

Ablaut and transitive softening in the Russian verb

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1. Introduction

Transitive softening, a.k.a. iotation, or transitive palatalization, is the term used for consonant mutation in Slavic languages and in Russian in particular. While the term itself has been used for more than a single phenomenon, we will be concerned here with the systematic change illustrated in Table 1 and resulting from an underlying [CjV] cluster (see Halle 1963, Lightner 1972, Coats and Lightner 1975, Bethin 1992 and Brown 1998 for generativist analyses of the phenomenon):¹

Table 1: Transitive softening

	consonant	transitive softening	infinitive (-tʹ-)	1sg (-u-)
a.	s, z	š, ž	<i>pros-í-tʹ</i> ‘to beg’	<i>proš-ú</i> ‘beg-1SG’
b.	t, d	č, ž	<i>obíd-e-tʹ</i> ‘to offend’	<i>obíž-u</i> ‘offend-1SG’
c.	x, k, g	š, č, ž	<i>max-á-tʹ</i> ‘to wave’	<i>maš-ú</i> ‘wave-1SG’
d.	p, b, m, v	plʲ blʲ, mlʲ, vlʲ	<i>lʹub-í-tʹ</i> ‘to love’	<i>lʹubl-ú</i> ‘love-1SG’
e.	l, r, n	lʲ, rʲ, nʲ	<i>bel-í-tʹ</i> ‘to whiten, tr.’	<i>belʹ-ú</i> ‘whiten-1SG’

In the verbal domain transitive softening generally targets second conjugation verbs, where inflectional suffixes are preceded by the theme vowels *-e-* (row (b) and *-i-* (rows (a), (d), (e)), which can be reasonably assumed to turn into glides before the non-front vowel [u]. Yet two sets of first-conjugation verbs undergo transitive softening before the present-tense suffix (underlying representation *-ě-* or *-o-*) despite there being no evidence for a front vowel in the underlying representations of their stems.² The bigger of these classes (ca. 100 verbs) is illustrated in row (c) of Table 1: as the infinitive form shows, the thematic suffix in this verb class is *-a-*. The second such class, consisting of five verbs with the thematic suffix *-o-*, can be illustrated by the verb *kolótʹ* ‘to stab’, whose first-person singular form is [kolʹú] instead of the expected *[kolú] (see a fuller discussion in section 2).

Given that [a] and [o] are unlikely candidates for changing into [j], how can this outcome be achieved? While several proposals have been made (Halle 1963, Lightner 1965, Ward 1970, Bethin 1992, etc.), none of them is independently motivated (see section 6 for discussion). To fill in this gap I will argue below that transitive softening verbs involve ablaut. I will show that the same vowel changes can be found in the verb stem, that the trigger (present vs. past) is the same, and that once this assumption is made, one more case of thematic allomorphy can be derived.

* For Morris, always. The treatment of transitive softening was the reason why we had never finished our work on the Russian conjugation. I hope that he likes this version from where he is.

¹ Transcriptions closely follow Russian orthography and do not indicate: (a) palatalization before front vowels (/Ci/ → [Ciʲ], /Ce/ → [Ceʲ]), (b) various vowel reduction phenomena in unstressed syllables, (c) final devoicing and voicing assimilation. Following Lightner 1965 I assume the underlying distinction between lax (short) and tense (long) vowels that is neutralized on the surface; the yers (abstract high lax unrounded vowels) are represented as /i/ (front, IPA ɪ) and /ü/ (back, IPA ʊ). The letters ы (the IPA ɨ , see Padgett and Žygis 2007), ь (IPA ɨ), ж (IPA ʒ), ш (IPA [ʂ]) are traditionally rendered as č, š, ž, and šč. Stress is marked by an acute accent on the vowel.

² While I will keep the traditional present vs. past labels in the description, the actual distinction is morphophonological rather than semantic, as the infinitive belongs to the past-tense series.

The argument will proceed as follows. I will begin (section 2) with a more detailed presentation of transitive softening and show that the two abovementioned verb classes (henceforth, TS verbs) cannot be accounted for by regular processes. Section 3 will present a stem ablaut in Russian that involves a front stem vowel in the present tense and its back counterpart in the past, similar to the thematic suffix change in TS *a*-verbs. Section 4 expands on it, suggesting the extension of the analysis to another exceptional Russian verb, and discusses ablauts involving more than one feature. The challenges to proper treatment of such ablauts will be discussed in section 5. Section 6 deals with prior analyses, while section 7 concludes and lists possible further extensions. Finally, section 8, the Appendix, lists the verbs subject to stem ablaut.

