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RUSSIAN VERBAL STRESS CLASH AS A TONAL CONFLICT

1. INTRODUCTION

Russian is a lexical stress language: each morpheme can be specified for accentuation type (1) and the position of the word stress (a secondary stress may only be present in compounds, see Gouskova 2010) is determined by the Basic Accentuation Principle (BAP) in (2). These core facts are uncontroversial (see Garde 1968, Halle 1973, Melvold 1989, and subsequent work).

(1) a. **Accented morphemes** carry an accent on themselves (open class)

b. **Post-accenting** and **pre-accenting** morphemes set accent on the next or previous syllable correspondingly: while there are no pre-accenting roots, the class of post-accenting roots is large (Halle 1973:316 asserts that there are more than 2000 of them) but closed

c. **Unaccented morphemes** carry no accentual specification of their own (closed class estimated to contain more than 400 roots)

(2) **The Basic Accentuation Principle** (Kiparsky and Halle 1977):
Assign stress to the leftmost accented vowel; if there is no accented vowel, assign stress to the initial vowel.

Productive classes of Russian verbs exhibit three stress patterns in conjugation, one of which cannot be derived from what is independently known or can be proposed about the accentual properties of individual morphemes and the usually assumed rules of their interaction. More specifically, a sizeable proportion of thematic verbs exhibit accentual variability in the present tense despite the fact that the present tense suffix is known to be accented:

(3) a. obmá-n-e-t ‘lie.3SG’, obmá-n-e-te ‘lie.2PL’, obmá-n-u-t ‘lie.3PL’…
b. obma-n-ú ‘lie.1SG’

To deal with these facts, Halle 1973 and Melvold 1989 propose a diacritic property of the stem that triggers stress retraction in certain forms. Feldstein 2015 has shown, however, that this retraction is limited to certain phonologically defined environments, which strongly suggests that the entire phenomenon is phonological in nature.

In this paper I will argue that these facts can be accounted for by assuming that Russian accent is underlyingly tonal, like in many other Slavic languages (Inkelas and Zec 1988, Bethin 2006, Zec and Zsiga 2010, etc.), even though it is realized on the surface in Russian by duration and vowel quality rather than pitch. Following Matushansky [to appear]-a, I will assume that the 1sg pattern arises when the present-tense suffix becomes unstressable (deleted from the metrical tier). I will show that this unstressability arises because of the conflict in the tonal specification of the relevant syllable: it is simultaneously required to be accented (high tone) and post-accenting (low tone).

The paper is structured as follows. In Section 2 I will present the data: first the closed class of athematic verbs, which make it possible to determine the accentual properties of various tense and agreement morphemes, then other verbs, where a thematic suffix introduces an additional accent between the stem and agreement. I will demonstrate that this additional accent ensures,

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The transcriptions below 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) voicing assimilation and final devoicing. Stress is marked by an acute accent on the vowel. The yers (abstract high lax unrounded vowels) are represented as /ĭ/ (front, IPA [ɪ]) and /ŭ/ (back, IPA [ʊ]). The letters *ч* (IPA [t͡ɕ]), *ш* (IPA [ʂ]), *ж* (IPA [ʐ]), *щ* (IPA [ɕɕ]), and *ц* (IPA [t͡s]) are traditionally rendered as *č*, *š*, *ž*, *šč*, and *c*, and the distinction between the two hypothetical underlying representations for the surface [e] (the lax [ɛ] (surfacing as [o] in stressed syllables) and the tense [e]) is not indicated unless essential for the discussion.

if nothing else is said, that post-accenting and unaccented roots should behave the same with respect to stress placement.

