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ABLAUT AND TRANSITIVE SOFTENING IN THE RUSSIAN VERB
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1. INTRODUCTION

Transitive softening, a.k.a. iotation, or transitive palatalization, in Slavic languages and in Russian in particular (Jakobson 1929, Kortlandt 1994, Meillet 1934, Townsend and Janda 1996, *inter alii*; see Halle 1963, Lightner 1972, Coats and Lightner 1975, Bethin 1992 and Brown 1998 for generativist analyses of the phenomenon) is the term used for a special type of **consonant mutation resulting from an underlying [CjV] cluster**:¹

Table 1: Transitive softening

	consonant	transitive softening	infinitive (- <i>tʹ</i> -)	1sg (- <i>u</i> -)
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>lʹublʲ-ú</i> ‘love-1SG’
e.	l, r, n	lʲ, rʲ, nʲ	<i>bel-í-tʹ</i> ‘to whiten, tr.’	<i>belʲ-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))

Yet ca. 60 Russian first-conjugation verbs undergo transitive softening in the present tense despite no evidence for an underlying front vowel before the present tense suffix (row (c)), the past-tense form contains the theme vowel *-a-*):

(1) root *-pis-* ‘write’:

- | | | | | | | |
|----|----|----------------------|----|------|-----|-------------|
| a. | v- | pis- | a- | l- | a | ⇒ [vpisála] |
| | | in write | TH | PAST | FSG | |
| | | <i>wrote in</i> | | | | |
| | | | | | | |
| b. | v- | pis- | ?- | ě- | u | ⇒ [vpišú] |
| | | in write | TH | PRES | 1SG | |
| | | <i>will write in</i> | | | | |
| | | | | | | |

The consensus is that these verbs somehow acquire [i] in place of [a] in their present tense. Yet how?

My proposal: transitive softening verbs involve ablaut

Evidence: same triggering environment, same vowel changes

Consequences: explaining one more exception

Extensions: more questions on the nature of Russian ablaut

Acknowledgments: 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/* → [*Cʲi*], */Ce/* → [*Cʲe*]), (b) various vowel reduction phenomena in unstressed syllables, (c) final devoicing and voicing assimilation. The yers (abstract high lax unrounded vowels) are represented as /i/ (front, IPA ɪ) and /ü/ (back, IPA ʊ). The letters ч (the IPA *tɕ*, see Padgett and Žygis 2007), ш (IPA *ʃ*), ж (IPA *ʒ*), щ (IPA [ɕɕ]) are traditionally rendered as č, š, ž, and šč. Stress is marked by an acute accent on the vowel.

2. INCURSION INTO TRANSITIVE SOFTENING

Second conjugation verbs use the present-tense suffix *-i-* and are characterized by the so-called thematic suffixes *-i-* and *-e-* intervening between the lexical stem and the infinitive or past tense exponent:

- (2) a. v- ljub- i- l- a ⇒ [vljubíla] 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

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:

- (3) a. v ljub- i- i- t ⇒ [vljúbit] i+3sg
in love TH PRES 3SG
will make ___ to fall in love 3SG
- b. obid- e- i- t ⇒ [obídít] e+3sg
offend TH PRES 3SG
will offend 3SG

However, in the 1sg of the present tense, in the passive past participle and in the secondary imperfective second conjugation verbs undergo transitive softening: the thematic suffix *-i-* or the present-tense suffix *-i-* turns into [j] before a vowel distinct from [i]:

- (4) a. v- ljub- i- i- [u] ⇒ [vljubíju] 1sg
in love TH PRES 1SG
will make ___ to fall in love 1SG
- b. v- ljub- i- [ě]n- a ⇒ [vljubíjená] PPP
in love TH PPP FSG
fallen in love FSG
- c. v- ljub- i- Ø- [a]- l- a ⇒ [vljubíjala] secondary imperfective
in love TH IMPRF TH PAST FSG
was making ___ to fall in love FSG
- (5) a. obid- e- i- [u] ⇒ [obížu] 1sg
in love TH PRES 1SG
will offend 1SG
- b. obid- e- [ě]n- a ⇒ [obížena] PPP
in love TH PPP FSG
offended FSG
- c. obid- e- Ø- [a]- l- a ⇒ [obížála] secondary imperfective
in love TH IMPRF TH PAST FSG
was offending FSG

Conclusion: the vowels [e] and [i] (provided by the corresponding thematic suffixes) turn into [j] when followed by the vowels [u], [ě] (or [ö]) and [a] (or maybe just before non-[i])