2. TS verbs

The distinction between the first and the second conjugations in Russian is in the present-tense suffix: in first-conjugation verbs it surfaces as palatalizing [o] under stress and as [e] in unstressed syllables, while second-conjugation verbs use the present-tense suffix [i].³ While second-conjugation verbs systematically trigger transitive softening in the first-person singular (Table 1, rows (a), (b), (d), and (e)), in the first conjugation transitive softening only occurs in a restricted set of verbs and then throughout the present-tense paradigm (Table 2).

Table 2: First conjugation, transitive softening: *pisátʹ* ‘to write’

		singular.M (-F/N)	plural
present	1	piš-ú	piš-e-m
	2	piš-e-š	piš-e-te
	3	piš-e-t	piš-u-t
past		pis-á-l (-a/o)	pis-á-l-i
participle	active past	pis-á-vš-aja	
	active present	piš-ušč-aja	

For the five Russian *o*-verbs (*kolótʹ* ‘to stab’, *molótʹ* ‘to grind’, *polótʹ* ‘to weed’, *borótʹ* ‘to fight’, *porótʹ* ‘to whip’) demonstrating the effect of transitive softening is slightly more complicated: as the present-tense suffix is *-jo-* (see fn. 3) and since with sonorants the effects of transitive softening cannot be distinguished from simple palatalization (see the last row of Table 1), we see it only in the first-person singular (1):⁴

- (1) a. kol- o- tʃ ⇒ [kolótʃ]
 stab TH INF
to stab
- b. kol- ?- Ø- u ⇒ [kol’ú]
 stab TH PRES 1SG
stab 1SG

³ Historically the underlying representation of this suffix was a front vowel surfacing as [ě]. Since [ě] turns into [ø] if stressed and followed by a non-palatalized consonant (the palatalization triggered by *-ě-* remains), and unstressed [ø] preceded by a palatalized consonant turns into [ě], determining the underlying representation of this suffix is a non-trivial task. For the sake of simplicity I will side with here with Lightner 1965 and represent it as *-jo-*. The passive past participle suffix, subject to the same issues, will be represented as underlyingly *-jon-*.

⁴ The underlying representation of the present-tense suffix in the 1SG and 3PL is subject to some debate: some suggest that it is null (rather than *-ě-* or *-jo-*) because there is no palatalization of the stem-final consonant in the 1SG and 3PL (as shown, e.g., by the athematic verb *lezʹ* ‘to climb’/ *lězu* ‘climb-1SG’). Others believe that the present-tense suffix is present throughout the paradigm, but the 1SG and 3PL suffixes are depalatalizing. For the sake of simplicity I will adopt the latter view, as the choice does not affect the main argument.

As is easy to see, were the thematic suffix to remain the same in the present as in the past, the wrong outcome would ensue: the independently motivated (Jakobson 1948) vowel-before-vowel deletion process would get rid of the first vowel ([o]) predicting no palatalization:

- (2) [[[kol-o]₁-Ø]₂-u]₃
 └───┘
 *[kolu] hiatus resolution: vowel-before-vowel deletion

First-conjugation transitive softening is not a phonologically triggered process, as can be seen from the fact that not all verbs appearing with the thematic vowel [a] in the past tense undergo transitive softening in the present. Three categories of *a*-verbs can be distinguished, depending on what happens to the vowel in the present tense:

- (3) Classes of first-conjugation [a] verbs:
- a. **-aj- verbs** (productive): the verbal stem is followed by [aj] before vocalic suffixes and by [a], before non-vocalic ones. While Jakobson 1948, Halle 1963, Lightner 1965, 1967, Melvold 1990, etc., opt for an underlying *-aj-* and glide-deletion before consonantal suffixes, Garde 1972 argues for the underlying *-a-* and glide-insertion before vocalic ones.
 - b. **-Ø- verbs** (15 roots): no trace of [a] remains in the present tense, due to hiatus resolution
 - c. **TS verbs** (ca. 100 roots):⁵ appear with [a] in the past tense and show transitive softening and no sign of [a] in the present tense

As is easy to see, the behavior of TS *a*-verbs cannot be explained by phonology: hiatus in Russian can be resolved either by the deletion of the first vowel (class (3b)) or, if Garde 1972 is correct, by the insertion of a glide (class (3a)). The transformation of [a] into [j] therefore requires a non-phonological treatment (and some prior proposals are discussed in section 6).

I propose that transitive softening in TS verbs arises through a two-step process. The first step is non-phonological and involves the transformation of the thematic suffix *-a-* into [i] (cf. Bethin 1992) or [e]. The second step is predictable: a front vowel before a non-front vowel becomes the glide [j].

