

# Synchrony, diachrony and the life cycle

## Anachronisms in Slavic phonology

What do I mean?

My main claim is that the traditional generative approach to Slavic phonology has led to numerous anachronisms, which may or may not prevent us from making progress.

### BCMS yers, part I: accents

One widely accepted reconstruction of Common Slavic accent makes the following distinctions:

- Light syllables could originally bear stress, but made no further distinctions
- Heavy syllables (those with long vowels or sonorant codas) distinguished
  - Circumflex: only found in initial syllables
  - Acute: marked accent, found on any syllable

At some point, weak yers lost their ability to carry stress, and it shifted one syllable to the left. These newly stressed syllables — whether light or heavy — received ‘neoacute’ accent.

This is a super specialist area and this is horribly simplified<sup>1</sup>

The classical Neo-Shtokavian system contrasts four accents:

Neo-Shtokavian	Common Slavic	Example	CSI	Russian
Long falling	Circumflex on heavy syllable	<i>grād</i> ‘town’	* <i>gôrdь</i>	<i>górod</i>
	Neoacute on heavy syllable	<i>sûd</i> ‘judgement’	* <i>sôdь̀</i>	<i>súd</i>
Long rising	Long vowel with retracted stress	<i>tráva</i> ‘grass’	* <i>trāvà</i>	<i>travá</i>
Short falling	Stress on short vowel	<i>krǎvju</i> ‘blood.INS’	* <i>krǎvьjъ</i>	<i>krónju</i>
	Acute (shortened in BCMS)	<i>kràva</i> ‘cow’	* <i>kòrva</i>	<i>koróva</i>
Short rising	Short vowel with retracted stress	<i>dàska</i> ‘plank’	* <i>dъskà</i>	<i>doská</i>

<sup>1</sup> Christian S. Stang. 1957. *Slavonic accentuation*. Oslo: Universitetsforlaget; Paul Garde. 1968. *L'accent*. Paris: Presses universitaires de France; Werner Lehfeldt. 2009. *Einführung in die morphologische Konzeption der slavischen Akzentologie*. 3rd expanded and revised edition, with an afterword by Willem Vermeer (Vorträge und Abhandlungen zur Slavistik 42). München: Otto Sagner Verlag; Mate Kapović. 2015. *Povijest hrvatske akcentuacije: Fonetika*. Zagreb: Matica Hrvatska.

The difference between the ‘falling’ and ‘rising’ accents is basically that

in ‘falling’ accents there is a high tone on the stressed syllable itself, but in ‘rising’ accents the pitch peak is in the post-tonic syllable.<sup>2</sup>

The classical analysis goes back to — no prizes for guessing — Jakobson, this time.<sup>3</sup> It goes like this:

- Stressed syllables with falling accents are word-initial, in the absence of a high tone on any other syllable
- Stressed syllables with rising accents by definition precede a H-toned syllable, which can be anywhere in the word
- Therefore, stress is predictable from tone
- Rising accents occur one syllable to the left of lexical H tone
- Falling accents occur when stress and H tone coincide in the initial syllable
  - This occurs when the H tone is lexically on the initial syllable, and stress cannot go any further leftwards
  - This also occurs when stress is automatically assigned to the initial syllable in the absence of a lexical H tone

<sup>2</sup> Reflecting its original position, which can be seen in more conservative varieties like Kajkavian or Russian

<sup>3</sup> Roman Jakobson. 1931. Die Betonung und ihre Rolle in Wort- und Syntagmaphonologie. *Travaux du Cercle linguistique de Prague* 4. 164–182; Roman Jakobson. 1963. Opýt fonologicheskogo podkhoda k istoricheskim voprosam slavyanskoj aktsentologii: Pozdnij period slavyanskoj yazykovoj praistorii. In *American contributions to the Fifth International Congress of Slavists, Sofia, September 1963*. Vol. 1: *Linguistic contributions*, 153–178. The Hague: Mouton.