Section 3 will codify the intuition that the 1sg stress pattern arises when the present-tense suffix is rendered unstressable. More specifically, I will propose that accented morphemes correspond to a high tone on the accented vowel while post-accenting ones, to a low tone on the last vowel of the morpheme. I will argue that the conflict causing the deletion of the tense suffix from the metrical tier arises when a post-accenting thematic suffix is deleted before the vocalic present-tense suffix as a means of hiatus resolution (Jakobson 1948). After this deletion the low tone associated with the thematic suffix is linked to the accented present-tense suffix yielding a conflict: the same vowel is assigned two different tones and hence two different accentual instructions. I will demonstrate that the combination of this intuition and the independently established assumptions about OCP will suffice to explain why post-accenting roots do not give rise to the 1sg pattern.

Section 4 will conclude, discuss possible extensions of this proposal to other environments and mention some unresolved complications.

2. RUSSIAN STRESS AND THE 1SG PATTERN

Russian unprefixed verbs can be separated into two broad classes: athematic ones, consisting of the lexical stem (root), a tense suffix (present or past) and an argument suffix, and thematic ones, where an additional suffix (minimally, a vowel) appears between the stem and tense. An examination of the accentuation patterns of athematic verbs yields four stem classes (and two verbs that do not fit into them), in function of the accentuation of the verbal root:[1]

Table 1: Accentual interaction in athematic (√-T-ϕ) verbs

		accented PAST-FSG	**unaccented** PAST-PL	**accented** PRESENT-3SG
a.	accented: -*lez*- ‘climb’	*lézlá*	*lézli*	*lézet*
b.	post-accenting: -*nes*- ‘carry’	*neslá*	*neslí*	*nesjót*
c.	unaccented: -*klad*- ‘put’	*klalá*	*kládli*	*kladjót*
d.	retracting: -*gr*ɨ*z*- ‘gnaw’	*grízlá*	*grízli*	*grjózet*

The first class (row (a) in Table 1) exemplifies accented stems, which will always be stressed. The fact that in the other three rows stress falls on the present-tense suffix makes it possible to establish (Melvold 1989) that the present-tense suffix -*e*- introduces an accent. In the past-tense paradigm, on the other hand, accentuation is more complex.

Focusing first on the row (c) with unaccented stems, we see that stress is final with the accented feminine suffix -*a*-, but initial with the unaccented plural suffix -*i*-, which shows that the past-tense suffix -*l*- does not introduce an accent (as expected from an asyllabic suffix). The contrast between the verb in row (b), which surfaces with post-stem stress throughout the paradigm, and that in row (d), which exhibits post-stem stress in the present and stem stress in the past, can be explained by two more assumptions, both introduced in Matushansky [to appear]-b. The first one is that the past-tense suffix is retracting: it forces the movement of the accent assigned by a post-accenting root one syllable to the left. The behavior of row (d) now follows from the assumption that such roots are post-accenting: the accent assigned by the root is retracted. To explain the behavior of row (b) a second assumption is needed, namely that some roots are not

[1] The alternation between the surface [e] in unstressed syllables and the surface [o] with a palatalized preceding consonant ([ʲo]) under stress is allophonic (Lightner 1969, Boyd 1997). The general (and historically motivated) consensus is that the underlying representation of the suffix is -*ɛ*- (Lightner 1965:22, Melvold 1989:79).

merely post-accenting but also *unaccentable*: they cannot be assigned an accent. However the property of unaccentability is derived (see section REF), unaccentable stems will be unable to tolerate retraction required by the past-tense suffix and thus will force post-stem stress. While the two hypotheses have been introduced to explain the accentuation of infinitives and passive past participles, they will turn out to be essential also for the present-tense patterns of thematic verbs discussed below.[2]

We end up, as a result, with the conclusion that the past-tense suffix is unaccented (which gives rise to variable accent placement with unaccented roots, row (c)), while the present-tense suffix introduces an accent (as is suggested by the lack of such variability in the present). As a result, when we turn next to thematic verbs, we can demonstrate that the majority of thematic suffixes introduce an accent: only one small, closed class of thematic verbs exhibit accentual variability in the past (4), all others surface either with stress on the stem (with accented roots, as in (5a)) or with stress on the thematic suffix (5b), which may be the result of either a post-accenting or an unaccented root:

(4) a. *lg-a-l-á*/*lg-á-l-i* 'lie.TH-PAST-FSG/PL' — unaccented root, unaccented theme
br-a-l-á/*br-á-l-i* 'take.TH-PAST-FSG/PL'

b. *éx-a-l-a*/*éx-a-l-i* 'ride.TH-PAST-FSG/PL' — accented root, unaccented theme

c. *eb-á-l-a*/*eb-á-l-i* 'fuck.TH-PAST-FSG/PL' — post-accenting root, unaccented theme

(5) a. *tóp-n-u-l-a*/*tóp-n-u-l-i* 'stomp.TH-PAST-FSG/PL' — accented root, accented theme

b. *max-nú-l-a*/*max-nú-l-i* 'wave.TH-PAST-FSG/PL' — non-accented root, accented theme

The verbal class in semelfactive *-nu-* is productive. The lack of accentual variability in the past tense in this class can only be explained by the accent introduced by the thematic suffix: given the BAP (2), the accentual properties of the agreement suffixes will be irrelevant in the presence of an accent to their left. Garde 1968, Halle 1973 and Melvold 1989 all conclude therefore that thematic suffixes are accented (except *-a-* in (4)).

Given that the thematic suffix precedes tense and agreement suffixes, the BAP (2) predicts that the present tense of thematic verbs will behave exactly like their past tense: stress will surface either on the stem (for accented roots) or immediately after it. This, however, is not the case: while both consistent stem stress (row (a) in Table 2) and consistent post-stem stress (row (b)) are attested, the third stress pattern exhibits post-stem stress in the past correlated with variant stress in the present (row (c)): in the present tense of such verbs stress falls on the stem except in the first-person singular, where it is final:

Table 2: Accentual interaction in thematic *nu*-verbs

		accented PRES-3SG	**accented** PRES-1SG	**accented** PAST-FSG	**unaccented** PAST-PL
a.	stem: *-top-* 'stomp'	*tóp-n-e-t*	*tóp-n-u*	*tóp-n-u-l-a*	*tóp-n-u-l-i*
b.	post-stem: *-max-* 'wave'	*max-n^{j}-ó-t*	*max-n-ú*	*max-n-ú-l-a*	*max-n-ú-l-i*
c.	variant 1sg: *-obman-* 'cheat'	*obmá-n-e-t*	*obma-n-ú*	*obma-n-ú-l-a*	*obma-n-ú-l-i*

The pattern in row (c) (henceforth, *the 1sg pattern*) is attested with several thematic suffixes (including the productive second-conjugation suffix *-i-*) and does not follow directly from the hypotheses advanced so far, as will be shown in the next section.

[2] The facts in Table 1 have been treated by Melvold 1989 and Garde 1998. Melvold 1989 proposed that the roots in row (b) are post-accenting, whereas those in row (d) are post-accenting and retracting. Conversely, Garde 1998 hypothesized that the past-tense suffix is subject to accentual allomorphy in function of the final segment of the stem (factually different descriptions of this allomorphy are given on pp. 323-324, 325 and 333). Neither analysis can be extended to the facts discussed in Matushansky [to appear]-b or is relevant for the patterns examined here.

2.1. Segmental phonology of the thematic suffix and its effect on accentuation

The obvious difference between thematic and athematic verbs is the presence of the thematic suffix, which introduces its own accent. Whereas the 1sg pattern is attested in both conjugation classes, athematic verbs belong to the first conjugation (defined by the present-tense suffix *-e-*, turning into [ʲo] under stress, see fn. 1), which therefore allows better comparison. As Table 3 (presenting the underlying representations of the present-tense patterns of Table 2) shows, the hiatus created by the thematic suffix *-nu-* and the present-tense suffix *-e-* is resolved by the deletion of the first vowel (see Jakobson 1948 for the original hypothesis and Lightner 1965, Halle 1973, Melvold 1989, etc., for its development). Importantly, all verbs exhibiting the 1sg pattern (with the sole exception of the athematic verbs *prinʲátʲ* 'to accept' (and other derivatives from the cranberry root *-im-*/*-nʲa-* 'have') and *močʲ* 'to be able') are characterized by either the deletion of the thematic vowel or by its transformation into a glide.