3. WRITE-VERBS (INCLUDING *MURLÍKATʲ* ‘TO PURR’)

Second-conjugation verbs (thematic suffixes *-ě-* and *-i-*) use the present-tense suffix *-i-*

The first-conjugation present-tense suffix is *-ě-* (or *-jo-*, cf. Lightner 1965)

Historically it was *-ě-*. Under stress *-ě-* turns into *-o-* (palatalization triggered by *-ě-* remains), and unstressed *-o-* preceded by a palatalized consonant turns into *-ě-*, which makes determining the underlying representation of this suffix a non-trivial task

The first conjugation is characterized by the thematic suffixes surfacing as *-nu-*, *-o-*, *-ē-* and *-a-* in the past tense, or by the lack of such a suffix

While the first three suffixes never trigger transitive softening, the suffix *-a-* falls into three categories, depending on what happens in the present tense forms

(1) **-aj- verbs** (a productive first conjugation class): the verbal stem is followed by *-aj-* before vocalic suffixes (i.e., the present tense suffix *-ě-* and the active present participle *-ŭšč-*), and by *-a-* before non-vocalic ones. So a glide is either deleted before consonantal suffixes (e.g., Jakobson 1948, Halle 1963, Lightner 1965, Lightner 1967, Melvold 1990, etc.) or inserted before vocalic suffixes

(2) **-o- verbs** (15 roots): no trace of *-a-* remains in the present tense or in the active present participle

(3) **TS verbs** (60 roots, as well as all verbs formed by the productive verbalizing suffix *-ov-*): take the theme *-a-* in the past tense and show transitive softening and no sign of *-a-* in the present tense or active present participle:

Table 2: Surface forms, first conjugation, transitive softening: *pisáti* ‘to write’

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

Transitive softening here occurs in the entire present-tense paradigm indicating the presence of a glide before the present-tense suffix. Although this last case is not productive (setting aside the very productive *-ow.a-/u.j-* derivation) and verbs slowly shift from this category to the first one, this does not mean that it doesn't require an explanation.

4. RUSSIAN VOWEL SYSTEM

The historical [α ATR] opposition is essential for verbal ablauts:

Table 3: Russian oppositions: [α high], [α back], [α ATR]:

[– ATR] vowels

	-back	+back
+hi	<i>ĩ</i>	<i>ũ</i>
-hi	<i>ě</i>	<i>õ</i>

[+ ATR] vowels

	-back	+back	[round]
+hi	<i>i</i>	<i>ĩ</i>	<i>u</i>
-hi	<i>ē</i>	<i>ā</i>	

Historically the [ATR] distinctions correlated with the length distinctions, hence the notation None of them are manifested in the surface representations (so [ě] and [ē] are both realized as [e], and [õ] and [ā] as [o] and [a])

The famous two yers, the front one [ĩ] and the back one [ũ], are deleted unless either lowered (to [ē] and [õ], respectively) or tensed (to [i] and [i̥])

5. THE FRONT ABLAUT

Setting aside the only verb with a synthetic future, *biti* ‘to be’, Russian has 26 stems subject to ablaut (see the list in section 10). We’re interested in one:²

Table 4: Surface forms, first conjugation, front ablaut: *molótʹ* ‘to grind’

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

So the underlying root vowel [o] (/ǝ/) turns into [e] in the present tense

How do we know it is underlyingly [o] and not the other way around? From the secondary imperfective, which is subject to an autosegmental vowel change of its own: the final vowel of the stem is tensed (lengthened) (Halle 1963, Flier 1972, Feinberg 1980, etc.):

- (6) a. *skolʲznútʹ* ‘to slide, glide’
 b. *uskolʲznútʹ* ‘to slip away_{PRF}’
 c. *uskolʲzivatʹ* ‘to slip away_{IMPRF}’ (also *uskolʲzátʹ*)

In all ablaut verbs the base for the secondary imperfective is that past-tense form:

- (7) a. *molótʹ* ‘to grind’
 b. *peremolótʹ* ‘to grind down_{PRF}’
 c. *peremolivatʹ* ‘to grind down_{IMPRF}’
 (8) a. *pétʹ* ‘to sing’
 b. *perepétʹ* ‘to sing again_{PRF}’
 c. *perepevatʹ* ‘to sing again_{IMPRF}’

The ablaut (for these verbs) is therefore triggered by the present tense

Table 5: Russian vowel system: FRONT ablaut

[– ATR] vowels

	-back	+back
+hi	ĩ	ũ
-hi	ě	ǝ

[+ ATR] vowels

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

This phenomenon can be formalized by assuming a floating feature ([– back] for Lieber 1987, [+front] for Wiese 1996) or by parasitic elements (Ségéral and Scheer 1998)


However this is achieved, it can straightforwardly be extended to transitive softening verbs

² Other instances of unpredictable ablaut are found in bare-stem deverbal nouns, and transitive and non-directed motion counterparts of unaccusatives.

