

Neo-Štokavian deverbal *je*-nominalisations contain passive participles

MARKO SIMONOVIĆ
University of Graz

ABSTRACT

An analysis is presented for the prosody of four groups of forms (infinitive, present tense, passive participle and the deverbal noun) of the most numerous theme-vowel class in Neo-Štokavian (characterised by the theme vowel *i*). A cyclic analysis of *en*-participles and *je*-nominalisations is proposed, showing that the latter contain the former. As noted in traditional grammars, this approach is challenged by the fact that *je*-nominalisations typically have the prosodic pattern of the infinitive, while the *en*-participle displays a neutralisation of lexical prosody. The analysis demonstrates that *en*-participles are indeed contained in *je*-nominalisations, but do not trigger a phonological cycle in them, which is why tonal contrasts survive.

KEYWORDS Neo-Štokavian · Tone · Passive Participle · Deverbal Nominalisation · Cycle · Phases

1 DEVERBAL NOUNS: *nuđen-je* OR *nud-enje*?

All Slavic languages have deverbal nominalisations derived by a descendant of the Proto-Slavic **-ije* (see Miklosich 1874: 64–69 for a historical reconstruction, and Sussex & Cubberley 2006: 432 for a modern overview). An example from the Neo-Štokavian dialect group of Bosnian/Croatian/Montenegrin/Serbian (henceforth, NŠ) is *nuđenje* [nudzɛɛjɛ] ‘offering’, from *nuditi* ‘to offer’. The suffix in question (in NŠ, *-je*) exists in other contexts, e.g., in collective plurals such as *per-je* ‘feathers, plumage’ from *per-o* ‘feather’. As far as the segmental content is concerned, the base to which the suffix gets added in deverbal nouns is typically an attested form (at least for transitive and unergative verbs): it is the passive participle, in this case *nuđen* [nudzɛn] ‘offered’.

While segmentally everything speaks in favour of analysing the deverbal nouns as derived from passive participles using the suffix *-je*, suprasegmental information presents a challenge for this analysis. In Table 1, three prosodic types of verbs with CVC stems in the *i*-class of verbs are shown, accompanied by specifications of their underlying tonal patterns. In all forms, the high tone (H) is marked using the IPA symbol [tá].¹ Vowel length is marked by doubling, in order to mark the mora on which H surfaces.

Table 1: CVC imperfective verbs in the *i/i* class

	prelinked H	floating H	epenthetic H
	<i>lomiti</i> ‘break.IPFV’	<i>moliti</i> ‘pray.IPFV’	<i>nuditi</i> ‘offer.IPFV’
INF	lomítí	molítí	núdití
PASS.PTCP	lómɫɛn	móɫɛn	núdɛn
DEVERBAL NOUN	lom.łéɛjɛ	mo.łéɛjɛ	núdɛɛjɛ

¹As one of the reviewers notes, in the traditional notation, the same accent mark is used for the so-called long-rising accent. E.g., the traditional notation *ráđiti* ‘work.IPFV.INF’ corresponds to my notation [raadítí]. In order to minimize the confusion, I will use IPA in all forms where H is marked.

Before turning to the distribution of H, note that the affix *je* always lengthens the preceding vowel ([lom.ɫɛn] vs. [lom.ɫɛɛɛɛ]). This actually speaks in favour of the unified *je*-analysis, since the same lengthening can be observed in, e.g., collective plurals (e.g., [pɛr-o] ‘feather’ vs. [pɛɛr-je] ‘feathers, plumage’).

Turning now to the distribution of H, several observations can be made. The prelinked type and the floating type (*lomiti* and *moliti*) are totally neutralised in the forms presented here. However, they clearly differ from the third, epenthetic type. The epenthetic type has H on the root (*nud*) in all forms, whereas the two other types have the H on the syllable following the root (*lom* and *mol*) in the infinitive and in the deverbal noun. In the passive participle, there is a total neutralisation between the three types: they all have H on the root. Crucially for our discussion, if the passive participle is an intermediate step in the derivation of the deverbal noun, this loss of prosodic contrast in the passive participle presents a problem for the *je*-analysis. Such an account has to show that the prosodic neutralisation on the passive-participle cycle somehow gets undone on a later cycle.

In the traditional literature, the prosodic pattern has been used to argue against a *je*-analysis as well (see, e.g., Stevanović 1979: 470). Specifically, Stevanović argues that, given the fact that *je*-nominalisations have the prosodic pattern of the infinitive, they are ‘more related to the infinitive’ and therefore more probably derived directly from it. While certainly targeting the same data set, note that the issue tackled here is not exactly the same as that raised by Stevanović. The focus in this paper is not on surface similarity, but on the preservation of contrast which, once lost, cannot be ‘unlost’ at a later stage of the derivation.