Independent evidence for the second step comes from second conjugation verbs, characterized by the thematic suffixes *-i-* and *-e-* intervening between the lexical stem and the infinitive or past-tense exponent (4) and by the present-tense suffix *-i-* (5). The present-tense suffix *-i-* appearing after the thematic suffix creates a hiatus resulting in the deletion of the thematic suffix, as originally suggested by Jakobson 1948:

- (4) a. v- l'ub- i- l- a ⇒ [v'l'ubila] second conjugation thematic suffix *-i-*
 in love TH PAST FSG
 made ___ to fall in love FSG
- b. obid- e- l- a ⇒ [obídela] second conjugation thematic suffix *-e-*
 offend TH PAST FSG
 offended FSG
- (5) a. v l'ub- i- i- t ⇒ [v'l'ubit] i+3SG
 in love TH PRES 3SG
 will make ___ to fall in love 3SG

⁵ Melvold 1990 includes in this group the very productive *-ow.a-/-u.j-* verb class, which she argues to be derived by the verbalizing suffix *-ow-* combined with the thematic suffix *-a-/-j-*.

- b. obid- e- i- t ⇒ [obidʲit] e+3SG
 offend TH PRES 3SG
will offend 3SG

However, before the vocalic suffixes of the 1SG of the present tense, the passive past participle and the secondary imperfective the thematic suffix *-i-* (or the present-tense suffix *-i-*) turns into [j] before a vowel distinct from [i] (for the surface form of the passive past participle suffix see fn. 3):⁶

- (6) a. v- ljub- i- i- [u] ⇒ [vljubʲiʲu] 1sg
 IN love TH PRES 1SG
will make ___ to fall in love 1SG
- b. v- ljub- i- [õ]n- a ⇒ [vljubʲená] PPP
 IN love TH PPP FSG
fallen in love FSG
- c. v- ljub- i- Ø- [a]- l- a ⇒ [vljubʲála] SI (Ø allomorph)
 IN love TH IMPRF TH PAST FSG
was making ___ to fall in love FSG
- (7) a. obid- e- i- [u] ⇒ [obidʲu] 1SG
 offend TH PRES 1SG
will offend 1SG
- b. obid- e- [õ]n- a ⇒ [obidʲena] PPP
 offend TH PPP FSG
offended FSG
- c. obid- e- Ø- [a]- l- a ⇒ [obidʲála] SI (Ø allomorph)
 offend TH IMPRF TH PAST FSG
was offending FSG
- (8) raz- smotr- e- [iv]- a- l- a ⇒ [rassmatrʲivala] SI *-iw-* allomorph
 DIST look TH IMPRF TH PAST FSG
was examining FSG

The passive past participle and secondary imperfective forms show that both [i] and [e] turn into [j] when followed by the back vowels [u], [õ] (modulo fn. 3), [i] and [a] (or maybe just before non-[i]).⁷ Since the vowels [a] and [i] differ in two features ([α back] and [α high]) while [a] and [e] differ in only one, it is more economical to assume that the vowel turning into a glide in TS verbs is [e] rather than [i].

We now turn to the question of how the thematic suffix *-a-* turns into [e] in the present tense.

3. The front ablaut

Ca. 25 Russian verbs (see the full list in section 8) undergo tense-triggered ablaut: their stem vowel is not the same in the present and in the past tenses. While the full range of possible ablauts is discussed in

⁶ Transitive softening does not occur in the second conjugation before the gerund suffix *-a-*, which historically arises from the combination of the present-tense suffix (*-i-*) and the nasal (*-n-*). I will not address this issue here.

⁷ The secondary imperfective in (8) is also subject to voicing assimilation (between the prefix and the stem) and stem-vowel change (triggered by the secondary imperfective suffix, see below). The thematic suffix *-e-* is generally absent in secondary imperfectives (Matushansky 2021), but is detectable here from [i] instead of [j] in the suffix and concurrent palatalization of the stem-final consonant.

section 8, we are currently interested in only one:

Table 3: First conjugation, front ablaut: *molóti* ‘to grind’

		singular.M (-F/N)	plural
present	1	me <i>l</i> i-ú	me <i>l</i> i-e-m
	2	me <i>l</i> i-e-š	me <i>l</i> i-e-te
	3	me <i>l</i> i-e-t	me <i>l</i> i-u-t
past		mol-ó-l (-a/o)	mol-ó-l-i
participle	active past	mol-ó-vš-aja	
	active present	me <i>l</i> i-ušč-aja	