5.1. Transitive softening as ablaut: o-verbs

Russian o-verbs (*kolotʲ* ‘to stab’, *molotʲ* ‘to grind’, *polotʲ* ‘to weed’, *borotʲ* ‘to fight’, *porotʲ* ‘to whip’ – 5 verbs in all) exhibit transitive softening in the present tense




Expected:

(9) $[[[kol-o]_1-\emptyset]_2-u]_3$

 *kolu cycle 2: vowel before vowel deletion

Correct: *kolʲú* ‘stab.1SG’

Melvold 1990: the present-tense suffix is \emptyset in 1sg. Reason: lack of palatalization. Historically, the 1sg -u ending stems from a back nasal vowel, which depalatalized the preceding consonant. This is how we know that these verbs involve transitive softening

Proposal: the thematic suffix -o- is subject to the front ablaut, like the root -mol- above

(10) $[[[kol-o]_1-\emptyset]_2-u]_3$

 cycle 2: FRONT ABLAUT
 $[[kol-ě]_2-u]_3$

 cycle 3: glide formation
 $[kolj-u]_3$

 some more rules
 $[kolʲú]$

The glide formation process is modeled after Bethin 1992: a front vowel (rather than her [i]) followed by any vowel distinct from [i]:³




(11) $V_{[-back]} \rightarrow [-syll, -cons] / ___ V$ GLIDE FORMATION (TS)

To exclude glide formation for [i]-[i] and [ē]-[i], I assume that front vowels are deleted before [i] by a rule that precedes this one

In non-1sg we get the sequence $ě-ě$, which should not trigger transitive softening, but triggers regular palatalization, which yields the same result for [r] and [l]

5.2. Transitive softening as ablaut: write-verbs

We can now account for *write*-verbs by assuming that their -a-theme is also subject to the front ablaut, which, following Table 5, gives us [ē]:

(12) $[[[pis-a]_1-\emptyset]_2-u]_3$

 cycle 2: FRONT ABLAUT
 $[[pis-ē]_2-u]_3$

 cycle 3: glide formation
 $[pisj-u]_3$

 some more rules
 $[pišú]$

Independent evidence for [e] triggering transitive softening: second conjugation e-verbs (5)

³ For this rule to apply to active present participles of the first conjugation (-*ŭšč-*) yet not to active present participles of the second conjugation (-*ašč-*), it is necessary to assume that these suffixes are formed on the basis of the present tense suffix (correspondingly -*ě-* (turning into [o]) and -*i-*) followed by a nasal suffix (-*nšč-*), with subsequent nasal transformation, as suggested for nasal roots by Lightner 1965:49ff.

Transitive softening occurs in all present-tense cells, e.g., 3sg:

- (13) $[[[pis-a]_1-ě]_2-t]_3$
 ┆
 cycle 2: FRONT ABLAUT
 $[[[pis-ē]_1-ě]_2-t]_3$
 ┆
 cycle 3: glide formation
 $[[pisj-ě]_2-t]_3$
 ┆
 some more rules

[píšet]

Here it is not the root that undergoes ablaut, it is the thematic suffix *-a-*

As this is also the thematic suffix selected by the productive verbalizing suffix *-ov-* (Lightner 1965, Melvold 1990), it is itself productive

6. COMBINED ABLAUT

One verb with the thematic suffix *-ē-* behaves differently from all other *-e-* verbs

Generally, two classes:

- productive: first conjugation, subject to glide-insertion after the suffix
- non-productive: second conjugation

The verb *revéti* ‘to bellow’ is first conjugation:

Table 6: Surface forms, 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-(Ø/a/o)	rev-é-l-i
participle	active past	rev-é-vš-aja	
	active present	rev-úšč-aja	

Why is there no transitive softening?