I will present an analysis which derives all the observed effects in a single phonological grammar and without any lexical specification on affixes. The key feature of the proposed analysis will be that the passive participle, while contained in the *je*-nominalisation, does not trigger a phonological cycle in it, which is why any neutralisation in the surface form of the passive participle fails to affect the phonology of the nominalisation.

The remainder of the article is organised as follows. In Section 2 the basic features of Neo-Štokavian (verb) prosody are outlined and the data set which will be accounted for by the phonological analysis is presented. Section 3 brings the phonological analysis of the present-tense and infinitive forms, introducing the constraint set that will be used throughout the analysis. In Section 4, the passive participle will be analysed, showing that this form contains a (verbal) cyclic domain. Section 5 brings an analysis of the deverbal noun. Section 6 concludes the paper, summarising the established cyclic domains and formulating the desiderata for a syntactic analysis of these data.

2 NEO-ŠTOKAVIAN VERB PROSODY

Neo-Štokavian is traditionally described as a pitch-accent system with distinctive vowel length. Two types of tonal accents are traditionally distinguished: falling (monosyllabic) and rising (disyllabic). In the falling accents, stress and high tone (H) co-occur, e.g., in [ˈráadii] ‘work.PRS.3SG’ and [ˈnúdii] ‘offer.PRS.3SG’. Falling accents are restricted to the initial syllable of the word. Rising accents were long assumed to have H over two syllables (e.g., Inkelas & Zec 1988, Zec 1999, Becker 2007), but recently Zsiga & Zec (2013) have argued that the first syllable of the rising accents only carries stress, for instance in [ˈtaajii] ‘conceal.PRS.3SG’ and [ˈlomii] ‘break.PRS.3SG’.

The distribution of stress is predictable from that of H. If H is non-initial, stress will be on the preceding syllable. If H is initial, stress and H will co-occur. This explains why the falling accents can only occur on the first syllable, whereas the rising accents can occur on any syllable (but cannot start on a final syllable). Since the distribution of stress is predictable, the representations used here will only mark H.

In this paper, I focus on the prosody of verbs in Neo-Štokavian, specifically on the largest and the most variegated theme-vowel class, that with the theme vowel *i* in all forms. Verbal prosody in Neo-Štokavian is much more restricted than noun prosody. A noun can have H on any syllable, as shown by quadruplets as [dʲɛtɛlina] ‘clover’, [domóvina] ‘homeland’, [tr̩gouína] ‘commerce’ [gotouiná] ‘cash’. On the other hand, if we consider the infinitive and the present tense (typically used to identify the conjugation and the prosodic pattern of a verb), in the *i*-class, H is restricted to two positions: it is either on the theme vowel or on the syllable preceding the theme vowel.

This was verified in the WeSoSlaV database (Arsenijević et al. 2022), in which 5300 most frequent verbs were manually annotated for prosody.² Out of these, 1606 verbs belong to the *i*-class and there is no single verb which was marked as obligatorily having H in a position preceding the stem final-syllable. Five verbs were marked as optionally having such a pattern, possibly due to the policy of the database to include prosodic patterns described in standard dictionaries, next to the annotator's pronunciation. For completeness, in Table 2, I list all five exceptional verbs with the prosodic pattern from Hrvatski jezični portal (HJP, an online Croatian normative dictionary) and my own rendition.³ The first three items are denominal and the remaining two are deadjectival, indicating that even in the HJP system, the exceptional Hs before the stem-final syllable are possible only in a restricted domain.

Table 2: Five exceptional verbs with more than one syllable before the theme vowel

gloss	Hrvatski jezični portal	The author's pronunciation	Related noun/adjective
'petrify'	okámen-i-ti	okamén-i-ti	kámeen 'stone'
'store'	(u)skládíft-i-ti	(u)skladíft-i-ti	skládíft-e 'storage'
'reflect'	zřtsal-i-ti	zřtsál-i-ti	zřtsal-o 'mirror'
'acidify'	kísel-i-ti	kisél-i-ti	kíseo 'sour'
'backfire'	izjálou-i-ti	izjalóu-i-ti or izjalou-í-ti	jálou 'futile'

Different theme-vowel classes impose different prosodic restrictions on their members, yet all types allow the two positions described above, H on the theme vowel or H on the syllable preceding it (i.e. stem-final H). Tellingly, all verbs that require the specification of a lexical H somewhere before the stem-final syllable are denominal or deadjectival. This extreme prevalence of the two-way contrast between theme H and stem-final H is a clear indication that (if we exclude denominal and deadjectival items) all lexical prosody in verbs originates from the specification on the theme vowel. As foreshadowed in Section 1, there are three possible underlying constellations when it comes to H and theme vowels. The theme vowel can have a prelinked H /i_H/, a floating H /i, H/ or no H at all /i/. Table 3 shows an expansion of Table 1, in which further forms are supplied. The forms which are not separated by a horizontal line repeat the same prosodic pattern and will be analysed together.