Table 3: Hiatus resolution in the present of thematic *nu*-verbs

		accented PRES-3SG	**accented** PRES-1SG
a.	stem: *-top-* 'stomp'	*tóp-nʉ-e-t*	*tóp-nʉ-ɇ-u*
b.	post-stem: *-max-* 'wave'	*max-nʉ-ʲó-t*	*max-nʉ-ɇ-ú*
c.	variant 1sg: *-obman-* 'cheat'	*obmán-nʉ-ɇ-t*	*obman-nʉ-ɇ-ú*

Since the thematic suffix *-nu-* introduces an accent (as shown by the lack of a third accentual pattern in the past (Table 2)), the 1sg pattern can result from one or both of the following two causes: (1) the accent introduced by the thematic suffix, and (2) the deletion of the vowel of this suffix. However, since only some verbs show this pattern, the properties of the root must also play a role.

2.2. Thematic verbs and the accentuation of the stem

The two rather than three attested accentual patterns in the past tense strongly suggest that with an accented suffix post-accenting and unaccented lexical stems cannot be distinguished: both are expected to give rise to post-stem stress. Post-stem stress is also the outcome of combining a post-accenting root with an accented suffix in other environments, in both nominal and verbal domain. In the nominal domain this can be shown by that fact that post-accenting nouns like *čertá* 'line' and unaccented nouns like *dušá* 'soul' both exhibit final stress with the accented nominative ending *-a-* (the paradigms in Table 4 are provided in order to confirm the accentual properties of the relevant endings):

Table 4: Accentual interaction in the first (*-a-*) nominal declension

	accented FSG.NOM	**unaccented** FSG.ACC	**unaccented** PL.NOM
accented: *luž-* 'puddle'	*lúž-a*	*lúž-u*	*lúž-i*
post-accenting: *čert_-* 'line'	***čert_-á***	*čert_-ú*	*čert_-í*
unaccented: *duš-* 'soul'	***duš-á***	*dúš-u*	*dúš-i*

In the verbal domain both types of post-accenting athematic verbs (rows (b) and (d) in Table 1) exhibit post-root stress when combined with the accented present-tense suffix *-e-*. Crucially, in both domains unaccented roots cannot be distinguished from post-accenting ones when followed by an accented suffix, showing that two accents assigned to the same syllable give rise to the same effect as a single accent.

To illustrate this I will use the autosegmental metrical structure notation introduced by Halle and Vergnaud 1987a, b and developed in Idsardi 1992 and Halle and Idsardi 1995, where each syllable projected to the first line of the metrical tier is indicated by an asterisk and foot edges are marked by parentheses. Unlike Melvold 1989, who represents post-accenting morphemes by a diacritic triggering the advancement of a parenthesis to the next syllable, I follow Halle's (1997) notation, where a post-accenting morpheme introduces a left parenthesis after itself. In cases like *cert á* 'line' or the instrumental plural of a post-accenting root (6) from Halle 1997, Halle proposes that vacuous parentheses are deleted:

(6) a. ko rol a mi → b. ko rol a mi
* *((* * * * (* *

The same principles are expected to apply in verbal derivation, and no difference between (7a) and (7b) is thus expected (irrespective of whether the suffix *-nu-* is accented or post-accenting, as in the latter case the retraction triggered by the past-tense suffix would return the accent to the semelfactive suffix *-nu-*):

