

RHOTICS, JERS AND SCHWA IN THE HISTORY OF BULGARIAN

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ABSTRACT

Three phonological contexts of early Slavic involving rhotics and jers, which gave different outcomes in the various Slavic languages, are explored. The Modern Bulgarian reflexes of these contexts are explained by a change in the way the listener corrected the acoustic signal: the tendency to over-correct it (which had given rise to syllabic rhotics) reversed into a tendency to under-correct it (which resulted in a later insertion of anaptyctic schwas next to rhotics).

DESCRIPTION OF THREE EARLY SLAVIC CONTEXTS

In the period of dialectal disintegration of Proto-Slavic, the two-level vowel system that characterized Early Slavic 2 [1, 2] was restructured in a four-level system through a shift from quantitative (fig.1) to qualitative contrasts (fig.2). The latter is the system used as the starting-point in the historical phonology of the individual Slavic languages. The mid vowels in it (levels 2 and 3) shared the feature [+lax]. The high lax vowels (i and u), traditionally called *jers*, demonstrated a tendency to reduction in some specific contexts: word-finally and before a syllable with a 'full' vowel, i.e. a vowel that is not a jer.

i i: i: u u:
æ æ: a a:

Fig.1 Vowel system of Early Slavic 2

i i u
i u
e o
æ a

Fig.2 Vowel system of Early Slavic 3

During the Third Common Slavic Vowel Shift strong and weak jers developed very differently. Weak jers were lost whereas strong jers were retained as

fully-fledged vowels and subjected to a lowering.

Context A

CirC, CurC (< *C_rC)

In Early Slavic 1 the syllabic rhotics of Proto-Indo-European developed leftward anaptyctic vowels (short *i* or *u*), thus becoming codas in rhymes with decreasing sonority: **r* > *ir*, *ur* [3:95]. Being in contradiction with the tendency only to admit rhymes with increasing sonority (the 'law of the open syllables'), the sequences of 'high vowel + rhotic' were most probably restructured once more in Early Slavic 2. In Old Church Slavonic we find the spellings "r + soft jer" (*ri*), "r + hard jer" (*ro*) as reflexes of Early Slavic 1 **ir*, **ur*.

Context B1

CriC, CruC before a syllable with a 'full' vowel and word-finally

This is the so-called weak position where jers were generally subject to loss. They are referred to as *weak jers*.

Context B2

CriC, CruC before a syllable with another jer

This is the so-called strong position where jers were subject to lowering. They are referred to as *strong jers*.

PRESENTATION OF DATA FOR CONTEXTS A, B1 AND B2

Early Slavic 1 & 2 (reconstructed forms in IPA transcription):

A: /gurǫla/ "throat", /virhu/ "top"
B1: /druva:/ "wood", /kristi:ti:/ "christen"

B2: /kruvi/ "blood", /kristu/ "cross"

Old Church Slavonic (attested written forms):

A: grulo, vrhu (грѹло, врѹхъ)
B1: druva, kristiti (дрѹва, крѹстити)
B2: kruvi & krovǫ, kristu & krestu (крѹвь & кровь, крѹсть & крѹсть)

Russian

A: gorlo, verh (горло, верх)
B1: drova, krestit' (дрова, крестить)

B2: krov', krest (кровь, крест)

Polish

A: gardlo, wierzch
B1: drwa, chrzcić
B2: krew, chrzest

Czech

A: hrdlo, vrch
B1: drva, křiti
B2: krev, křest

Serbo-Croatian

A: grlo, vrh
B1: drva, krstiti
B2: krv, krst

Bulgarian

A: gǫrlo, vrǫh (гѹрло, врѹх)
B1: dǫrva, krǫstja (дрѹва, крѹстя)
B2: krǫv, krǫst (крѹв, крѹст)

Czech merged contexts A and B1 developing syllabic /r/'s (see Table 1 where "V" stands for "vowel"). Serbo-Croatian merged all three contexts in a single reflex: syllabic rhotics.