Table 3: CVC imperfective verbs in the *i/i* class

	prelinked H <i>lomiti</i> 'break.IPFV'	floating H <i>moliti</i> 'pray.IPFV'	epenthetic H <i>nuditi</i> 'offer.IPFV'
UR	/lom-i _H /	/mol-i,H/	/nud-i/
INF	lomítì	molítì	núdtì
IMP.2SG	lomí	molí	núdi
PAST.PTCP	lomíó	molíó	núdtio
PRS.3SG	lomíi	molíi	núdtii
PASS.PTCP	lómáen	móáen	núdzēn
DEVERBAL NOUN	lomáéeje	moláéeje	núdzēje

With stems which contain a long vowel, illustrated in Table 4, a more limited contrast is encountered, as the epenthetic and the floating type are neutralised. Note that there are no verbs with a H on the long stem-vowel in the infinitive (e.g., [*ráaditì]). Such verbs are marginally present among CVVCC stems. In the database, two such stems are attested (in each case next to a variant with H on the theme vowel): [(za)páamtitì] 'memorise' and [unóout_Hitì] 'monetise'.

²The WeSoSlaV database was created within the project *Hyperspacing the Verb: The interplay between prosody, morphology and semantics in the Western South Slavic verbal domain*.

³My Neo-Štokavian is by far closest to that of Belgrade, with some influences from Slavonian varieties. The renditions in Table 2 have been confirmed by speakers from Belgrade, Novi Sad, Ruma and Osijek.

Table 4: CVVC imperfective verbs in the i/i class

	prelinked H	floating H or epenthetic H
	<i>tajiti</i> ‘conceal.IPFV’	<i>raditi</i> ‘do.IPFV’
UR	/taaj-i _H /	/raad-i,H/ or /raad-i/
INF	taajíti	raadíti
IMP.2SG	taají	raadí
PAST.PTCP	taajío	raadío
PRS.3SG	taajii	ráadii
PASS.PTCP	táajen	ráadzēn
DEVERBAL NOUN	taajéεε	raadzéεε

Finally, our target data set is extended by one further point. Perfective verbs, illustrated in Table 5, generally follow the pattern attested in the imperfective verbs with the same prosodic specification, except in the deverbal noun. Deverbal nouns derived from perfective verbs have totally neutralised prosody, featuring a pattern which does not appear in any form in the verbal paradigm.

Table 5: Perfective verbs in the i/i class

	prelinked H	floating H	epenthetic H
	<i>pozeleniti</i> ‘make green.PFV’	<i>zadovoljiti</i> ‘satisfy.PFV’	<i>zapečatiti</i> ‘seal.PFV’
UR	/po-zelen-i _H /	/za-dovoł-i,H/	/za-petʃat-i/
INF	pozeleníti	zadovołíti	zapečátiti
IMP.2SG	pozelení	zadovołí	zapečátí
PAST.PTCP	pozelenío	zadovołío	zapečátío
PRS.3SG	pozelenii	zadovołii	zapečátii
PASS.PTCP	pozelépen	zadovołēn	zapečátšēn
DEVERBAL NOUN	pozeleεεε	zadovołēεε	zapečátšēεε

This concludes the data set that my analysis will account for. The analysis will be couched in Optimality theory (Prince & Smolensky 1993) but it will also allow sensitivity to cycles/phases (for comparable approaches, see, e.g., Gribanova 2015, Simonović 2022, Sande et al. 2020). I will consider pure concatenation of the morphemes’ URs as the input to the phonological computation whenever possible. In other words, multiple phonological cycles/phases will not be assumed a priori, but inferred from the phonological data.

3 INFINITIVE, PRESENT TENSE AND CO.

In this section the first two data cells from Tables 3 and 4 will be accounted for: the infinitive (as well as the forms with the same prosody) and the present-tense forms. An inspection of these forms in the ‘prelinked H’ types in Tables 3 and 4 leads to the conclusion that prelinked specifications are respected. This means that the constraint defined in (1) is undominated.

