Second thought on the form and the substance of Russian vowel reduction

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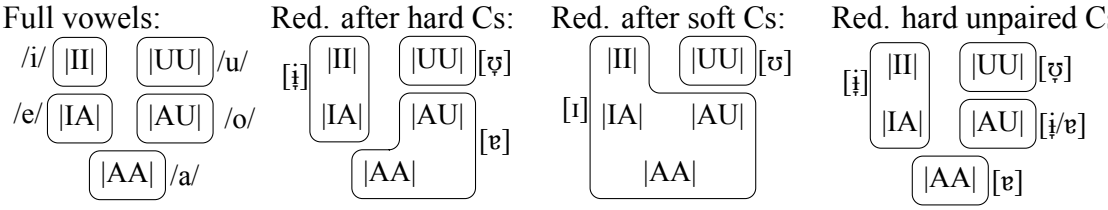
Background In Russian, vowels undergo reduction in unstressed positions. This qualitative process has been reanalyzed in terms of quantity by Crosswhite (2000) and later by Enguehard (2018). If stressed vowels are assumed to be phonologically long and therefore able to host more privative phonological features (elements of Element theory; Kaye, Lowenstamm & Vergnaud 1985), then vowel reduction follows from vowel shortening. Enguehard (2018) proposes a bi-elemental representation for Russian vowels and suggests that the second element is lost in reduction, resulting in the observed three-way vowel distinction in pretonic syllables.

We propose a development of Enguehard's (2018) analysis that takes into account additional data from Russian, which concerns the /e/ ∼ /o/ alternation (Lightner 1969, Padgett 2010) after palatal and palatalized consonants. We assume the two-tiered autosegmental representations of Strict CV (Lowenstamm 1996, Scheer 2004). Let us present a seeming counterexample to the analysis at hand.

Data Vowel reduction in Russian depends on the context. First, it proceeds differently in pretonic syllables (moderate reduction) and other unstressed syllables (radical reduction); the latter type has been argued by Iosad (2012) to be a non-phonological side effect of dramatically decreased duration. To make our case, we only need to consider moderate reduction, which is uncontroversially phonological. Enguehard's analysis employs five bi-elemental representations, which correspond to the full vowels and are grouped depending on the preceding C when moderately reduced. The reduced vowel space contains all of the three possible monoelemental vowels: |A|, |I|, |U|.



After non-palatalized, or hard consonants, /i, e/ and /a, o/ are mapped together; they share elements |I| and |A| respectively. For instance, /o/ in *kot* 'cat' is reduced to [ɐ] in *k*[ɐ]*tý* 'cat.PL'. After palatalized, or soft consonants, all vowels but /u/ are reduced to [ɪ], e.g. *m'ač – m'*[ɪ]*čí* 'ball – ball.PL'. Enguehard (2018) suggests that this is due to the palatalizing element |I| possessed by the soft consonants.

The palatal consonants /š, ž, c/, which are also called hard unpaired, since they do not have a soft counterpart, are neither like soft nor like hard consonants wrt. reduction. The vowel /o/ in the palatal context can be reduced either to [ɨ̟] (|I|, same as /i/) or to [ɐ] (|A|, like /a/). If /o/ alternates with /e/, it will be reduced to [ɨ̟], like after soft consonants (1). Note that this happens to both guises of the alternating /o/ (alt-/o/): both /o/ (*ž*[ɔ]*ny – ž*[ɨ̟]*ná* 'wife.PL' – 'wife') and /e/ (*š*[ɛ]*rst' – š*[ɨ̟]*rst'éj* 'wool' – 'wool.GEN.PL').

(1) *žëny* [ʐɔ̹nə] – *žénščina* [ʐɛ̹nʲɛɪnə] – *žená* [ʐɨ̟̹na] 'wife.PL' – 'woman' – 'wife'

A non-alternating stable /o/, however, is reduced to [ɐ] after palatals (2).

(2) a. *šort* [ʂɔ̹rt] – *šort'it'* [ʂɐ̹rtʲitʲ] 'short sale' – 'to short'

b. *p'ežó* [pʲɪʐɔ̹] – *p'ežovód* [pʲɪʐɐ̹vɔd] 'Peugeot' – 'Peugeot owner'

Enguehard (2018) only reports the behavior of alt-/o/.[1] When presented this way, the reduction pattern in the palatal context seems problematic. Since /i, e, o/ are all reduced to [ɨ̟], they are expected to share a common feature, which they do not have. This feature cannot be inherited from the context, like in the case of soft consonants, because then /a/ would have to be reduced to [ɨ̟] as well.