As is easy to see, the stem vowel surfaces as [o] (/ð/) in the past tense and as [e] in the present, and the thematic suffix *-o-* gives rise to transitive softening, strongly suggesting that they undergo the same change. Further evidence in favor of this intuition comes from the historical source of the two vowels: the sequences *-olo-* and *-oro-* are pleophonic variants of *-la-* and *-ra-*, correspondingly (on pleophony in Slavic see, e.g., Sussex and Cumberley 2006:36-37;207). The link between the two variants is the feature [α ATR], as can be seen from Table 4, representing the feature system of Russian vowels. While the four rightmost vowels in the table were historically both lax ([$-$ ATR]) and short, both distinctions are absent from surface representations in contemporary Russian, even though they still underlie a number of morpho-phonological processes, as we will shortly see.

Table 4: Russian vowel system

	[i]	[ĩ]	[u]	[e]	[a]	[ĩ]	[ũ]	[ē]	[ō]
ATR	+	+	+	+	+	-	-	-	-
back	-	+	+	-	+	-	+	-	+
round	-	-	+	-	-	-	+	-	+
high	+	+	+	-	-	+	+	-	-

The pleophony hypothesis, firstly, suggests that the underlying representation of the root is *-mōl-* rather than *-mēl-*. This view is supported by the behavior of the stem in the secondary imperfective. As discussed by Halle 1963, Jakobson 1966, Lightner 1967, Flier 1972, Feinberg 1980, and many others, underived verbs are subject to an autosegmental vowel change in the secondary imperfective: the final vowel of the stem is tensed:

- (9) a. *uskolʹznúti* ‘to slip away_{PRF}’ root vowel -*ǝ*-
 b. *uskolʹzivatʹ* ‘to slip away_{IMPRF}’ (also *uskolʹzátʹ*)
- (10) a. *dospátʹ* ‘to finish sleeping_{PRF}’ root vowel -*ǘ*-
 b. *dosipátʹ* ‘to finish sleeping_{IMPRF}’
- (11) a. *razodrátʹ* ‘to tear apart_{PRF}’ root vowel -*ř*-
 b. *razdirátʹ* ‘to tear apart_{IMPRF}’

The secondary imperfective stem is always either identical to the past-tense stem or derived by tensing the past-tense stem. In the case of the root *-mōl-* the secondary imperfective stem is *-māl-* (12). If the basis for tensing were /mēl/ (or /mēl/), the secondary imperfective stem would surface as [mel], since the lax [ē] and the tense [ē̃] both surface as [e], or [m^ol] (for [ē̃] under stress).

- (12) a. *peremólótʹ* ‘to grind down_{PRF}’ root vowel -*o*-
 b. *peremálivatʹ* ‘to grind down_{IMPRF}’

- (13) a. *podv[ɛ]siti* ‘to suspend_{PRF}’ root vowel -e-
 b. *podv[ɛ̃]sivatʲ* ‘to suspend_{IMPRF}’

As is easy to see from Table 4, the ablaut in question, present-triggered fronting, is the same as the one hypothesized for TS verbs. I suggest that the process is also the same in the two cases: the present-tense morpheme triggers the fronting of the preceding vowel. Formally this can be achieved by either spreading the suffix’s [-back] feature to the preceding timing slot, which is underspecified for backness (cf. Wiese’s (1996) solution for German umlaut), or by postulating a floating [-back] feature on the root that is forced to dock in the presence of the present-tense morpheme or feature. Both options are illustrated in (14) for the verb *kolóti* ‘to stab’ presented in (1), with a sample derivation in (15).⁸

- (14) a. $\sqrt{\text{kol}}$ TH PRES
 [-ATR] [-ATR]
 [-high] [-high]
 [-back]
- b. $\sqrt{\text{kol}}$ TH PRES
 [-ATR] [-ATR]
 [-high] [-high]
 [-back] [-back]

- (15) $[[[\text{kol-o}]_1-\emptyset]_2-\text{u}]_3$ FRONT ABLAUT
 $[[\text{kol-}\bar{\epsilon}]_2-\text{u}]_3$ glide formation
 $[\text{kolj-u}]_3$ transitive softening
 $[\text{kol}^h\acute{u}]$

To account for the double ablaut in the verb *molóti* ‘to grind’ I propose, in accordance with its history, that its root involves two timing slots linked to the same segmental content, which undergoes ablaut at once for both positions.