- (1) IDENT-LINK: Assign a violation mark for every association line present in the input that is absent from the output.

A further constraint satisfied in all infinitive (and related) forms is the one requiring underlying floating H to surface linked to its sponsor, defined in (2).

- (2) LINKSPONSOR: Assign a violation mark for every input H which is not linked to its sponsoring domain in the output.

Finally, the general alignment preferences of the system are revealed by the placement of the epenthetic tone, which has no sponsoring morpheme. In forms which only consist of light syllables, H aligns with the right stem edge. The right alignment is not obvious from the form [núditi] in Table 4, but it is from its prefixed version [ponúditi] or, e.g., [zapetjítiti] in Table 5. The relevant constraint is defined in (3).

- (3) ALIGN-RT(H, STEM): Assign a violation mark for every mora intervening between a H and the right edge of the stem.

The concept of the stem will be further refined in 4. For now, it can be interpreted as the piece of structure preceding the theme vowel. Finally, in order for epenthetic H to surface, the alignment constraint has to dominate the faithfulness constraint defined in (4).

- (4) DEPIO(H): Assign a violation mark for every H that is present in the output but absent in the input.

These four constraints, ranked in the order of appearance, are sufficient to account for all the infinitive (and related) forms which only consist of light syllables. The relevant tableaux are shown in Tables 6, 7 and 8.

Table 6: OT tableau for *lomiti* 'break.INF'

lom + i _H + ti	IDENTLINK	LINKSPONS	ALIGN-RT(H, STEM)	DEP-H
a. lómítí	*!	*		
b. lomítí			*	
c. lomítí	*!	*	**	

Table 7: OT tableau for *moliti* 'pray.INF'

mol + i, H + ti	IDENTLINK	LINKSPONS	ALIGN-RT(H, STEM)	DEP-H
a. mólítí		*!		
b. molítí			*	
c. molítí		*!	**	

Table 8: OT tableau for *nuditi* 'offer.INF'

nud + i + ti	IDENTLINK	LINKSPONS	ALIGN-RT(H, STEM)	DEP-H
a. núditi				*
b. nudítí			*!	*
c. nudítí			*!*	*

Now we can move on to forms containing long vowels, starting from the infinitive forms from Table 4. In all these forms H is on the theme vowel. While this is the result we expect based on the current ranking for the classes with prelinked and floating H, for the class with an epenthetic H, the current ranking predicts raáditi, which satisfies ALIGN-RT(H, STEM). What blocks this candidate is a constraint undominated in the entire NŠ, militating against H linked to the second mora of the syllable. Here I adopt the formulation from (Becker 2007), repeated in (5). Crucially, (Becker 2007) assumes that the second mora of the syllable is universally the weak mora.

- (5) ΔH:Δμσ (from Becker 2007: 8): If there is a mora m such that m is the head of a High tone span, then m is the head mora of a syllable.⁴

⁴For precision, in Becker's analysis, rising accents are binary spans, so his heads of H-spans coincide with TBUs which carry H in the present approach.

Since no words like [raáditi] ever surface in NŠ, I will assume that this constraint is undominated and omit candidates like [raáditi] from the tableaux. However, having excluded [raáditi], we still need to refine the ranking. The current ranking predicts a tie between [ráaditi] and [raadíti]. The constraint that tips the scales is defined in (6).

- (6) *CONTOUR: Assign a violation mark for every long syllable which has different tonal associations on different moras.

Adding this constraint below ALIGN-RT(H, STEM) yields the ranking which predicts all the infinitive forms. In Table 9 the evaluation for [raadíti] (assuming that the theme vowel has no H) is presented. Recall from the data overview in Table 4 that the same output is expected if the theme vowel has a floating H. In Table 10 the evaluation for the same verb is presented, now assuming that it has a floating H, indeed obtaining the same surface form. Finally, in Table 11, the evaluation for the prelinked-H type is presented.

Table 9: OT tableau for *raditi* 'do.INF'

raad + i + ti	IDENTLINK	LINKSPONS	ALIGN-RT (H, STEM)	*CONTOUR	DEP-H
a. ráaditi			*	*!	*
☞ b. raadíti			*		*
c. raadíti			**!		*

Table 10: OT tableau for *raditi* 'do.INF'

raad + i, H + ti	IDENTLINK	LINKSPONS	ALIGN-RT (H, STEM)	*CONTOUR	DEP-H
a. ráaditi		*!	*	*	
☞ b. raadíti			*		
c. raadíti		*!	**		

Table 11: OT tableau for *tajiti* 'conceal.INF'

taaj + i _H + ti	IDENTLINK	LINKSPONS	ALIGN-RT (H, STEM)	*CONTOUR	DEP-H
a. táajiti	*!	*	*	*	
☞ b. taa [́] jiti			*		
c. taa [́] jiti	*!	*	**		

This concludes the analysis of all the infinitive, imperative and past participle forms in our data set. We now turn to the present-tense forms.