*BCMS yers, part II: pre-yer lengthening*

In looking at monosyllabic nouns, we find three patterns:

- Short vowel with falling accent in both monosyllables and disyllables (original acute or light syllable accent)
- Long vowel with falling accent in both monosyllables and disyllables (original circumflex)
- Long vowel with falling accent in monosyllables, short vowel with falling accent in disyllables (original neoacute in monosyllables, with vowel lengthening, light syllable accent in disyllables)

Acute		Circumflex		Light syllable	
NOM.SG	GEN.SG	NOM.SG	GEN.SG	NOM.SG	GEN.SG
ràk	ràka	dûb	dûba	bôg	bôga
gràd	gràda	grâd	grâda	tâst	tâsta
dlàn	dlàna	sîn	sîna	pêc	pêci

What is the phonological analysis?

- The first group looks like an underlyingly short vowel, with predictable falling accent
- The second group looks like an underlyingly long vowel, with predictable falling accent default
- The third group then cannot be either, so what’s up?

- Yers to the rescue!

Toneless short vowels lengthen in monosyllables, potentially to compensate for the loss of the yer<sup>4</sup>

<sup>4</sup> Other accounts are available, however.

UR	bog-ъ	bog-a	grád-ъ	grád-a
Vowel lengthening and footing	[(boog)ъ]	[(boga)]	[(grád)ъ]	[(gráda)]
Yer deletion	boog	boga	grád	gráda
Default tone assignment	bóog	bóga	grád	gráda

There are other, even more involved examples of analyses crucially involving yers.

*So, what's your problem?*

Isn't all that evidence for the presence of yers in underlying representations?

That is usually how it's argued, and the presence of abstract underlying vowels across Slavic is taken to support positing them for BCMS

Except...

- There is only yer quality in BCMS (usually [a])
- There is no evidence from consonant patterning for more than yer
- BCMS vowel-zero alternations are mostly predictable as insertion

Where does this leave the analysis of accents?

There are many other patterns to look at that we don't have time for.

*Yers and palatalization*

- Another very common use for yers — including multiple yers — is the triggering of palatalization

Many languages — here exemplified by Russian — distinguish between three kinds of palatalizing behaviour of yer-initial suffixes:

- No palatalization (rare)
- Velar palatalization but no surface palatalization of non-velars
- Velar palatalization and surface palatalization

These are generally ascribed to the effect of different underlying vowels, one front and one back.

Preceding consonant	-ɔk <sub>Adj</sub>	-ɔk <sub>Dim</sub>	-ɔC-
Non-velar	<i>gad-k'-ij</i> 'abominable'	<i>vod-k-a</i> 'vodka'	<i>lov'-ec</i> 'catcher'
Velar	<i>m'ag-k'-ij</i> 'soft'	<i>ruč-k-a</i> 'handle'	<i>lž-ec</i> 'liar'

### Yers and palatalization redux: Polish

As we saw, this extends to Polish, where the yer is always [ɛ] on the surface.

One thing we have not seen yet is that there are must be two rounds of yer-triggered palatalization in Polish.

Rule	pEsO 'dog'	sOnO 'dream'	gOzO 'gadfly'
Palatalization	p <sup>j</sup> EsO		
Lower	p <sup>j</sup> ɛsO	sɛnO	gɛzO
Yer deletion	p <sup>j</sup> ɛs	sɛn	gɛz
Palatalization II			g <sup>j</sup> ɛz

All these items show yer alternations: GEN.SG *psa, sna, gza*. We need the second palatalization because in the usual analysis, the first palatalization rule riggers IVP, so the yer in *giez* cannot be front.

Rubach:<sup>5</sup> BCMS may need two yers to account for alternations like *strah* 'fear' ~ *strašan* 'frightful'

<sup>5</sup> Jerzy Rubach. 1993. *The lexical phonology of Slovak*. Oxford: Clarendon Press.

### What's your problem?

- General issues with vowel power: the fact that a consonant is soft does not necessarily mean that there is a front vowel in there somewhere
- Softening suffixes do not have to start with front vowels...

Table 6: Palatalizing suffixes without a front vowel (Russian examples)

Stem	Unsuffix- fixed	Suffixed	Note
'thief'	<i>vor</i>	<i>vor'uga</i> 'AUG'	
'ice'	<i>l'od</i>	<i>led'anój</i> 'ADJ'	For the vowel quality, cf. <i>peščánij</i> 'sandy'
'cow'	<i>korova</i>	<i>korov'ónka</i> 'DIM'	

- ... or to have any vowels are all

Table 7: Zero palatalizing suffixes (Russian examples)

Stem	Non-palatalized	Palatalized
'net'	<i>set-k-a</i>	<i>s'et'</i>
'root'	<i>kor'en-ast-ij</i> 'thick-set'	<i>kor'en'</i>
'salt'	<i>sol-onka</i> 'salt shaker'	<i>sol'</i>

In principle, for some of these we could posit a front yer. This might work for items like *s'et'*, which inflect like other items that never occur with a hard consonant, but not for items like *kor'en'*, which belong to a different inflection class.