The larger class of TS *a*-verbs behaves the same:

- (16) $[[[\text{pis-a}]_1-\emptyset]_2-\text{u}]_3$ FRONT ABLAUT
 $[[\text{pis-}\bar{\epsilon}]_2-\text{u}]_3$ glide formation
 $[\text{pisj-u}]_3$ transitive softening
 $[\text{piš}^h\acute{u}]$

The insight from *o*-verbs might expand the list of front vowels turning into glides to include [ɛ̃] (which is the vowel arising from the fronting of [ɔ̃], see Table 4), though it might eventually turn out that the target vowel is [ɛ̃], like in second-conjugation *e*-verbs (see (7b, c)).⁹ Independent evidence for the ability of [e] to

⁸ Both solutions are based on the various studies of Germanic umlaut, which is argued to arise from a floating feature ([-back] for Lieber 1987, [+front] for Wiese 1996). As we will see below, ablaut phenomena in Russian are not limited to fronting, which means that either the present-tense suffix should contain several floating or spreading features or that it can force the docking of the floating features of the root. A solution based on parasitic elements (Ségéral and Scheer 1998) can also be envisaged, but I will not attempt either to refine these options here or to decide between them.

⁹ For glide formation to apply in active present participles of the first conjugation (-*ŭšč-*) yet not those of the second conjugation (-*ašč-*), it is necessary to assume that these suffixes are formed on the basis of the present tense suffix (correspondingly -*o-* and -*i-*) followed by a nasal (suffix -*nšč-*) or with a floating feature [nasal], with subsequent nasal transformation, as argued by Lightner 1965:49ff. for nasal roots and for the cases of 1SG and 3PL (cf. fn. 3).

form glides comes from Late Latin (Chitoran and Hualde 2007), where [e] and [i] historically turned into [j] before another vowel:

(17) *palea* → **palja* → *pała* ‘straw’ (It. *paglia*, Port. *palha*, Fr. *paille*, Sp. *paja*)

To summarize, the stem ablaut in the verb *molóti* ‘to grind’ shares the trigger and the feature with the sound change responsible for the behavior of TS verbs. The hypothesis that ablaut can apply to certain thematic vowels as well as to certain stems allows to assimilate transitive softening to stem ablaut, but also to account for another verb, where the expected transitive softening does not occur.



4. The back ablaut and other ablauts

The verb *revéti* ‘to bellow’ is a first-conjugation verb, where the thematic vowel [e] disappears in the present (Table 5). All other verbs with [e] appearing between the lexical stem and the past-tense suffix are either first-conjugation verbs (e.g., *krasnéti* ‘to be red’/*krasnéju* ‘am red’) surfacing with a glide after [e] in the present or belong to the second conjugation (7).

Table 5: Exceptional first-conjugation verb *revéti* ‘to bellow’

		singular.M (-F/N)	plural
present	1	rev-ú	rev ⁱ -ó-m
	2	rev ⁱ -ó-š	rev ⁱ -ó-te
	3	rev ⁱ -ó-t	rev-ú-t
past		rev-é-l (-a/o)	rev-é-l-i
participle	active past	rev-é-vš-aja	
	active present	rev-úšč-aja	

Applying the same glide formation rule as in (16) we expect transitive softening at least in 1SG:

(18) $[[[\text{rev-}\bar{e}]_1-\emptyset]_2 -u]_3$
 cycle 3: glide formation
 $[\text{revj-u}]_3$
 some more rules
 * $[\text{revl}\acute{u}]$

I propose that the thematic suffix here is underlyingly [a] (same as in (3b)), undergoing the fronting ablaut in the past, and there is in fact a verb demonstrating that such an ablaut is available:

Table 6: Combined [ATR]/[back] ablaut: *péti* ‘to sing’

		singular.M (-F/N)	plural
present	1	poj-ú	poj-ó-m
	2	poj-ó-š	poj-ó-te
	3	poj-ó-t	poj-ú-t
past		pé-l (-a/o)	pé-l-i
participle	active past	pé-vš-aja	
	active present	poj-úšč-aja	

The verb *péti* ‘to sing’ is not a perfect stem counterpart for the change in the thematic suffix of the verb *revéti* ‘to bellow’: the proper pairs for [–high] vowels are given by the lax [ě]/[ǔ] and the tense [e]/[a]. This can be made clearer by representing the Russian vowel system in a different sort of table:

Table 7: Russian vowel system: ATR ablaut

[- ATR] vowels

	-back	+back
+hi	ĩ	ũ
-hi	ě	ǫ

[+ ATR] vowels

	-back	+back	[round]
+hi	i	ɨ	u
-hi	ē	ā	

⇒

That the final vowel in the past-tense forms *revél* and *pel* is [ē] is shown by the fact that it does not become [io] when stressed (cf. fn. 3). It means that another ablaut is needed: the verb *péti* ‘to sing’ also involves a change in the feature [α ATR].