In Bulgarian we find two different reflexes: ǫr, rǫ. Moreover, there is a

large set of Bulgarian words, historically related to contexts A, B1 and B2, which exhibit morphophonemic alternations (in either inflected or derived forms) with 'metathesis' of schwa (written ǫ) and r [4:166-200]. Here are some examples:

grǫk 'Greek' ~ gǫrkǫt 'the Greek',
gǫrci 'Greeks'

vrǫv 'twine', vrǫvta 'the twine' ~
vǫrvi 'twines'

krǫv 'blood' ~ kǫrvav 'bloody',
okǫrvaven 'bloodstained'

Since 1899 Bulgarian orthography has been based on the following principle: "rǫ" is written (i) before 2 (or more) consonants; (ii) in monosyllables. In all other cases, i.e. before one consonant in polysyllables, "ǫr" is written.

Compared to data from the other languages, the Bulgarian data suggest the following scenario: merger of A, B1 and B2 in a single reflex (to be found) and further differentiation in two different outcomes: ǫr/rǫ.

Table 1. Reflexes of contexts A, B1 and B2 in the modern Slavic languages

	Context A *CurC, *CirC	Context B1 CruC, CriC (weak jers)	Context B2 CruC, CriC (strong jers)
Russian	V left to /r/	V right to /r/	
Polish	V left to /r/	no V	V right to /r/
Czech	no V		V right to /r/
Serbo-Croatian	no V		
Bulgarian	V either left or right to /r/		

ACOUSTIC CHARACTERISTICS OF RHOTICS IN SOME SLAVIC LANGUAGES

Bulgarian post- and pre- consonantal rhotics

Modern Bulgarian rhotics are apical taps and are typically realized as "an (almost) empty space on a spectrogram without any formants" [5:165-6], but only in intervocalic position. When they are preceded or followed by another consonant, a schwa-like vocoid element appears necessarily on oscillograms and spectrograms. In Bulgarian these svarabhakti vocoids (the term has been introduced by [6:298] in his description of

Spanish rhotics) possess a formant structure very similar to that of a reduced vowel (schwa). The average duration of svarabhakti elements is about 30 ms.

Phonetically Bulgarian pre-consonantal rhotics represent a sequence of a tap and a svarabhakti vocoid (fig.3) whereas post-consonantal rhotics are a combination of a svarabhakti vocoid followed by a tap (fig.4). Compared to preceding (fig.3) or following schwa (fig.4), svarabhakti vocoids are shorter and of lower intensity.

Czech syllabic rhotics

The acoustic image of inter-consonantal rhotics in Czech is very similar to the

sequences "schwa + tap + svarabhakti vocoid" and "svarabhakti vocoid + tap + schwa" in Bulgarian. Czech syllabic rhotics represent a tap both preceded and followed by a svarabhakti vocoid (fig.5). The two svarabhakti vocoids are roughly

of equal duration and intensity. Thus the acoustic image of Czech syllabic rhotics is symmetrical unlike that of the Bulgarian sequences "schwa + rhotic + consonant" or "consonant + rhotic + schwa", characterized by asymmetry.

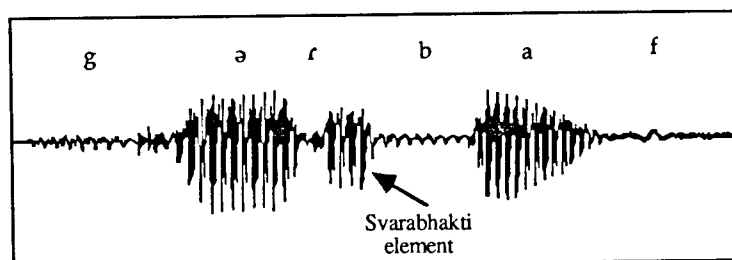


Figure 3. Oscillogram of Bulgarian pre-consonantal rhotic in gǎrbav "hunchbacked"

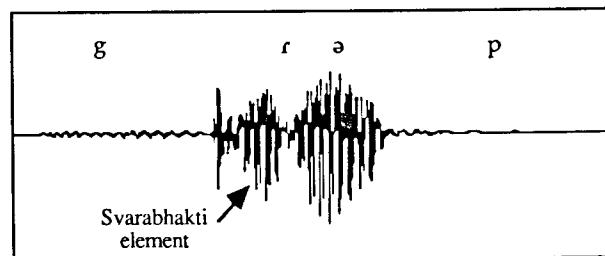


Figure 4. Oscillogram of Bulgarian pre-consonantal rhotic in grǎb, "back"