(7) a. unaccented root

√ nu l a
* (* (*

b. post-accenting root

√ nu l a → √ nu l a
(((* * (* (*

Turning now to the present tense of thematic verbs, it does not differ from the past with respect to the accentual interaction between the stem and the semelfactive suffix because the accent of the latter precedes the accent introduced by the present tense. Irrespective of whether the stems in rows (b) and (c) are post-accenting or unaccented, the accent introduced by the semelfactive suffix nullifies this distinction: the first parenthesis in (8b) would be deleted just like in (7b):

(8) a. unaccented root b. post-accenting root

√ nu e t √ nu e t
* (* (* *((* (*

Importantly, the thematic vowel should be deleted before the present-tense suffix. However, even if we suppose, to maintain the distinction between the two types of stems, that its accent is not deleted at an earlier stage, we would still not obtain the distinction between the post-stem pattern and the 1sg pattern.

If the accent of the semelfactive suffix is deleted at the same time as the vowel, the distinction between post-accenting or unaccented lexical stems will reduce to two vs. one accent assigned to the same syllable (the present-tense suffix). The superficial accent in (8d) would be deleted.

(8) accent is deleted with the theme vowel

c. unaccented root d. post-accenting root

√ nú e t √ nú e t
* (* *((*

(8) accent is shifted to the right:

e. unaccented root

√	nʊ	e	t
*	(	(*	

f. post-accenting root

√	nʊ	e	t
*(	(	(*	

Finally, if the accent of the deleted vowel is shifted to the previous syllable, we will expect it to surface on the stem-final syllable for both post-accenting and unaccented stems:

(8) accent is shifted to the left:

g. unaccented root

√	nʊ	e	t
(*(		(*	

h. post-accenting root

√	nʊ	e	t
(*(		(*	

While (8e-f) represents the correct outcome for non-1sg non-accented stems, and (8g-h), the stem-final stress obtained in the non-1sg cells of 1sg stems, neither the special status of the 1sg nor the distinction between two types of verbs surfacing with post-stem stress in the past are expected from (8).

As the 1sg pattern has proved impossible to derive from other principles, its prevalent treatment in the generative phonology of Modern Russian (Halle 1973:328, Melvold 1989:291, Idsardi 1992:124, Gladney 1995:114-117, Feldstein 2015, among others) has been to assume a special lexical property of the relevant verbal stems: certain stems bear a diacritic triggering retraction in the present tense, except in the 1sg. However, as observed by Feldstein 2015, there exist two more forms, which systematically exhibit the same accentual pattern as the 1SG, and both of them are simple vowel endings of the type -V#:

(9) a. *vert-í* 'spin.IMP', *vertʲ-á* 'spin.GER' (cf. *verčú*/*vértit* 'spin.1SG/3SG')
b. *obman-í* 'cheat.IMP' (cf. *obmanú*/*obmánet* 'cheat.1SG/3SG')
c. *lʲub-í* 'love.IMP', *lʲubʲ-á* 'love.GER' (cf. *lʲublú*/*lʲúbit* 'love.1SG/3SG')

While Feldstein's generalization could be a pure coincidence, I propose that it is indicative of the fact that retraction in the 1sg pattern is derived phonologically rather than morphologically.

3. PRESENT-TENSE UNSTRESSABILITY AS A RESULT OF ACCENTUAL CONFLICT

I will adopt the descriptive generalization proposed in Matushansky [to appear]-a, which suggests that the 1sg pattern is due to induced unstressability of the present-tense suffix: verbal roots triggering the pattern delete the position associated with the present-tense suffix from the metrical grid. As a result, the accent that would be assigned to the suffix (either that of the present-tense suffix itself or that of the thematic suffix, whose vowel is deleted before another vowel) shifts to the right if a syllable is available (i.e., in the 1sg, in the imperative and in the gerund, per Feldstein's generalization):[3]

(10) unstressable tense, syllabic 1sg ending

√	nu	e	u	→	√	nʊ	e	u	→	√	n	e	u
*	(*	(*	*		*		(*	*		*		(	*

If no such syllable is available (the 2pl ending is stipulated to be extrametrical and all remaining ones are asyllabic), the accent is forced to shift to the left. Independent evidence for stress shifting to the left in the absence of a syllable to which it can be assigned comes from Russian