Evidence both for exactly this vowel change and for ablaut targeting two features for one and the same verb comes from the five verbs with the root vowel [ǫ] in the present and [i] in the past:

Table 8: Combined [ATR]/[high] ablaut: *mítì* ‘to wash’

		singular.M (-F/N)	plural
present	1	mój-u	mój-e-m
	2	mój-e-š	mój-e-te
	3	mój-e-t	mój-u-t
past		mí-l (-a/o)	mí-l-i
participle	active past	mí-vš-aja	
	active present	mój-ušč-aja	

On the assumption that the underlying representation of the root vowel is /ũ/, the tensing ablaut yields the past-tense forms ([i]) whereas the present-tense forms are accounted for by a lowering ablaut, which is also attested independently in verbs like *bratì* ‘to take’ (root -*bĩr-*), where the root yer is lowered in the present tense (unlike in the non-ablaut verb *lgatì* ‘to lie’, root -*lũg-*):

Table 9: [high] ablaut: *bratì* ‘to take’

		singular.M (-F/N)	plural
present	1	ber ⁱ -ú	ber ⁱ -ó-m
	2	ber ⁱ -ó-š	ber ⁱ -ó-te
	3	ber ⁱ -ó-t	ber ⁱ -ú-t
past		brá-l (bra-l-a/brá-l-o)	brá-l-i
participle	active past	brá-vš-aja	
	active present	ber ⁱ -úšč-aja	

Table 10: Yer-containing root with no ablaut: *lgatì* ‘to lie’

		singular.M (-F/N)	plural
present	1	lg-ú	lž-ó-m
	2	lž-ó-š	lž-ó-te
	3	lž-ó-t	lg-ú-t
past		lga-l (lga-l-á/lgá-l-o)	lgá-l-i
participle	active past	lgá-vš-aja	
	active present	lg-úšč-aja	

Summarizing, this section has argued that the assumption that ablauts can operate on thematic suffixes as well as roots can also deal with the exceptional verb *revéti* ‘to bellow’, whose behavior in the present is not consistent with the thematic vowel [e]. I have proposed that the thematic vowel is fronted in the past by

the ablaut motivated by the verb *peti* ‘to sing’. As this verb root involves more than one feature change, I provided evidence for other such verbs and also illustrated another relevant type of ablaut in Russian: the lowering ablaut.

5. The nature of the combined ablaut

The natural question to ask here is whether verbs exhibiting a change in two features undergo double ablaut in the present tense or two separate ablauts from an underspecified underlying representation: one in the present and one in the past. The verb *revéti* ‘to bellow’ argues for the latter solution, but the issue of the trigger then becomes highly problematic.

As mentioned above, other verbs with the thematic suffix surfacing as [e] in the past are either derived with a productive (deadjectival) verbalizer and surface with a glide in the present (19a) or belong to the second conjugation (19b). Importantly, the thematic vowel [e] turns into [a] if the root begins with a palatal sibilant [č], [š], [ž], or [šč], but this change does not affect its behavior (20). Moreover, the appearance of a glide after the thematic vowel [a] is the default for first-conjugation verbs (3a).

- (19) a. *-krasn-* ‘red’ + *-e-* (deadjectival verbalizer) → *krasnét/krasnéju* ‘be red.INF/1SG’
 b. *-vis-* ‘hang’ + *-e-* (second-conjugation verbalizer) → *visét/visít* ‘hang.INF/3SG’
- (20) a. *-nišč-* ‘beggarly’ + *-e-* (deadjectival verbalizer) → *niščát/niščáju* ‘become a beggar.INF/1SG’
 b. *-vizg-* ‘squeal’ + *-e-* (second-conjugation verbalizer) → *vizžát/vizžít* ‘squeal.INF/3SG’

If we want to maintain the link between the thematic suffix and the conjugation class, assuming an underlying [e] entails the need either to prevent glide insertion (for the first conjugation [e]) or to explain why *revéti* ‘to bellow’ is not a second-conjugation verb. Assuming an underlying [a] (of the class in (3b), that is deleted in the present tense to resolve the hiatus) removes the issue but introduces past-triggered ablaut.

While the advantage of having past-triggered ablaut is that it provides for a natural one-feature change treatment of cases like *mítí* ‘to wash’ (see Table 8), the uniform behavior of the past-tense suffix *-l-* and the infinitive suffix *-ti-* (as well of the past participle and past gerund suffixes) is not expected under this view as they do not share any obvious semantic or morphophonological features.