The only class whose present-tense forms are correctly predicted by the current ranking is that with a prelinked H. In the floating class and in the epenthetic class the current ranking predicts, contrary to fact, the theme vowel to carry H. In all these classes the theme vowel is lengthened and seems to be avoided by H. There is synchronic evidence from other classes that lengthened theme vowels are avoided as hosts for H even more than regular long vowels are. This seems to be part of a broader tendency. Simonović (2021) presents evidence that derived long vowels are avoided as hosts of H in nouns, verbs and adjectives.⁵ What seems to be particularly problematic about lengthened theme vowels is that they display a total exponence overlap between the theme-vowel morpheme

⁵Simonović's analysis is couched in Becker's (2007) approach, where, as discussed in Footnote 4, rising accents are binary spans. Simonović's claim is that derived long vowels 'cannot head a H-span', which is exactly the same as saying that they cannot carry a H in the present analysis.

and the present-tense morpheme (which is a mora), so that constraints such as LINKSPONSOR cannot consider them as the sponsoring morpheme of the floating H. Since the present tense is the only context in our data set where lengthened theme vowels are attested and since reviewing the other contexts would go beyond the scope of this paper, the generalisation that lengthened theme vowels are avoided by H will be captured using a parochial constraint defined in (7), leaving to further research to incorporate this constraint into a broader and better grounded constraint.

(7) *H-LONGTHEME: Assign a violation mark for every long theme vowel associated with a H.

Adding this constraint just below IDENTLINK captures all the present-tense forms. To save space, only the tableaux for the floating and long-voweled epenthetic types are shown, as in the remaining types *H-LONGTHEME is satisfied by candidates which were already winning. In Table 12 the evaluation for the short-voweled floating type is presented. In Tables 13 and 14 the two evaluations for *radimo* 'do.PRS.1PL' are presented, assuming a floating H and no H, respectively.

Table 12: OT tableau for *molimo* 'pray.PRS.1PL'

mol+i,H+μ+mo	IDENTLINK	*H-LT	LINKSPONS	ALIGN-RT (H, STEM)	*CONTOUR	DEP-H
☞ a. móliimo			*			
b. molíimo		*!		*	*	
c. moliimó			*	*!		

Table 13: OT tableau for *radimo* 'do.PRS.1PL'

raad+i,H+μ+mo	IDENTLINK	*H-LT	LINKSPONS	ALIGN-RT (H, STEM)	*CONTOUR	DEP-H
☞ a. ráadiimo			*	*	*	*
b. raadiímo		*!		*	*	*
c. raadiimó			*	**!		*

Table 14: OT tableau for *radimo* 'do.PRS.1PL'

raad+i+μ+mo	IDENTLINK	*H-LT	LINKSPONS	ALIGN-RT (H, STEM)	*CONTOUR	DEP-H
☞ a. ráadiimo				*	*	*
b. raadiímo		*!		*	*	*
c. raadiimó				**!		*

This concludes our analysis of the infinitival (including the related forms) and the present-tense forms. The constraint set established in this section will be used for the rest of the analysis without further modifications. The constraint *H-LONGTHEME will be omitted from further evaluations, as it will be vacuously satisfied by all candidates, since no further contexts with long theme vowels will be analysed. In the following section, passive participles will be analysed.

4 FULL NEUTRALISATION: PASSIVE PARTICIPLES

Passive participle forms display total neutralisation of underlying prosody: all forms have H right-aligned with the verbal stem (skipping the weak mora in the case of long vowels). In this form the theme vowel gets lost, turning into a palatalising element which either fuses with the previous consonant (e.g. in /nud+i+en/ which yields [nudʒen]), disappears (e.g. in /taa+j+i+en/ which yields [taaʃen]) or surfaces as a [ʌ] (e.g. in /lom+i+en/ which yields [lomʌen]). Since these

‘iotation’ processes apply in the whole data set, due to space limitations, I will assume that they are enforced by constraints higher in the ranking than the constraints discussed here and omit candidates which don’t undergo iotation. Now the question arises whether the delinked and floating H still have a sponsoring domain. If there is no sponsoring domain, we expect that all verbs will behave as verbs with no underlying H on the theme vowel. This indeed sounds promising, since there is full neutralisation. However, there is a problem. Our current ranking predicts the wrong output for long-voweled stems and an epenthetic H. This is shown in Table 15. The wrongly predicted winner is indicated by a left pointing hand.