Already Worth:<sup>6</sup> Russian possesses a non-segmental palatalizing morphophoneme

<sup>6</sup> Dean S. Worth. 1972. Morfonologija nulevoj affiksatsii v russkom slovoobrazovanii. *Voprosy yazykoznavaniya* 1972/6. 76-84.

### *Summing up the problem*

Many of the abstract URs we generally take for granted are not sufficiently well justified

- Circular argumentation
- Incomplete coverage of the data
- Implausible, or at least poorly justified, appeal to cross-Slavic comparison
  - BCMS yers
  - Bulgarian underlying /i/
  - Two abstract yers in Polish
  - Russian palatalization by front vowel

### *Towards a solution*

#### *Rethinking /i/*

Let's recap of the difference between /i/ and /i/

/i/	/i/
[-back]	[+back]
No surface palatalization of non-velars	Surface palatalization of non-velars
Surface palatalization of velars (via post-velar fronting)	First velar palatalization
Inflectional and derivational suffixes	Derivational suffixes

What are we missing?

- Suffixes that trigger surface palatalization of both velars and nonvelars:
  - Russian *ber'i* 'take.IMP.2SG', *bereg'i* 'protect.IMP.2SG'
  - Russian *kos'ě* 'scythe.LOC.SG', *ruk'ě* 'hand.LOC.SG'

The usual solution is rule ordering and cyclicity: surface palatalization of velars — and the second round for nonvelars — apply in later cycles, where velar palatalization does not apply

	Rule	/(po-ruk-i)-ti/	/(ruk)ɨ/	/(ruk)ě/
Cycle 1	Velar palatalization	(po-ruči)-ti		does not apply
Cycle 2	Post-velar fronting Surface palatalization		ruki rukʲi	ruk'e ruk'ě

### ! The take-away

Even with the traditional account, we must have different grammars of palatalization in different morphological contexts

This is the insight in Lexical Phonology,<sup>7</sup> Derivational OT,<sup>8</sup> and Stratal OT<sup>9</sup>

*An alternative: no /i/ in Russian?*

What are the salient properties of /i/?

- It does not palatalize non-velars → behaves as [+back]
- It triggers palatalization of non-velars → behaves as [-]back **but only in later strata**

What are the salient properties of /i/?

- It triggers 1VP → behaves as [-back] **but only in earlier strata**
- It triggers surface palatalization → behaves as [-back], at least apparently

What are the salient properties of the palatalizing morphophoneme?

- It is mostly restricted to Level 1 derivation
- It triggers 1VP:<sup>10</sup> *kol'co* 'ring' ~ *kol'čuga* 'chain mail'
- It triggers surface palatalization: *x'itrij* 'cunning' ~ *xitr'uga* 'trickster'

*The generalization*

These are the suffixes of Russian

- Level 1:
  - 1VP + surface palatalization of non-velars

<sup>7</sup> David Pesetsky. 1979. Russian morphology and lexical theory. MS., Massachusetts Institute of Technology.

<sup>8</sup> Jerzy Rubach. 2000. Backness switch in Russian. *Phonology* 17(1). 39–64. <http://www.jstor.org/stable/4420162>.

<sup>9</sup> Lev Blumenfeld. 2003. Russian palatalization and Stratal OT: Morphology and [back]. In Wayles Brown et al. (eds.), *Annual workshop on formal approaches to Slavic linguistics: The Amherst meeting 2002*, 141–158. Ann Arbor, MI: Michigan Slavic Publications.

<sup>10</sup> The examples are all of *c*, but this is consistent with the Level 1 behaviour of front vowels.