6. Alternative proposals

Most prior treatments of transitive softening did not link it to other phenomena. The various proposals detailed below hypothesize either allomorphy or readjustment rules.

Thus Halle 1963 (via Lightner 1967, Ward 1970) hypothesizes glide insertion before an unrounded vowel followed by a rounded vowel (p. 119), followed by the independently motivated deletion of a vowel before another vowel (p. 116). Lightner 1965 (and following him Lunt 2001:182-184) proposes that a tense vowel turns into [j] if followed by a lax one. Setting aside the fact that glide formation is unmotivated here, both views are subject to the same two empirical problems: they do not extend to (a) the *o*-verbs, since the vowel [o] is a lax one (cf. Table 4), and (b) secondary imperfectives of second-conjugation verbs (6c), (7c), where the vowel following the glide ([a]) is both non-round and non-lax; the same problem arises with the overt secondary imperfective suffix *-iv-* (underlying *-iw-*).¹⁰

Coats and Lightner 1975 propose that the underlying form of the thematic suffix is *-aj-* (which for them is the underlying representation of the suffix in (3a)), and the vowel is deleted by a minor rule that also applies in comparatives to the suffix *-eje-* to derive *molóže* (*molod-je*) from the underlying *molod-eje*. While this proposal has the advantage of some generality (applying as it does to another morpheme and in another environment), its disadvantage in the current frameworks is that it has to simultaneously access the

¹⁰ Matushansky 2009 argues that the underlying representation of all allomorphs of the secondary imperfective suffix is *-ǔ-*, in which case the second problem does not arise.

identity of the root (the suffix *-aj-* does not lose its vowel with all roots), the phonological representation of the suffix (the vowel [a] is separated from the root by the glide [j]) and the featural representation of the following morpheme (if the present-tense suffix is null in the 1SG and 3PL, see fn. 4).

Finally, while Brown 1998 and Rubach and Booij 2001 propose that the suffix in question is subject to allomorphy, Bethin 1992:285 (and following her, Boyd 1997) assumes an adjustment rule by which the underlying /a/ of this thematic suffix is replaced by /i/ in the present tense.

7. Conclusion and further questions

I have argued that the two closed classes of verbs exhibiting transitive softening in the present tense and a back thematic vowel ([a] or [o]) in the past can be accounted for by assuming that these two thematic vowels undergo fronting ablaut in the present tense, the same as the fronting ablaut targeting a number of Russian verb stems. The hypothesis that ablaut can apply to thematic vowels as well as to stems makes it possible to account for another Russian verb exhibiting an unexpected behavior in the present tense (*revéti* ‘to bellow’). The advantages of my proposal over prior ones, given in section 6, are its greater phonological transparency and greater empirical coverage (even if restricted for now to one more verb).

Two important issues arise from this proposal.

Firstly, the hypothesis that ablaut can target thematic vowels places a possible additional restriction on the direction of ablaut: it is highly desirable to link conjugation class to the thematic suffix, which suggests that the verb *revéti* ‘to bellow’ should be regarded as an *a*-verb, similar to (3b), yet undergoing ablaut in the past. Another supporting argument comes from the existence of combined ablauts, which seem to be more elegantly viewed as involving an intermediate underlying representation.¹¹

This tackle, however, is problematic from the point of view of the trigger, and therefore the possibility of past-triggered ablaut remains hypothetical.

Secondly, the question arises of whether other minor thematic suffixes can be derived from their more productive counterparts. The most promising case is that of the second-conjugation suffix *-e-*, illustrated in (7), (8) (19b), and (20b): it only occurs in some 100 verbs. It is also possible that the difference between the thematic suffix in (3a), which appears with a glide in the present, and (3b), which is deleted there, can be handled by appealing to different underlying representations and an ablaut, although it is difficult to see how ablaut might block glide insertion. Finally, the two second conjugation verbs with [a] suffix in the past (*spátvi* ‘to sleep’, *gnátvi* ‘to chase’) might also involve ablaut of the underlying *-e-*, although for this to work past-triggered ablaut would seem to be necessary.¹²

Finally, I have said next to nothing about the mechanism of Russian ablaut. The fact that one and the same feature ([αback], [αtense]) can be implied in changes for both the positive and the negative value (see section 8) casts strong doubts on the spreading hypotheses in (14), as does the existence of the nasal ablaut (Rasmussen 1988), as in (21), where the nasal feature is in no way linked to the present-tense suffix (*-i-*). I leave this issue for future investigation since other types of ablaut, in transitivity (22), in null-derived nominalization (23), and in the formation of non-directed/iterative counterparts (24) of unaccusative motion verbs require further investigation.