Expected:

- (14) $[[[rev-ē]_1-ě]_2-t]_3$
 ┆
 cycle 3: glide formation
 $[[[revj-ě]_2-t]_3$
 ┆
 some more rules
 * [revⁱót]

Correct: *revót* ‘bellows’

Or, if the [ē-ě] sequence is unlikely to give rise to a glide, the problem arises for 1sg and the expected form will be *[revⁱu]

Even if we do not expect [ē-V] to give rise to a glide at all, the expected form will be *[revⁱu] in 1sg

We need another ablaut operating in the opposite direction or activating the feature [α back]

Independent evidence: another verb, where the root vowel surfaces as [ē] in the past tense and as [o] in the present tense:

Table 7: Surface forms, first conjugation, combined 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-(Ø/a/o)	pé-l-i
participle	active past	pé-vš-aja	
	active present	poj-úšč-aja	

We know that the vowel in the past tense is [ē] because [ě] would have given us the incorrect **revól*, **p’ól*.

So the simple reversal of the front ablaut is not enough: it creates the pairs [ě]/[ö] or [ē]/[ā]

Table 8: Russian vowel system: BACK ablaut

[– ATR] vowels

	-back	+back
+hi	ĩ	ũ
-hi	ě	ö

[+ ATR] vowels

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

Back ablaut would work for *revéti* ‘to bellow’ (Table 6) but not for *péti* ‘to sing’ (Table 7): in the latter there is also a change in the feature [α ATR]:

Table 9: Russian vowel system: ATR ablaut

[– ATR] vowels

	-back	+back
+hi	ĩ	ũ
-hi	ě	ö

[+ ATR] vowels

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

The ablaut connecting [ē] and [ö] require the change in two features: [α front] and [α ATR]

Independent evidence for combined ablaut: 5 verbs with the stem vowel [ö] in the present and [ĩ] in the past

Table 10: Surface forms, first conjugation, front ablaut: *mítí* ‘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-(Ø/a/o)	mí-l-i
participle	active past	mí-vš-aja	
	active present	mój-ušč-aja	

For these stems the value of the feature [α front] remains unchanged, but the features [α high] and [α ATR] change

Two ways of dealing with this ablaut:

- two features change at once
- the underlying form of the stem vowel is [ũ] and there are two ablauts, one in the past, one in the present

Whatever the solution, it can be extended to *péti* ‘to sing’ (Table 7)

7. CONCLUSION

Ablauts are there, some for a few roots, some for only one

If we assume that thematic vowels can also be subject to ablauts, we can explain not only transitive softening, but also the unexpected lack of it:

- FRONT ABLAUT: *-mol-o-* ‘grind’ (root + theme), other *-o-* verbs (theme), TS-verbs (60 roots + the suffix *-ov-*) (theme)
- COMBINED ABLAUT: *-rev-e-* ‘bellow’ (theme), *-pěj-* ‘sing’ (root)

A lot of new takes on the old facts might follow

7.1. Ablaut or umlaut?

Wiese 1996 distinguishes *umlaut* (vowel fronting, systematically triggered in some stems by several different suffixes, which he treats as phonological) from *ablaut* (unpredictable vowel change occurring in the paradigm of strong verbs, which he assigns to morphology)

See Wiese 2008 for evidence that ablaut is more systematic than it might seem

Wiese 1996 also assumes that [+front] can spread from the suffix to the root only if the vowel of the root is underspecified for that feature

Wiese’s umlaut proposal works perfectly for the Russian front ablaut in the stem of *molóti* ‘to grind’. It cannot be extended to other ablauts because different features are involved

Should we distinguish between ablaut and umlaut in Russian? No:

- it is precisely the same environment: the past vs. present tense series
- these are non-productive phenomena
- the thematic vowel change can go in the opposite direction (for the verb *revéti* ‘to bellow’)
- stem “umlaut” can be combined with an [α ATR] ablaut (in the verb *péti* ‘to sing’)

But ablaut is a lot messier than umlaut

7.2. Direction of ablaut

The relationship between the stem vowels in the present and past forms is non-systematic:

- (15) a. [dɛrʲót] ‘tear.3SG’ [dralá] ‘tore.FSG’
b. [umʲót] ‘will die.3SG’ [umerlá] ‘died.FSG’

The root yer is lowered in the present in (15a) and in the past in (15b)

How do we know that this yer is underlying? Because of secondary imperfective tensing, an independently motivated ablaut, which turns the back yer [ǔ] into [ĭ], the front yer [ĭ] into [i], and [ǒ] into [a] (see Jakobson 1966, Lightner 1967):

- (16) root *-skoliz-* ‘slip’
a. usk[ǒ]lʲznúti ‘to slip away PRF’
b. usk[ǐ]lʲzivati ‘to slip away IMPRF’ (also *uskolʲzát*)