Table 15: OT tableau for *rađen* ‘do.IPFV.PASS.PTCP’

raad + i + en	IDENTLINK	LINKSPONS	ALIGN-RT (H, STEM)	*CONTOUR	DEP-H
a. ráadzen			*	*!	*
☞ b. raadzén			*		*

In what follows I will argue that the reason why our ranking is not giving the right result lies in the fact that we have bumped into a phase boundary and therefore need to reconsider the input to our tableaux. Essentially, we are evaluating a form which has a full adjectival paradigm, but also incorporates the eventive component of a verb. This indicates the presence of at least one phase boundary within this word. Assuming that the first phase contains the verbal stem and the theme vowel, we expect this phase to get spelled out first. In line with the spellout mechanism in, e.g., Sande et al. (2020), this means that the output of the first cycle serves as the input of the following cycle. Since the first cycle always links a H to a mora, there will be no verbal stems lacking a H or with a floating H entering the second cycle. The output of the first cycle will have the form that we can see in our initial data-overview Tables 3, 4 and 5 as the imperative form. This means that when it comes to short-voweled stems, the prelinked and the floating type will be neutralised (since, e.g., [lomí] and [molí] are prosodically equivalent), whereas in long-voweled stems all types will neutralise (since, e.g., [raadí] and [taají] are the same). We indeed never see these forms behaving differently, not only in the passive participle, but also in the deverbal noun.

Finally, we can turn to the issue of the sponsoring domain of the delinked element. The word is built incrementally and the sponsoring domain of any delinked elements is the structure present in the working space at the moment when the element triggering the current cycle was merged. This is also our definition of the stem to which the alignment constraint in (3) refers. This means that the whole verbal sequence will be considered the sponsoring domain of the delinked theme vowel. In Table 16 the new evaluation is shown for [ráadzen]. The evaluation for [táajen] would look exactly the same because of the same input.

Table 16: OT tableau for *rađen* ‘do.IPFV.PASS.PTCP’

raadi _H + en	IDENTLINK	LINKSPONS	ALIGN-RT (H, STEM)	*CONTOUR	DEP-H
☞ a. ráadzen	*		*	*	
b. raadzén	*	*!	*		

The evaluation for [lómʎen] is presented in Table 17 and the evaluation for [mólʎen] would look exactly the same.

Table 17: OT tableau for *lomljen* ‘break.IPFV.PASS.PTCP’

lomi _H + en	IDENTLINK	LINKSPONS	ALIGN-RT (H, STEM)	*CONTOUR	DEP-H
☞ a. lómʎen	*				
b. lomʎén	*	*!	*		

Finally, the evaluation for [núdzɛn is presented in Table 18.

Table 18: OT tableau for *núden* ‘offer.IPFV.PASS.PTCP’

nu _H di + en	IDENTLINK	LINKSPONS	ALIGN-RT (H, STEM)	*CONTOUR	DEP-H
☞ a. núdzɛn					
b. nudzɛ́n	*!	*	*		

4.1 A CODA: WHICH FORMS ARE CYCLIC?

Since the approach taken here was to assume concatenation of underlying representations wherever possible, the emergence of the verbal cycle closed off by the theme vowel may lead us to reconsider the other forms which contain this structure. Under the present OT analysis, for the forms like the infinitive, imperative and past participle, the result would be the same, as no iotation happens and therefore no unlinking occurs. In the next section we turn to the deverbal nouns.

5 REEMERGING CONTRAST: DERVERBAL NOUNS

One feature of the analysis of the passive participles in the previous section is that it introduced some leveling of the input forms (e.g., the prelinked and the floating type are entirely indistinguishable, because the output of the first phase is exactly the same), but it does not neutralise all types. So while in the evaluations in Tables 17 and 18 the same output prosody wins, there is still a difference in the input. Now we can capitalise on this feature in our analysis of deverbal nouns. As discussed in Section 1, the contrast neutralised in passive participles resurfaces in deverbal nouns. This has led some researchers to postulate an affix *-enje* which accidentally looks like a concatenation of the affixes *en* and *je*. The present analysis can derive all the forms without any further rerankings or changes in the representation. The only important assumption is that the passive participle *does not* trigger its own phonological cycle, as this would obviously lead to the full neutralisation we see in the passive participle. Tables 19, 20 and 21 show the evaluations for the three types of representations that are delivered by the first cycle. Note that the affix *-je* comes with an additional mora, which surfaces on the preceding syllable in all the different uses of *-je*. The *e* is the case ending and case endings are never long in the citation form in NŠ, which is why the mora surfaces on the preceding syllable.