[3] The present active participle suffix *-ušč-*/*-ʲašč-* would seem to be an exception to this generalization. However, all active participles also contain the long-form suffix, which, as noted by Melvold 1989, triggers stress retraction to the left.

post-accenting nouns. As illustrated in example (11), a masculine noun with a post-accenting stem surfaces with stem-final stress because the exponent of the nominative masculine singular is the back yer (-*ŭ*-), which cannot bear stress: unless affected by some readjustment rule, a yer is vocalized (lowered) if there is a yer in the next syllable and deleted otherwise.

(11) a. korolʲ-a → *korolʲá*
king-SG.GEN
'a king'

b. korolʲ-ŭ → *korólʲ*
king-SG.NOM
'a king'

Since for Melvold (1989:23) post-accentuation consists of post-cyclically shifting a stress that has already been assigned one syllable to the right, if no such syllable is unavailable, stress is not shifted, remaining on the final syllable of the word. In the Halle-Idsardi system, on the other hand, an additional parenthesis needs to be inserted before the post-accenting syllable:[4]

(12) a. post-accenting noun, asyllabic case ending

ko rol ŭ → ko rol ŭ
* *(* (*(

b. unstressable tense, asyllabic 3sg ending

√ nu e tŭ → √ nɯ e tŭ → √ n e tŭ → √ n e tŭ → √ n e tŭ
* (* (* * ((* * (* * ((* (

Having established the main hypothesis, two questions need to be answered: why the present-tense suffix becomes unstressable and what is the role of the stem. To recall once again, up to three accents maybe appear after the lexical stem:

- the first-conjugation present-tense suffix is known to introduce an accent because athematic verbs may exhibit accentual variability in the past while having only two accentual patterns in the present
- the thematic suffix is also known to introduce an accent because thematic verbs (in contrast to athematic ones) have only two accentual patterns in the past: stress on the stem and stress on the thematic suffix
- finally, nothing precludes the stem itself from introducing an accent if the stem is post-accenting

I will argue that unstressability of the present-tense suffix arises when the vowel of the thematic suffix is deleted before another vowel. More specifically, my working hypothesis is that the deletion of the thematic vowel does not affect its accentual specification, whose assignment to the present-tense suffix gives rise to conflicting stress specifications on the same syllable. I will further argue, linking 1sg retraction to inherently available properties of verbal stems, that this accentual conflict can be avoided when the lexical stem is post-accenting.

While the Halle-Idsardi notation cannot easily obtain this result, I will show that the hypothesis that Russian accentuation is rooted in tone permits a straightforward explanation of this pattern.

3.1. Proposal

I propose that Russian accent is encoded not as a diacritic on a given morpheme or syllable but as tone (cf. Dubina 2012). Specifically, I propose that a simple accent is encoded as a high tone

[4] Halle 1997:284 formulates this rule for yers. A reasonable adjustment would have it refer to syllable nuclei not projected to the metrical tier.

(H), while post-accentuation is encoded as a low tone (L).[5] The high tone corresponds to the head of an iambic foot (unless, of course, the syllable is initial, in which case we might assume a degenerate foot or a trochaic one) and the low tone, to the tail of an iambic foot.[6] Importantly, for our purposes it is essential that these tonal specifications correspond to instructions on the metrical tier, i.e., the system is a derivational one.

Given that Russian only allows one stress per word, what happens when two tones are present? The following descriptive generalizations characterize all possible options:

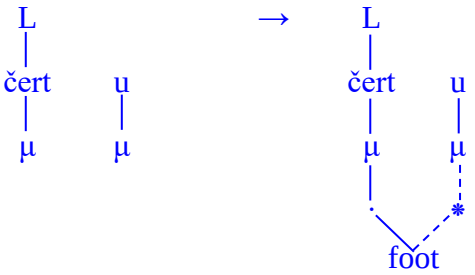
(13) a. LL: in a sequence of post-accenting morphemes place stress after the rightmost
b. LH: in the sequence of a post-accenting and accented morphemes, stress the latter
c. HX: the first accented morpheme gets stress

Assuming tonal representation of accentuation and iambic feet derives all the patterns in (13), as I will now show.