- No softening
- Level 2
  - Surface palatalization of velars, no softening of non-velars
  - Surface palatalization of all consonants, including velars

There are two sources of softening in Russian

- A floating [-back] autosegment
- The [-back] specification of a vowel

This is the grammar of softening in Russian

Level	Softening source	Effect	Traditional analysis
Level 1	Floating /j/	1VP + SP	Front vowel
	Inherent [-back]	Inert	Back vowel, notably /i/
Level 2	Floating /j/	SP across the board	Front vowel
	Inherent [-back]	SP of velars	/i/ with post-velar fronting

Table 11: Reanalysis of the Russian forms from [Tuesday](#)

Level	Rule	/(xod- j)ɨj/	/(muk- j)ɨj/	/(xod- i/	/(muk- i/	/(ruk- je/	/(kos- je/
Level 1	/j/ softening	xodʲi	mučʲi				
Level 2	/j/ softening /i/ softening					rukʲe	kosʲe
Output		xodʲitʲ	mučʲitʲ	xodi	mukʲi	rukʲe	kosʲe

Critically, we now understand why ‘/i/’ can behave as if it was front: because it is! It’s just that its action is narrowly circumscribed by the grammar. We don’t need Jakobson’s post-velar fronting any more!

### Possible objections

Don’t you still have to back the [i] in *xodʲi* ‘walk-PL’?

No! Russian [i] is in fact [ʲi] — a front vowel with strong velarization of the preceding consonant causing a low F2 transition.<sup>11</sup>

<sup>11</sup> Jaye Padgett. 2011. Russian consonant–vowel interactions and derivational opacity. In Wayles Brown et al. (eds.), *Formal Approaches to Slavic Linguistics 18: The second Cornell meeting, 2009*, 352–381. Ann Arbor, MI: Michigan Slavic Publications.

Incidentally, this also means that [i] after postalveolars is also really [j]: there is no phonological rule of backing

All /e/-initial suffixes are softening, but none are like traditional /i/: in your system, they are all /j/. Isn't that a missed generalization?

Yes, there is nothing preventing us from having an /e/-initial suffix that only does surface palatalization of velars. There are none like that in Russian, but they exist in Polish or Slovak, and have indeed been analyzed with /ɤ/. This looks like an accident of history, because it is.

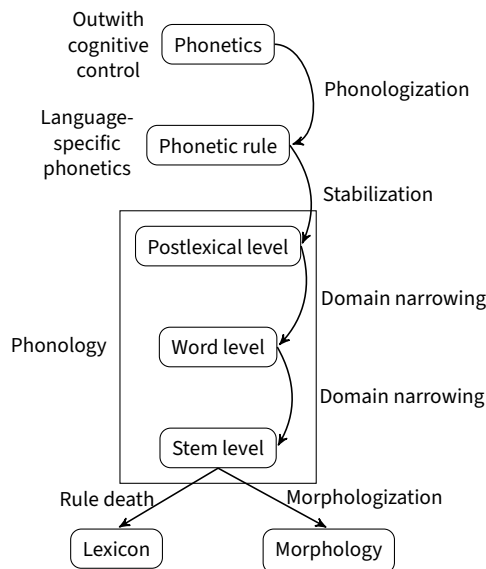
### Summary

- Once we make full use of the stratal structure and the division of labour, we can understand the multiple palatalization processes without proliferation of extrinsically ordered rules and abstract URs
- Very similar conclusions can be drawn for Polish<sup>12</sup>
- Future work (by you?): extend this to Bulgarian, BCMS,<sup>13</sup> Ukrainian, Slovak...

### Rounding off: the life cycle

#### The life cycle of phonological processes

See Bermúdez-Otero;<sup>14</sup> Bermúdez-Otero;<sup>15</sup> Ramsammy;<sup>16</sup> Sen:<sup>17</sup> a theory of how phonological patterns develop from phonetic variation through to morphophonological rules deeply embedded in the grammar.



<sup>12</sup> Edmund Gussmann. 1992. Back to front: Non-linear palatalization and vowels in Polish. In Jacek Fisiak & Stanisław Puppel (eds.), *Phonological investigations*, 5–66. Amsterdam & Philadelphia: John Benjamins; Sławomir Zdziebko. 2015. A generalized nonlinear affixation approach to Polish palatalizations. *Studies in Polish Linguistics* 10(1). 17–55.

<sup>13</sup> see Bruce Morén. 2006. Consonant–vowel interactions in Serbian: Features, representations and constraint interactions. *Lingua* 116(8). 1198–1244. <https://doi.org/10.1016/j.lingua.2005.04.003>.