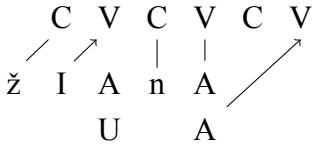
Analysis There are two questions that we are going to address: (i) How is alt-/o/ reduced to [ɨ̟] together with /e, i/ even when not sharing the |I| element with a soft consonant? (ii) What is the representational difference between stable and alt-/o/?

We claim that alt-/o/ inherits an |I| element from the preceding palatal. With alt-/o/, the palatal behaves like a soft consonant, whereas with the stable /o/, it is like a hard one. Hence, we attribute the distinction between two /o/'s to the properties of the preceding palatals.

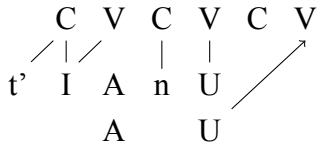
First, what is the underlying representation of alt-/o/: /o/ or /e/? In unstressed positions, alt-/o/ always behaves like /e/ rather than /o/ wrt. reduction. The only context where it appears as /o/ is under stress before a hard consonant. It might sound promising to suppose that alt-/o/ is just /e/ that can be assimilated by hard consonants on the right, but this would go against the way palatalization is already represented privatively by the element |I| in our system. If palatalization is marked by |I|, velarization is unmarked; an assimilation rule cannot target the absence of a feature. Hence, alt-/o/ does not correspond to /e/, and the unmarked variant has to be /o/.

Then, the difference between palatals before alt-/o/ and stable /o/ has to be established. The element |I| will not be directly included into the representation of unpaired hard palatals /š, ž, c/, since they are not soft. If the palatalizing |I| should denote similar articulational instructions across consonants, hard palatals should not contain it. Rather, we suggest that the |I| is floating: it does not soften the consonant, but it can have the same influence on the vowel as in a soft consonant (compare derivations in (3) and (4) below).

(3) *ž*[ɨ̟]*ná* 'wife'



(4) *t'*[ɨ̟]*nú* 'pull.PRS.1SG'
(cf. *t'*[a]*n'et* 'pull.PRS.3SG')



In *ž*[ɨ̟]*ná* 'wife', alt-/o/ is reduced to |I| (3), similarly to *t'*[ɪ]*nú* 'pull.PRS.1SG', where |I| appears as a result of spreading from the preceding soft consonant. The floating |I| is exclusive to the contexts containing alt-/o/, whereas hard unpaired palatals elsewhere do not have it and therefore behave like other hard consonants.

Conclusion The proposed revision of the virtual length analysis of Russian vowel reduction develops it in several ways. First, we have formalized the mechanism of palatalization influencing reduction. Palatalization corresponds to the element |I|, which can change the place of articulation of the consonant as well as be left floating. This is the case with hard unpaired consonants before the alternating /o/, which constitute a palatalized context for vowel reduction despite not being palatalized themselves. Also, we incorporate the data on loanwords, where /o/ after hard unpaired consonants is reduced as expected in the non-palatalized context. Loanword behavior is predicted by the analysis as-is, whereas the ostensible counterexample – the alternating /o/ – can be explained away via spreading of the floating palatalizing feature.

References ❖ Crosswhite, Catherine M. 2000. Vowel reduction in Russian: A unified account of standard, dialectal, and 'dissimilative' patterns. In Catherine M. Crosswhite & Joyce McDonough (eds.), *University of Rochester Working Papers in the Language Sciences*, 107–171. Rochester, NY: University of Rochester. ❖ Enguehard,

[1] Alt-/o/ is found in the pretonic position much more frequently than stable /o/, which occurs in rare loanwords.

Guillaume. 2018. A thought on the form and the substance of Russian vowel reduction. In Denisa Lenertová et al. (eds.), *Advances in formal slavic linguistics 2016*, 109–125. Berlin: Language Science Press. ❖ Iosad, Pavel. 2012. Vowel reduction in Russian: No phonetics in phonology1. *Journal of linguistics* 48(3). 521–571. ❖ Kaye, Jonathan, Jean Lowenstamm & Jean-Roger Vergnaud. 1985. The internal structure of phonological elements: a theory of charm and government. *Phonology* 2(1). 305–328. ❖ Lightner, Theodore M. 1969. On the alternation ẽo in Modern Russian. *Linguistics* 7(54). 44–69. ❖ Lowenstamm, Jean. 1996. CV as the only syllable type. In Jacques Durand & Bernard Laks (eds.), *Current trends in phonology, models and methods*, vol. 2, 419–443. Salford: European Studies Research Institute. ❖ Padgett, Jaye. 2010. Russian consonant-vowel interactions and derivational opacity. In Draga Zec & Wayles Browne (eds.), *The second cornell meeting 2009*, 352–381. Ann Arbor: Michigan Slavic Publications. ❖ Scheer, Tobias. 2004. *A Lateral Theory of Phonology*. Berlin: De Gruyter Mouton.