3.1.1. Post-accenting stems

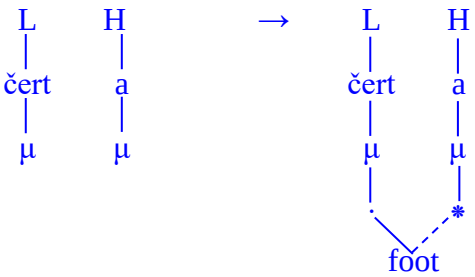
The sequence of two accented morphemes or the sequence of an accented and a post-accenting morpheme pose no issues, the first accent will win in accordance with the BAP (2). Continuing with more complex cases, a stem-final low tone translates into the tail of an iambic foot. The combination of a post-accenting nominal stem (e.g., -*čert*- 'line') and an unaccented accusative ending illustrates this derivation:

(14)



If the same post-accenting stem is followed by the accented nominative ending, the outcome is the same, since a high tone is associated with the head of an iambic foot:

(15)



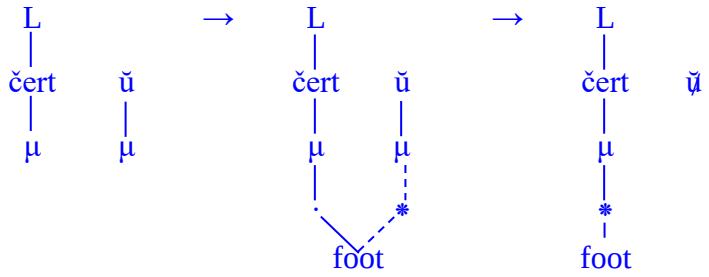
The final simple scenario to consider is the one where a post-accenting stem is followed by a suffix that cannot bear stress (because it is asyllabic, unstressable, or unaccentable). Such is the

[5] I follow the usual assumption that prominence is associated to a high tone. However, Bethin 2006 demonstrates that in some East Slavic dialects pretonic syllables bear a lexical high tone, which raises the possibility of the reverse association.

[6] While Crosswhite 1999, Crosswhite 2000, Gouskova 2010, and Dubina 2012 argue for iambic feet in Russian (supported by the existence of post-accenting morphemes and the special status of pretonic syllables), Revithiadou 1999 hypothesizes that feet in Russian are trochaic, which could account for pre-accenting morphemes, but Dubina 2012 provides convincing evidence against her view.

case with the -*ŭ*- allomorph of the genitive plural suffix (surface-identical to the nominative masculine singular):[7]

(16)



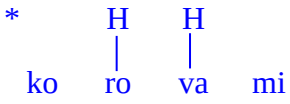
This last case represents an additional assumption necessary if only iambic feet are assumed to be possible: on both the left and the right edges of a word a degenerate foot consisting of just one mora can be created.

3.1.2. OCP and tonal sequences

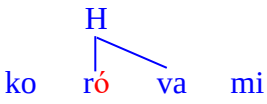
The Obligatory Contour Principle, as originally formulated by Leben 1973, prohibits sequences of adjacent identical tones. On the assumption that Russian accents are represented as tones, LL and HH sequences are prohibited. Two ways of handling them can be envisaged: multiple linking (17c) or deleting one of the two tones (17d-e):

(17) a. korov- 'cow' + -ami 'PL.DAT' → *koróvami* 'with cows'

