section, we are adducing some additional support for the distinction between members of paradigms and non-members, showing how the non-member prosodic pattern keeps emerging across cases in which we have reasons to assume dissociation from a paradigm.

4.1. Forced lexicalisation beyond perfective verb stems

There is a sizable class of deverbal *-VV.je* nominalisations in S-C which have the non-member prosodic pattern (i.e. they can be synchronically analysed as derived by a stress/tone attracting suffix, *-VV.je_H*), but which are derived from an imperfective verb, and hence segmentally homonymous with a paradigm-member nominalisation. In such minimal pairs, the sole effect of the non-member prosodic pattern, compared to the member-marking prosody of the member nominalisation, is in marking the derived noun for its standing outside of the paradigm of the stem. The stress/tone-attracting feature of the suffix thus can be analyzed as converting a paradigm member nominalisation into a noun with a lexicalised meaning.

(19) Imperfective verbs nominalising through the non-member pattern

- a. pUtovati^{IMPF} ‘travel’ pUtovaanje ‘traveling’ putovAAnjE ‘trip’
- b. OsjEcati^{IMPF} ‘feel’ OsjEcaanje ‘feeling’ osjećAAnjE ‘sense’
- c. pOštovati^{IMPF} ‘respect’ pOštovaanje ‘respecting’ poštovAAnjE ‘respect’

Here again, one of the effects of lexicalisation is that the noun receives a count interpretation, in spite of the homogenising semantics of the suffix. This massifying semantics is only strictly imposed within the domain of semantic transparency, i.e. within the paradigm. The latter generalisation can be tested by the modifier *cijel* ‘whole’ which is only used with count expressions, more precisely with quantised nominal predicates (homogeneous predicates only combine with *sav* ‘all’).

(20) tokom cijelog putovAAnjA/ *pUtovaanja
 during whole trip / traveling
 ‘during the entire trip’

In terms of our analysis, the stress/tone attracting behaviour of the suffix, which we just analysed as following from a fusion of the suffix and the stem into a new simplex stem, has the effect of relaxing the massifying interpretation of the suffix by setting it out of the paradigm, i.e. out of the domain of strict compositional interpretation.

4.2. Drifting away of the non-members

Although the prosodic shape is by far the most important surface cue for non-membership in paradigms, our model predicts that words which are forced to isellexicalise, i.e. to leave the paradigm of the base can drift away from their original bases in other respects as well. Once out of the bounds of the paradigm, the lexical item is also not subject to LC, and more prone to phonological change. In fact, such a process is welcome on functional grounds, as it strengthens the marking of non-membership.

An effect as described is indeed attested in non-member nominalisations (those which already have non-member prosody) developing additional segmental modifications in respect of the originally derived form, and thus expanding the phonological distance from the paradigm. This process is especially strong in the colloquial language, while the standard remains protected by the very strong prescriptive influence in the S-C linguistic community.

In (21), among the doublets given, the options listed first are becoming dominant in the colloquial usage, while those listed second are sovereign in the standard use. Observe the different segmental make-up of the colloquial variants in respect of the participle from which they are derived (underlined). These modifications are possible due to the disconnection between these forms and the paradigms of the respective stems *razočara-* and *odeli-* (> *odelj*), i.e. due to the fact that what is originally derived as the passive participle has been fused into a simplex stem and thus smuggled out of the auspices of LC, thus becoming more easily affected by phonological change.

(21)

Deverbal nominalisation	Related participle
a. <i>razočar<u>EEnjE</u></i> / <i>razočar<u>AA</u>njE</i> ‘disappointment’	<i>razOOčAAra-an</i> ‘disappoint ^{PERF} -PPcpl’
b. <i>odel<u>EEnjE</u></i> / <i>odelj<u>EEnjE</u></i> ⁷ ‘class’ ‘separation’ / ‘class’	<i>OOdEElj-en</i> ‘separat ^{PERF} -PPcpl’

Expectedly, modifications of this type are never encountered in paradigm member nominalisations, which are still under the full-fledged protection of LC.