- (17) root *-sǔp-* ‘sleep’
a. dosp[ǒ]át ‘to finish sleeping PRF’
b. dosip[ǐ]át ‘to finish sleeping IMPRF’

In the secondary imperfective the verbs in (15) surface with [i]:

- (18) a. *razdirátʲ* ‘to tear apart’
b. *umirátʲ* ‘to be dying’

The underlying [ě] would have turned into [ē] in the secondary imperfective (no observable change on the surface)

These facts suggests that the underlying form of the stem vowel is [ĩ] in both cases and there are two ablauts, one in the past, one in the present

Likewise for the verb *pétʲ* ‘to sing’ (Table 7): an underlying [ě] backed in the present (to [ǔ]) and tensed in the past (to [ē])

How can the same morpheme trigger opposite ablauts? How can the same root undergo two different ones?

8. OTHER ABLAUTS AND LINKED PHENOMENA

The stem vowel also unproductively undergoes ablaut in truncating nominalizations (e.g., *rov* ‘moat’ from *róju/ríla* ‘dig’, *boj* ‘fight’ from *bjú/bíla* ‘beat’), in transitivity (e.g., *poítʲ* ‘to give drink’ from *pju/pílá* ‘drink’), and in the formation of non-directed/iterative motion verbs from unaccusatives (e.g., *sidétʲ* ‘to be seated’ from *síadu/séla* ‘sit down’)

It is possible that the unexpected third declension nominalizations of the transitive softening verb *-pis-* ‘read’ (e.g., *rúkopisʲ* ‘manuscript’, *skóropisʲ* ‘stenography’) result from ablaut
But other such nouns derived from *-a/-i-* verbs are unexceptional

The two second conjugation verbs with [a] suffix in the past (*spátʲ* ‘to sleep’, *gnátʲ* ‘to chase’) might also involve an ablaut of the underlying *-e-*

8.1. Simultaneous stem and theme ablaut

The verbs *molótʲ* ‘to grind’ and *gnátʲ* ‘to chase’ involve simultaneous (different) ablauts in the root and in the theme: e-e/o-o for the former and o-i/ü-a for the latter. How can we handle this?

Matushansky 2009: secondary imperfectives involve simultaneous yer-tensing in the stem and in the secondary imperfective suffix itself (but there it is the same change!)

8.2. Potential second conjugation ablaut

Puzzle: why does the sequence of the second conjugation thematic suffix *-ē-* and the present-tense suffix *-i-* not convert into [ēj]?

- needed: *-ē-* should be deleted
- usual solution V-before-V deletion, rule ordering
- weird new proposal: the suffix *-ē-* is subject to a lowering ablaut (also exists) and then either coalescence (i-i) or maybe there is no present-tense suffix at all?

Possible alternative: the second conjugation is defined by the thematic suffix *-i-*, which can undergo ablaut and takes a zero present-tense suffix. If so, the thematic suffix *-e-* will only be a first conjugation suffix that will turn into *-ej-* in the present tense. We would still need to explain why it triggers glide insertion rather than transitive softening, but it’s a more general question. More problematic would be the question of [e]-to-[a] change, not attested for [i], so this is probably not a good idea

8.3. Secondary imperfectives

A similar hypothesis can be advanced to explain why the second conjugation thematic suffixes *-e-* and *-i-* sometimes disappear before the secondary imperfective suffix:

- (19) root *-korm-* ‘feed’, theme *-i-*
 a. *korm-í-tj* ‘to feed’
 b. *ot-korm-í-tj* ‘to fatten.PRF’
 c. *ot-kár[m]-iv-a-tj* ‘to fatten.IPFV’
- (20) root *-kus-* ‘bite’, theme *-i-*
 a. *kus-í-tj* ‘to bite’
 b. *ot-kus-í-tj* ‘to bite off.PRF’
 c. *ot-kú[s]-iv-a-tj* ‘to bite off.IPFV’ (**ot-kú[s]-iv-a-tj*)




If the thematic vowel here undergoes back ablaut, as we have already argued thematic vowels can, the resulting back vowel will be deleted before the secondary imperfective suffix

9. ALTERNATIVE PROPOSALS FOR TRANSITIVE SOFTENING VERBS

Halle 1963 (via Lightner 1967, Ward 1970): two rules:

- a. Transitive softening of consonants (tantamount to [j]-insertion) takes place before an unrounded vowel followed by a rounded vowel (p. 119)
- b. A vowel is deleted before another vowel (p. 116)




Halle assumes that the first conjugation present-tense suffix is *-o-* at this point of the derivation. If I make the same assumption, my glide formation will be even more reasonable, it will always be a front vowel before a back one

- (21) $[[[pis-a]_1-o]_2-u]_3$

 cycle 2: glide insertion
 $[[[pisj-a]_1-o]_2-u]_3$

 cycle 2, 3: vowel before vowel deletion
 $[pisj-u]_3$

 some more rules
 $[pišú]$

(b) is clear, but (a) is unmotivated

Empirically, problems with transitive softening in secondary imperfectives (Flier 1972)

Lightner 1965: A tense vowel turns into [j] if followed by a lax one (for him as well, the present-tense suffix is *-jo-*):

- (22) $[[[pis-a]_1-o]_2-u]_3$

 cycle 2: glide formation
 $[[[pisj-o]_2-u]_3$

 cycle 3: vowel before vowel deletion
 $[pisj-u]_3$

 some more rules
 $[pišú]$

Same problems with transitive softening in secondary imperfectives

Ward 1970: doesn't discuss transitive softening in *write*-verbs, postulates j-initial allomorphs in other cases (PPPs, nominalizations, comparative suffixes)

Lunt 2001:182-184: totally follows Lightner (*a* → *j*)

Flier 1972: vague remarks about vowels turning into glides before other vowels

Coats and Lightner 1975: the underlying form of the thematic suffix is *-aj-*, the vowel is deleted by a minor rule (the same that applies in comparatives to the suffix *-aje-* to derive *molože*)

Bethin 1992:285: an adjustment rule for a-suffixed verbs by which the /a/ is replaced by /i/ in the present tense

Boyd 1997: follows Bethin

Brown 1998: this is allomorphy, who cares

Rubach and Booij 2001: OT-governed allomorphy

10. STEM ABLAUT VERBS

25 verbs in all, not counting *bítí* ‘to be’ and the exceptional suppletive verb *idítí* ‘to go’ (present tense/infinitive root *-id-*, past tense *šed-*, imperfective *-xod-*):

- i. **5 roots in [ĭj]** surfacing as [i] (before consonants) or [j] (before vowels): *bjú/bíla* ‘beat’, *vjú/víla* ‘weave’, *ljú/lílá* ‘pour’, *pjú/pílá* ‘drink’, *šjú/šíla* ‘sew’. The root yer is detectable in the imperative, where it is lowered and surfaces as [e]
- ii. **5 roots in [ǔj]** surfacing as [oj] (pres) or [i] (past): *vóju/víla* ‘howl’, *móju/míla* ‘wash’, *nóju/níla* ‘whine’, *róju/ríla* ‘dig’, *króju/kríla* ‘cover’
- iii. **1 root in [ej]** (pres) or [i] (past): *bréju/bríla* ‘shave’
- iv. **4 roots in [ĭr]**: *mrú/míorla* ‘die’, *prú/píorla* ‘trudge’, *trú/tíorla* ‘rub’, and maybe as a synchronically separate root *prostrú/prostíorla* ‘stretch’
- v. **1 root in [oj]** (pres) or [e] (past): *pojú/péla* ‘sing’
- vi. **1 root in [el’]** (pres) or [olo] (past): *melú/molóla* ‘grind’
- vii. **1 root in [a]** (pres) or [ě] (past): *vágu/leglá* ‘lie down’ (masculine singular *vóg*, showing that the vowel is [ě])
- viii. **1 root in [a]** (pres) or [e] (past): *s’ádu/séla* ‘sit down’ (masculine singular *sél*, secondary imperfective root *-sid-*, showing that the underlying vowel is [ĭ])
- ix. **1 root in [a]** (pres) or [o] (past): *rastú/roslá* ‘grow’ (masculine singular *rós*)
- x. **4 yer-containing -a- verbs:** the first conjugation *zovú/zvalá* ‘call’, *berú/bralá* ‘take’, and *deru/dralá* ‘tear’, the second conjugation *gonú/gnalá* ‘chase’ and maybe *stelú/stlála* ‘spread’
- xi. **1 derived secondary imperfective verb with transitive softening** in [e] (pres) or [i] (past): *vnémľu/vnimála* ‘harken’

Historically, *vágu/leglá* ‘lie down’, *s’ádu/séla* ‘sit down’, and *búdu/bílá* ‘be’ involved nasal infixation

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