¹¹ It could seem that adopting this view also paves the way to incorporating the origin of the suffix *-o-* as an allomorph of *-a-* into the same proposal: the verb *rastí* ‘to grow’ would appear to exhibit the same kind of ablaut (*rastú/ros* ‘grow.PRES.1SG/PAST.MSG’). If past-triggered ablaut is possible, the less frequent allomorph ([o]) could be derived from the common underlying representation (/a/). The problem is that no other stem ablauts distinguish between infinitives and the rest of the “past” paradigm, so the form **rostí* would be expected. Whereas the vowel [a] in the infinitive can be attributed to neutralization of unstressed vowels, once this approach is taken, it can be extended to all other instances of the surface [ras], making this verb a regular one.

¹² Three more verbs, *meréti* ‘to die’, *peréti* ‘to trudge’, and *teréti* ‘to rub’, seem like they involve past-triggered lowering (e.g., *mrú/mórlí* ‘die.PRES.1SG/PAST.PL’). The actual reason, like the appearance of the second [e] in the infinitive, is not ablaut but the need to resolve an impossible consonant cluster.

- (21) a. *l'águ/l'óg* 'lie down.PRES.1SG/PAST.MSG' nasal ablaut
 b. *s'ádu/sel* 'sit down.PRES.1SG/PAST.MSG'
- (22) a. *poít'* 'to give drink' from *pju/pilá* 'drink.PRES.1SG/PAST.FSG' transitivity
 b. *sadít'* 'to seat' from *s'ádu/séla* 'sit down.PRES.1SG/PAST.FSG'
- (23) a. *rov* 'moat' from *róju/ríla* 'dig.PRES.1SG/PAST.FSG' null-derived nominalization
 b. *boj* 'fight' from *bjú/bíla* 'beat.PRES.1SG/PAST.FSG'
- (24) a. *sidét'* 'to be seated' from *s'ádu/séla* 'sit down.PRES.1SG/PAST.FSG' non-directed motion
 b. *nosít'* 'to carry' from *nesú/n'ós* 'carry.PRES.1SG/PAST.MSG'

A deeper examination of the systematic nature of stem change in secondary imperfectives ((9)-(11)) might provide additional insights into this complicated matter.

8. Appendix: Russian stem ablaut verbs

The description of the ablaut is given by the value(s) of the changing feature(s) in the present tense. The illustrating verb forms are given in the first-person singular of the present and of the feminine singular in the past, the past-tense masculine form is provided when necessary to determine the stem vowel. The list is, to the best of my knowledge, complete.

8.1 Simple ablauts Those that only invoke one feature

- i. **[-back] ablaut** (1 root): *mel'ú/molóla* 'grind'
- ii. **[-tense] ablaut** (5 roots): *bjú/bíla* 'beat', *vjú/víla* 'weave', *ljú/lílá* 'pour', *pjú/pilá* 'drink', *šjú/šíla* 'sew'. The root yer is detectable in the imperative, where it is lowered and surfaces as [e], e.g., *bej* 'beat.IMP'
- iii. **[-high] ablaut** (7 roots): first conjugation: *zovú/zvalá* 'call', *berú/bralá* 'take', *deru/dralá* 'tear', *bréju/bríla* 'shave', *vném'v/vnimála* 'harken' (highly exceptional verb; root -nim-, the verb looks like a secondary imperfective but with transitive softening); second conjugation: *gon'ú/gnalá* 'chase', *stel'ú/stlála* 'spread'
- iv. **[+tense] ablaut** (1 root): *rastú/roslá* 'grow' (masculine singular *ros*)

8.2 Complex ablauts Those that invoke more than one feature

- v. **[-high] [-tense] ablaut** (5 roots): *vóju/víla* 'howl', *móju/míla* 'wash', *nóju/níla* 'whine', *róju/ríla* 'dig', *króju/kríla* 'cover'
- vi. **[+back] [-tense] ablaut** (1 root): *pojú/péla* 'sing' (masculine singular *pel*)
- vii. **ⁿ-infixation** (3 roots): *l'águ/leglá* 'lie down' (masculine singular *l'óg*, showing that the vowel is [ē]), *s'ádu/séla* 'sit down' (masculine singular *sél*, showing that the vowel is [ē]), *búdu/bílá* 'be' (the underlying vowel is [i])

The lists of o-verbs (5 roots, see section 2) and a-verbs (103 roots) are not provided for space reasons.

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