Table 19: OT tableau for *núdenje* ‘offering’

nu _H dien + je, μ	IDENTLINK	LINKSPONS	ALIGN-RT (H, STEM)	*CONTOUR	DEP-H
☞ a. núdzɛɛje			**		
b. nudzɛ́ɛje	*!	*	*	*	
c. nudzɛɛjé	*!	*	*		

Table 20: OT tableau for *lomljenje* ‘breaking’

lom _H en + je, μ	IDENTLINK	LINKSPONS	ALIGN-RT (H, STEM)	*CONTOUR	DEP-H
a. lómλɛɛje	*		**!		
☞ b. lomλéɛje	*		*	*	
c. lomλɛɛjé	*	*!	*		

Table 21: OT tableau for *rađenje* ‘doing’

raadi _H en + je, μ	IDENTLINK	LINKSPONS	ALIGN-RT (H, STEM)	*CONTOUR	DEP-H
a. ráadzéeje	*		**!*	*	
☞ b. raadzéeje	*		*	*	
c. radzéejé	*	*!	*		

A final data point that needs to be covered here is the neutralised prosody of the nominalisations from perfective verbs. For this class, I follow the analysis in Arsenijević (2020) and Simonović & Arsenijević (2014). According to these analyses, nominalisations of perfective verbs, characterised by limited productivity and idiomatised meaning, undergo ‘structural flattening’, which is why they trigger default prosody. Arsenijević (2020) argues that the structure in question is a radical core, a complex root structure which gets spelled out without the lexical prosody of the participating roots and therefore receives default prosody. In Table 22 the relevant evaluation is provided, and the correct result is indeed predicted.

Table 22: OT tableau for *zadovoljenje* ‘satisfaction’

zadovolien + je, μ	IDENTLINK	LINKSPONS	ALIGN-RT (H, STEM)	*CONTOUR	DEP-H
a. záđovoléeje			**!**		*
b. zadóvoléeje			**!*		*
c. zadováleeje			**!		*
d. zadovoléeje			*	*!	*
☞ e. zadovoléejé			*		*

This concludes the phonological analysis of the data set sketched in Section 2. Before turning to the consequences and conclusions, a brief coda is in order concerning additional variation in Neo-Štokavian, which was disregarded in this paper.

5.1 ADDITIONAL VARIATION IN THE FLOATING TYPE

I have not been able to find any exceptions to the generalisations stated about any of the long-voweled types or, among the short-voweled types, the epenthetic and the pre-linked types. The generalisation that nominalisations of perfective verbs have default prosody is also exceptionless. The only domain in which there seems to be additional variation is the short-voweled floating type illustrated by *moliti* ‘pray’. In the prosody of the deverbal noun of these verbs my variety has neutralisation with the prelinked type. However, there are speakers who allow other prosodic patterns, as amply attested in prescriptive sources. In Table 23, I show six such verbs with the prosodic specifications from HJP and Nikolić (2000). It seems quite improbable that all the prosodic patterns described in the normative sources come from the same variety, as this would mean that the prosody of the deverbal nouns would have to be lexical (only of the pre-linked type). Before an alternative grammar is posited for additional varieties, further descriptive research is necessary.

Finally, and related to the previous observation, there is an exceptional class of prefixed imperfective verbs that is not covered by the present account. This class is limited to the three roots illustrated by the first three verbs in Table 23. These roots derive prefixed forms which are exceptional both syntactically and prosodically. They are all imperfective, e.g., *prenositi* ‘transfer.IPFV’, *prevoziti* ‘transport.IPFV’ and *prevoditi* ‘translate.IPFV’. Their deverbal nouns have H aligned with the verbal stem: [prenóʃeeje], [prevóʒeeje] and [prevóđzeeje] respectively. Traditional sources analyse such prefixed imperfective verbs not as derived from prefixless verbs, but from prefixed verbs such as *prenijeti* ‘transfer.PFV’ and *prevesti* ‘transport.PFV’. Babić (2002: 519) analyses these verbs as imperfectivised by the suffix *-iti* accompanied by “alternant allomorpha”. The whole

