

### Patterning of tone and stress in loanword phonology: the case of Serbian

In this paper we propose an analysis of a loanword pattern in Standard Serbian characterized by an idiosyncratic distribution of pitch accents that departs from the native phonological system, yet is in no obvious way related to any of the donor languages. This case of loanword specific prosodic properties will be interpreted as the emergence of lexical classes with exceptional phonological properties that can be captured in terms of minimal re-rankings within an Optimality Theory phonological grammar.

The class of loanwords that we focus on here emerges within the prosodic system of Standard Serbian, traditionally described in terms of two pitch accent types, ‘falling’ and ‘rising’, each phonetically associated with stress and a characteristic pitch contour (Lehiste & Ivić 1986, Smiljanić 2002, Zsiga & Zec 2013). These phonetic properties are captured in a straightforward way by factoring out High tone and stress as two interacting prosodic components (following Browne & McCawley 1965, Inkelas & Zec 1988, Zec & Zsiga 2008). High tone is lexically governed and can occur on any syllable in a lexical form, while the occurrence of stress is predictable, and as such subject to phonological constraints. Crucially, High tone and stress co-occur when High tone is on the initial syllable, as in (1), yielding a ‘falling’ accent, and occupy contiguous syllables in all other cases, yielding a ‘rising’ accent, as in (2). (Stress is designated by a vertical bar, and High tone by an *H* subscript on the tone bearing vowel.)

(1) Stress and High tone on the same syllable:

'va<sub>H</sub>tra ‘fire’, 'ku<sub>H</sub>ća ‘house’, 'ja<sub>H</sub>goda ‘strawberry’, 'pra<sub>H</sub>vedan ‘just’, 'o<sub>H</sub>morina ‘heat’

(2) Stress and High tone on contiguous syllables:

a. 'voda<sub>H</sub> ‘water’, 'liva<sub>H</sub>da ‘meadow’, 'mara<sub>H</sub>ma ‘scarf’, 'pozo<sub>H</sub>rište ‘theater’

b. ra'mena<sub>H</sub> ‘shoulders’, le'pota<sub>H</sub> ‘beauty’, ru'kavi<sub>H</sub>ca ‘glove’

c. predu'zeće<sub>H</sub> ‘company’, oso'vina<sub>H</sub> ‘axis’

Even though a number of loanwords have been integrated into the standard pattern, we note at least two loanword specific prosodic patterns. We begin with a minor pattern, in which High tone and stress invariably co-occur on the same syllable, as illustrated in (3) and (4).

(3) *Adjectives*: fre'kve<sub>H</sub>ntan ‘frequent’, šar'ma<sub>H</sub>ntan ‘charming’, transpa're<sub>H</sub>ntan ‘transparent’

(4) *Nouns*: kon'sta<sub>H</sub>nta ‘constant’, Pro'va<sub>H</sub>nsa ‘Provance’, ambu'la<sub>H</sub>nta ‘clinic’, guver'na<sub>H</sub>nta ‘governess’

Of central interest here, however, is a pattern we refer to as the major loanword pattern. While characterized by a separation of High tone and stress, this pattern departs from the standard in a peculiar fashion. As illustrated in (5) and (6), stress falls on the syllable immediately preceding the High toned one only when that syllable is word initial; otherwise, stress co-occurs with High tone.

(5) a. 'stude<sub>H</sub>nt ‘student’, 'docent ‘faculty’, 'age<sub>H</sub>nt ‘agent’, 'bila<sub>H</sub>ns ‘balance’, 'produ<sub>H</sub>kt ‘product’

b. asi'ste<sub>H</sub>nt ‘assistant’, diri'ge<sub>H</sub>nt ‘conductor’, dija'ma<sub>H</sub>nt ‘diamond’ konti'ne<sub>H</sub>nt ‘continent’

(6) a. 'promo<sub>H</sub>cija ‘promotion’, 'ago<sub>H</sub>nija ‘agony’, 'emo<sub>H</sub>cija ‘emotion’, 'Sici<sub>H</sub>lija ‘Sicily’,

b. kompo'zi<sub>H</sub>cija ‘composition’, viki'pe<sub>H</sub>dija ‘wikipedia’, Kata'lo<sub>H</sub>nija ‘Catalonia’

The phonological analysis of both the standard and the loanword patterns crucially relies on the constraints on High tone and stress in (7), (8); and on the constraints that mediate between the two, listed in (9) and (10).

(7) ALIGNSTRESS-LEFT The stressed syllable is aligned with the *left* edge of the prosodic word.