⁷ While in the rest of the article we are using the Ijekavian versions of S-C words which contain the reflex of the Common Slavic *ě* ‘yat’ (e.g. *riješiti*, rather than *rešiti*), in this example, we are making an exception, using the Ekavian version of the word and the (once) related participle. This is due to the fact that the non-standard form is by far more frequent in Ekavian S-C, although the form *odjelenje* is not unattested.

4.3. Borrowed verbs

While all biaspectual and imperfective verbs, native or borrowed, allow member nominalisation (22a), there are no borrowed perfective verbs which can be combined with *-VV.je* (22b).

(22) Unavailability of nominalisations from perfective borrowed verbs

- | | | | |
|-------------------------------------------------------------------|---------------------|--------------------------------------|--------------|
| a. <i>šUtati</i> _{IMP} / <i>šutIIrAti</i> _{IMP} | ‘to kick, to shoot’ | <i>šUtaanje</i> / <i>šutIIrAAnje</i> | ‘shooting’ |
| <i>organizIIrAti</i> _{BI} | ‘to organise’ | <i>organizIIrānje</i> | ‘organising’ |
| b. <i>šUtnuti</i> _{PERF} | ‘to kick, to shoot’ | * <i>šutnUUćE</i> | |
| <i>izorganizIIrAti</i> _{PERF} | ‘to organise’ | * <i>izorganizirAAnje</i> | |

This clear and categorical blocking of nominalisations derived from borrowed perfective verbs is further evidence that this type of nominalisation is different in nature from the fully productive nominalisation of imperfective verbs. Moreover, Arsenijević & Simonović (2013) and Simonović & Arsenijević (2014) observe that more generally Latinate and other borrowed (non-Slavic) nominalisations tend not to join the paradigms of their related borrowed verbs. Borrowed deverbal nouns are thus recruited to create nominalisations with a lexicalised, non-member kind of meaning, so that member vs. non-member pairs of the type *šUtaanje*_{MEMBER} / *šutIIrAAnje*_{MEMBER} vs. *šUt*_{NON-MEMBER}, *organizIIrAAnje*_{MEMBER} vs. *organizAAcIIja*_{NON-MEMBER} are created. Simonović & Arsenijević (2014) discuss the mechanisms that secure that the borrowed nominalisations will have stems which even segmentally differ from the stems of the native nominalisations derived from borrowed stems (cf. *šut* vs. *šuta-* / *šutira-* and *organiza-* vs. *organizira-*).

4.4. Borrowed nominalisations in *-nje*

Finally, our account predicts that if any items from another language which segmentally resemble S-C deverbal nominalisations were to land in S-C, they should display the non-member pattern i.e. that they are borrowed as simplex stems with a long prefinal syllable. There is indeed a class of loan nouns in *-nje*, borrowed from Russian/Church Slavonic without the related verb, and therefore unrelated to any existing verbal paradigm in S-C. Expectedly, the all show the non-member pattern.

(23) Borrowed Slavic nominalisations

- | | | |
|--------------------|-------------------------------------------|-----------------|
| <i>sretEEnjE</i> | ‘the Presentation of Jesus at the Temple’ | no related verb |
| <i>vaznesEEnjE</i> | ‘the Ascension’ | no related verb |
| <i>vavedEEnjE</i> | ‘the Presentation of Mary’ | no related verb |

4.5. Beyond S-C

The distinction between member and non-member nominalisations seems present in many languages. Our English glosses seem to point at a similar asymmetry between the nominalisations in *-ing* and *-tion*. Arsenijević and Simonović (2013) discuss a similar

dichotomy in deadjectival nominalisations in Dutch. However, most dichotomies we find in Germanic are of the type discussed in 4.3. (and in more detail in Simonović and Arsenijević 2014): native member nominalisation patterns vs. Latinate non-member nominalisation patterns. While we believe that these oppositions are part of the same generalisation, due to space limitations, in this paper we are focusing on the specialisation in the native domain of the lexicon.

Closer to S-C, we found another case of the specialisation of the type we have discussed. Macedonian, a related language, where there is an aspect distinction comparable to that in S-C, and where stress is fixed (antepenultimate if the word is long enough, otherwise initial), makes a similar distinction by two segmentally different suffixes: *-nje* and *-nie*.