Table 23: Deverbal nouns in the short-vowelled floating type

gloss	HJP	Nikolić (2000)	Author's pronunciation	root
'carrying'	noʃéeɲe	noʃéeɲe and nóʃeeɲe	noʃéeɲe	$\sqrt{\text{NOS}}$
'driving'	voʒéeɲe	voʒéeɲe and vóʒeeɲe	voʒéeɲe	$\sqrt{\text{VOZ}}$
'guiding'	vódzéeɲe	vodzéeɲe and vódzeeɲe	vodzéeɲe	$\sqrt{\text{VOD}}$
'praying'	mo.ʎéeɲe	mo.ʎéeɲe and mó.ʎeeɲe	mo.ʎéeɲe	$\sqrt{\text{MOL}}$
'speaking'	gouóreeɲe	gouóreeɲe	gouoréeɲe	$\sqrt{\text{GOVOR}}$
'scything'	kóʃeeɲe	koʃéeɲe	koʃéeɲe	$\sqrt{\text{KOS}}$

list of verbs he analyses this way has the prosodic pattern in the deverbal noun that is compatible with our H-less type. Clearly, further research is needed before we can provide a full analysis of such cases.

6 BY WAY OF CONCLUSION: DESIDERATA FOR A SYNTACTIC ANALYSIS

The analysis throughout the paper was guided by the prosodic patterns attested in various (de)verbal forms. Clearly, the next step is matching the identified domains with syntactic domains in order to provide a full interface analysis. In this concluding section, I briefly overview the domains that have been established as cyclic and non-cyclic in our analysis and consider why they may be this way.

6.1 WHAT TRIGGERS A CYCLE?

In the role of cycle-triggers we have seen the theme vowel, the affix *-en* in Passive Participles (but crucially not in deverbal nouns) and the affix *-je* in deverbal nouns. Among these, all but one were also the last morpheme to get merged, so it is hard to establish whether there was a phonological evaluation because of the properties of the merged morpheme or because the last element was merged, the prosodic word was completed and a final round of evaluation was triggered.⁶ Essentially, the only domain that convincingly imposed itself as phasal was the one closed off by the theme vowel. If the theme vowel is a phase head (say of *vP*, *AspP* or *VoiceP*), we need to assume (as, e.g., Sande et al. 2020) that heads get spelled out together with their complements. Phonology can at this point (and only at this point) distinguish between the cycle-triggering head and the material already assembled in the course of derivation. The latter is the stem domain to which the alignment constraints can refer.

6.2 WHAT DOES NOT TRIGGER A CYCLE

The crux of our analysis was that *-en* does not trigger a cycle within deverbal nouns. As previewed above, this does not mean that we need to assume different properties of this affix in participles and deverbal nouns. The difference may very well be that the participle *-en* closes off the prosodic word and therefore a final phonological evaluation is triggered, whereas in the deverbal noun only *-je* closes off the prosodic word.

While remaining agnostic in this respect, there is some evidence that at least the adjectival nature of the passive participle (e.g. having full adjectival declension, the possibility of a *ost*-nominalisation etc.) cannot directly be used as evidence for its constituting a phase within deverbal nouns. If the passive participle was always an *aP*, we would expect it to combine with things with which *aPs* typically combine and not to combine with things with which *aPs* typically don't combine.

⁶A further option suggested by one of the reviewers is that it is the inflection that triggers spellout. In this case the difference between the adjectivally used passive participle and the passive participle within the deverbal noun follows from the simple fact that the former is directly followed by inflection but the latter is not.

Since passive participles readily combine with *-je*, we would then expect many deadjectival *-je*-nominalisations. However, there are only four items in the entire language which can plausibly be analysed as deadjectival *je*-nominalisation.

Babić (2002:162) lists the following plausibly deadjectival examples: [mii̯l̩e] ‘delight’ (related to [mío] ‘dear’), [zdráav̩l̩e] ‘health’ (related to [zdráav̩] ‘healthy’), [poʃteep̩é] ‘honesty’ (related to [poʃtén] ‘honest’) and [v̩eseel̩é] ‘joy’ (related to [v̩eseo] ‘joyful’). The last example has the same prosodic pattern as a class of passive participles considered here (e.g. [núdz̩en]) but the prosodic alternation is a different one, so that a root nominalisation analysis seems more plausible. If passive participles are aPs, it is unclear why they are the only aP that can be (productively) nominalised using *-je*.

It is my hope that further research will productively interact with the presented analysis and bring further insight into the open issues.

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CONTACT

marko.simonovic@uni-graz.at

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