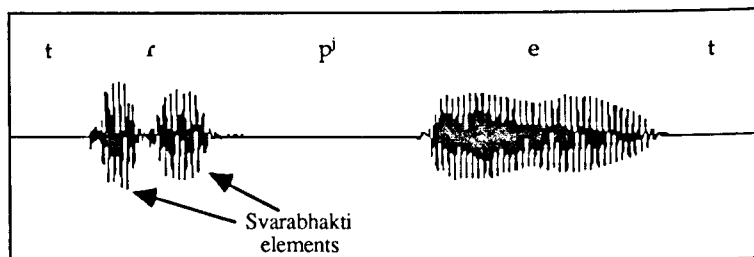


Figure 5. Oscillogram of Czech inter-consonantal syllabic rhotic in trpět, "endure"

SOUND CHANGES THROUGH UNDER- AND OVER-CORRECTION

As pointed out by Ohala [7:348] such "automatic" vocoids may create a sound change. The intervocalic rhotic is an unambiguous context and as such doesn't require any correction. There exists perfect correspondence between the speech signal and its perceptual interpretation. As for pre-consonantal and post-conso-

nantal rhotics, they are contexts with virtual ambiguity: they require correction of the speech signal by the listener (factoring out of the svarabhakti vocoid).

Under-correction of svarabhakti vocoids. Anaptyxis.

If the listener fails to attribute the svarabhakti vocoid to the adjacent rhotic, he will misperceive it as a phonemic (most probably reduced) vowel. He will

under-correct the signal. The resulting sound change will be an *anaptyxis*.

Over-correction of reduced vowels. Vowel loss.

If the listener inappropriately corrects the signal, he can misperceive a reduced vowel as a svarabhakti vocoid, erroneously attributing it to the adjacent rhotic. He will over-correct the signal. The resulting sound change will be a *vowel loss*.

A POSSIBLE SCENARIO FOR BULGARIAN

Merger of contexts A, B1 and B2

In context A, the jers in the Old Church Slavonic sequences ru, ri, lu, li did not denote real jers. Even in strong position they were not subject to lowering. Words as vrhu, privu, skrubi never appear with e, o in the place of strong jers (i.e. in their first syllable).

In the manuscripts [8:139-140] there is often confusion between the hard and the soft jer in these sequences: pruvu instead of privu, srdice instead of srudice, zrno instead of zrno, etc.

By contrast, lowering of the jer in strong position does occur occasionally in the manuscripts where the sequences ru, ri, are found in context B2: krestu for kristu 'cross', krovu for kruvu 'blood'.

Hence Old Church Slavonic used the same spelling ru, ri (pb, pb) for two different phonetic and phonological realities:

- i. "svarabhakti vocoid + rhotic + svarabhakti vocoid" (phonetically), "syllabic rhotic" (phonologically);
- ii. "svarabhakti vocoid + rhotic + reduced vowel (jer)" (phonetically), "non-syllabic rhotic + reduced vowel" (phonologically).

The merger between contexts (i.) and (ii.) took place later: at the end of the Old Bulgarian period, that is, at the end of the 11th century.

The merger resulted from the reanalysis of the jer in context B as a svarabhakti vocoid, i.e. as part of a syllabic rhotic. This was a process of dephonologization. The perceptual mechanism which produced the sound change was that of over-correction. Listeners erroneously analyzed the jer as part of a syllabic rhotic. Then speakers began producing /r/ with symmetrically distributed svarabhakti elements (cf. fig.5) at the place of the

earlier asymmetrical acoustic image corresponding to "rhotic + reduced vowel (jer)" (cf. fig.4).

Schwa anaptyxis

In a later period, a new tendency towards undercorrection of the acoustic signal arose. The Bulgarians then started perceiving either the leftward or the rightward svarabhakti vocoid of syllabic rhotics as a reduced vowel (schwa). This resulted in schwa anaptyxis. One of the svarabhakti vocoids was thus phonologized. Acoustically, this meant a return to asymmetry. The direction of the anaptyxis (leftward or rightward) depended upon the syllable structure. Apparently a constraint prohibiting "liquid + obstruent" codas was at work at that time. That is why "ǎr" is admitted before one consonant when a vowel follows (i.e. in polysyllables), but not in monosyllables where the following consonant is word-final and hence it cannot be resyllabified as the onset of another syllable.

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