(8) IDENTHIGH Correspondent tones must be identical.

(9) CULMINATIVITY: If  $\sigma_i$  bears HIGH TONE and  $\sigma_j$  bears STRESS, then  $\sigma_i = \sigma_j$ .

(10) EXTENDED CULMINATIVITY: If  $\sigma_i$  bears HIGH tone and  $\sigma_j$  bears STRESS, then no syllable may intervene between  $\sigma_i$  and  $\sigma_j$ .

As stated in (7), stress is left aligned; the faithfulness requirement on the High tone to remain in its lexically assigned position is stated in (8). Turning to the mediating constraints, (9) requires that the High

tone and stress occur on the same syllable, and (10) relaxes this requirement, allowing for the two to occur on contiguous syllables, but prohibiting any further separation; (9) and (10) are in a stringency relation.

In the standard pattern, IDENTHIGH and EXTENDED CULMINATIVITY are undominated, while the remaining two constraints can both be violated, with ALIGNSTRESS ranking higher than CULMINATIVITY. This insures that the stressed syllable is either co-extensive with, or minimally separated from, the High toned one. The latter case is presented in (11).

(11) Standard pattern:  $\text{ramena}_H \rightarrow \text{ra}'\text{mena}_H$

$\text{ramena}_H$	IDENTHIGH	EXTCULMIN	ALIGNSTRESS	CULMINAT
☞ $\text{ra}'\text{mena}_H$			*	*
$\text{rame}'\text{na}_H$			**!	
$'\text{ramena}_H$		*!		*
$'\text{ra}_H\text{mena}$	**!			

Loanword patterns are analyzed as exceptional classes within the standard prosodic system, and are formalized in terms of constraint indexation (Pater 2009). The minor loanword pattern is captured by positing an indexed CULMINATIVITY constraint, ranked above ALIGNSTRESS, as in (12). This ranking will insure that stress co-occurs with High tone in all forms belonging to this lexical class.

(12) Constraint ranking: minor loanword pattern

IDENTHIGH, EXTCULMIN >> CULMIN<sub>MIN</sub> >> ALIGNSTRESS >> CULMIN

The major loanword pattern, however, calls for two indexed constraints: CULMINATIVITY, as in the minor loanword pattern, and ALIGNPRWD-LEFT, which in this case requires a stressed syllable at the prosodic word's left edge. While inert in the standard pattern, this constraint expresses the unmarked status of initially stressed forms in the standard prosodic system, and as such emerges as an important player in this exceptional loanword class. The ranking is given in (13):

(13) Constraint ranking: major loanword pattern

IDENTHIGH, EXTCULMIN >> ALIGNPRWD-LEFT<sub>MAJ</sub> >> CULMIN<sub>MAJ</sub> >> ALIGNSTRESS >> CULMIN

The tableau in (14) accounts for the forms in (5a) and (6a), while the tableau in (15) captures constraint interactions in (5b) and (6b):

(14) Major loanword pattern  $\text{age}_H\text{nt} \rightarrow '\text{age}_H\text{nt}$

$\text{age}_H\text{nt}$	IDENTHIGH	EXTCULMIN	ALIGNPRWD <sub>MAJ</sub>	CULMIN <sub>MAJ</sub>	ALIGNSTRESS
☞ $'\text{age}_H\text{nt}$				*	
$\text{a}'\text{ge}_H\text{nt}$			*!		*
$'\text{a}_H\text{gent}$	**!				

(15) Major loanword pattern:  $\text{emigra}_H\text{nt} \rightarrow \text{emi}'\text{gra}_H\text{nt}$

$\text{emigra}_H\text{nt}$	IDENTHIGH	EXTCULMIN	ALIGNPRWD <sub>MAJ</sub>	CULMIN <sub>MAJ</sub>	ALIGNSTRESS
☞ $\text{emi}'\text{gra}_H\text{nt}$			*		**
$\text{e}'\text{migra}_H\text{nt}$			*	*!	*
$'\text{emigra}_H\text{nt}$		*!		*	
$'\text{e}_H\text{migrant}$	**!				

To conclude, the two loanword patterns presented here both depart from the standard system, but do so by virtue of exploiting system internal potentials for minimal constraint re-rankings. The ranking in (12), which captures the minor loanword pattern, hints at a “foreign” flavor by fully suppressing the separation of High tone and stress, typical of the native forms. But while the ranking for the major pattern in (13) secures this same effect for the forms in (5b) and (6b), the behavior of the forms (5a) and (6a) is an innovation that exploits markedness relations within the standard prosodic system.