As Friedman (2002: 23) states, “[t]he suffix /-ńe/ derives concrete deverbal nouns from imperfectives [...]; /-nie/ derives abstractions from perfective verbs.” In the same vein, Koneski & Tošev (1950:56) state that “the deverbal nominalisations with the archaic suffix *-nie* are the ones which are derived from perfective verbs”.

(24) Macedonian member vs. non-member deverbal nominalisations

rešavanje	‘an act of deciding’	rešenje	‘decision’	(Friedman 2002)
uveruvanje	‘persuading’	uverenie	‘persuasion’	

The examples in (24) all have S-C cognates which conform to the generalisation we have discussed.

5. Conclusions

Our survey of the deverbal nouns in Serbo-Croatian has shown that the same suffix – *-VVje* – has an ever-applicable version for paradigm members and a more demanding one for word formation. Its paradigmatic function is deriving deverbal nouns with gerund semantics, which is only possible with imperfective verbs in S-C. The non-paradigmatic version covers a variety of functions, from creating deverbal nouns from perfective verbs to accommodating for borrowed nouns in *-nje* which are not related to any S-C verb. What unites all the non-paradigmatic nouns is their tendency to develop idiomatic, unpredictable semantics. On the phonological side, prosody is shown to be sensitive to paradigm membership. As paradigms are special interpretation domains (transparency, inheritance of semantic properties of the stem etc.), prosody of the derived forms closely correlates with their semantics. All member nominalisations show the prosodic pattern attested somewhere in the paradigm, and in all non-member nominalisations, the prosody displays a pattern which does not exist anywhere in the paradigm of the verb: a right-aligned rising span headed by a leftmost long syllable. We have argued that this pattern should be viewed as the post-lexical pattern in the words with a stem-final long vowel.

This view establishes a whole new dimension of LC, a family of constraints originally postulated to model restrictions on proliferation of new allomorphs. LC is modelled as a set of constraints relating a stem and its allomorphs. As members of paradigms often involve contexts in which Markedness constraints favour a modification of the stem, LC keeps the instantiations of the stem sufficiently close to the base representation to preserve the integrity of the paradigm. This makes the underapplication of LC effects a convenient mechanism of marking non-membership of derivationally relatable morphemes. This mechanism most commonly operates in S-C through ensuring that the prosodic pattern of the non-member is different from the prosodic pattern of any of the paradigm members. Its sharp violation of LC marks a lexicalised stem as a non-member of the paradigm of a derivationally related base. An important role in the process of grammaticalisation of the prosodic marking of non-membership was played by a mechanism we referred to as forced lexicalisation, and which we identified with the stage termed obligatorification in the literature on grammaticalisation. In the case at hand, forced lexicalisation was triggered by the fact that a vast majority of perfective verbs involve semantics incompatible with that of the suffix *-VV.je*.

The conspiracy between LC and the dynamics of paradigm (non-)membership has resulted in the organisation of the lexicon that we compare with the structure of the coconut. The lexicon consists of a soft core formed by paradigmatic derivations, in which larger paradigms contain smaller paradigms, with the possibility of the smaller ones containing morpho-syntactic features non-characteristic for their embedders (e.g. case and gender in participles and paradigmatic deverbal nominalisations, which form paradigms embedded into the paradigm of the base verb). These paradigmatic derivations are characterised by being: (a) maximally productive, (b) semantically transparent and (c) phonologically non-demanding. There is also the hard outer part, consisting mostly of loanwords and loanword patterns and other items with highly restricted productivity and lacking semantic transparency. Finally, there is a middle layer of the partially hardened core material. This layer, consisting of lexicalised derived items, has some interaction with the soft core, but lacks its main characteristics of productivity and semantic transparency. Members of this layer have their own paradigms, but these are paradigms consisting mostly from the typical inflection forms, with few derived members. Besides poor productivity and low semantic transparency, both the middle and the outer layer are also characterized prosodic patterns typically imposed by dominant suffixes.

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