<sup>14</sup> Ricardo Bermúdez-Otero. 2007. Diachronic phonology. In Paul de Lacy (ed.), *The Cambridge handbook of phonology*, 188–218. Cambridge: Cambridge University Press.

<sup>15</sup> Ricardo Bermúdez-Otero. 2015. Amphichronic explanation and the life cycle of phonological processes. In Patrick Honeybone & Joseph C. Salmons (eds.), *The Oxford handbook of historical phonology*, 374–399. Oxford: Oxford University Press.

<sup>16</sup> Michael Ramsammy. 2015. The life cycle of phonological processes: Accounting for dialectal microtypologies. *Language and Linguistics Compass* 9(1). 33–54. <https://doi.org/10.1111/lnc3.12102>.

<sup>17</sup> Ranjan Sen. 2016. Examining the life cycle of phonological processes: Considerations for historical research. *Papers in Historical Phonology* 1. 5–36. <https://doi.org/10.2218/pihph.1.2016.1691>.



### The life cycle of /i/

- While Russian [i] can be relegated to phonetics, this is not the case for e.g. Polish [i]
- In life cycle terms, Russian [C<sup>ʲ</sup>i] for surface-phonological [Ci] is a **phonetic rule**, that is the process has **phonologized**
- Polish [i]<sup>18</sup> has undergone **stabilization**
- It is predicted that stabilization first occurs at the postlexical level

<sup>18</sup> Or perhaps more precisely [i]

In Modern Standard Russian, velars basically cannot be hard before [e i] — because of the rule /ki gi xi/ → [k<sup>ʲ</sup>i g<sup>ʲ</sup>i x<sup>ʲ</sup>i]

This rule **does not apply** across word boundaries: *K'ir'e* 'Kira.DAT' ≠ *k Ir'e* 'to Ira.DAT'. It has undergone **domain narrowing**.

Two predictions follow

- At an earlier stage, palatalization of velars before [i] must have applied across word boundaries

This is attested, for instance in Northern Russian vernaculars<sup>19</sup>

- Velars do not have low F2, so phonological [ki] (across a word boundary) will not be realized as [k<sup>ʲ</sup>i]

This is exactly what we find in Modern Standard Russian<sup>20</sup>

In other words, Russian has recently acquired **phonological** [i], albeit for now only after velars that escape softening.

This is consistent with the fact that [k<sup>ʲ</sup>i gi xi] are (very marginally) allowed in new borrowings, and famously in the name of the letter <ы>.

<sup>19</sup> Lyudmila Éduardovna Kalnĭn' & Lyudmila Ivanovna Maslennikova. 1981. *Sopostavitel'naya model' fonologicheskoi sistemĭ slavyanskikh dialektov*. Moscow: Nauka, p. 69.

<sup>20</sup> Sergeĭ Vladimirovich Knyazev. 2012. Diftong? Diftongoid? Monoftong? K voprosu o neodnorodnosti [j] v sovremennom russkom yazĭke. In Ol'ga Viktorovna Dedova, Leonid Mikhaĭlovich Zakharov & Konstantin Vasil'evich Lifanov (eds.), *Il Mezhdunarodnĭĭ nauchnĭĭ simpozium «Slavyanskĭe yazĭki i kul'turĭ v sovremennom mire»*, 280–281. Moscow: Filologicheskĭĭ fakul'tet MGU im. M. V. Lomonosova.

### Further extensions

- Polish is ahead of Russian
  - Merger of [C<sup>ʲ</sup>i] and [Ci]
  - Palatalization of velars by front vowels blocked across some morphological boundaries — further ahead in domain narrowing
- Other phenomena: see recently Dyachenko, Pronina & Knyazev<sup>21</sup> on the stabilization of dissimilative vowel reduction in Russian vernaculars

<sup>21</sup> Svetlana V. Dyachenko, Mariia Pronina & Sergey V. Knyazev. 2024. Dissimilative model for unstressed vowels: Three Russian dialects. *Russian Linguistics* 48(1). <https://doi.org/10.1007/s11185-024-09294-3>.

### Conclusions

#### Summing up

- The traditional generative approach to Slavic phonology is in many ways ripe for a re-examination
  - Less abstract URs and poorly motivated pan-Slavic argumentation

- More attention to exceptions and morphological embedding
- Stratification and the life cycle as useful heuristics — or explanatory tools

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