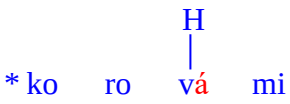
b. OCP violation



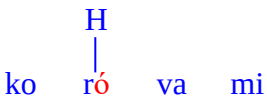
c. multiple linking



d. deletion of the first tone



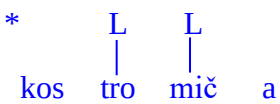
e. deletion of the second tone



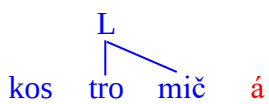
As is easy to see, in the case of deletion, the choice of which tone to delete determines where the word stress will surface. While the deletion of the second tone yields the right outcome for a sequence of two high tones (17e), for a sequence of two low tones the same algorithm would yield the wrong result, as in (18e). For the correct surface representation the rightmost low tone should survive (18d):

(18) a. kostrom_- 'Kostroma' + -ič_ 'NMLZ'+ -a 'GEN' → *kostromičá* 'of an inhabitant of Kostroma'

b. OCP violation

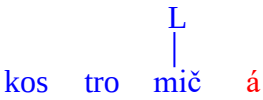


c. multiple linking

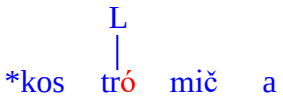


[7] Under most contemporary approaches to yers, they do not project a mora: whether they are regarded as floating melodic segments (Rubach 1986, Kenstowicz and Rubach 1987, Rubach 2016 and Yearley 1995) or as bare root nodes (Szpyra 1992), they are not projected on the skeletal tier. However, to make my representations more transparent I will assume that a mora is projected, but deleted when the yer is.

d. deletion of the first tone

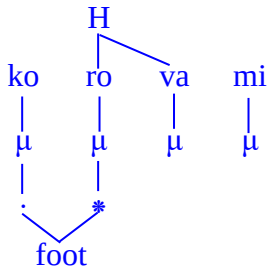


e. deletion of the second tone

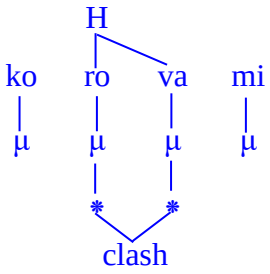


This means that tone deletion will have to operate differently for different sequences. Multiple linking removes this issue, and the realization of a multiply linked tone on the metrical tier can be accounted for by the assumption that Russian feet are iambic. Assuming (17c) and (18c) as the underlying representations, we can rule in (19a) and exclude (19b) by noting that only the former yields a legitimate iambic foot.

(19) a.

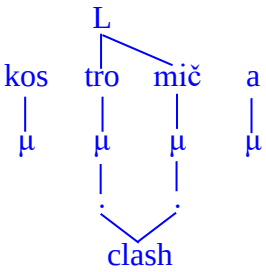


b.

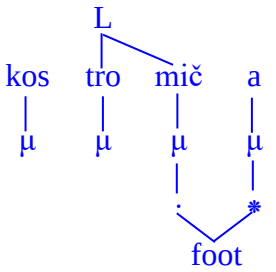


The same reasoning applies to the underlying representation in (18c): in the structure in (20a) the foot contains two tails, while in the correct surface representation in (20b) a normal foot is created:

(20) a.



b.



It appears therefore that the multiple linking hypothesis can better account for the observed empirical picture. However, more important is the fact that stress realization in a sequence of two post-accenting morphemes is the reason why it is necessary to treat post-accentuation in a manner distinct from placing an accent mark on the next syllable (*pace* Idsardi 1992, Halle and Idsardi 1995, and Halle 1997). The main intuition is the same as that of Garde 1968, 2015 and Melvold 1989:22: post-accentuation is a process forcing stress rightwards.[8] An additional need for separating accent and stress is given by the 1sg pattern, as we will now see.

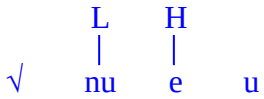
3.2. Thematic post-accentuation and vowel deletion

As discussed above, the 1sg pattern arises only when the vowel of the thematic suffix is deleted before the vowel of the present-tense suffix and only when the thematic suffix introduces an accent. I hypothesize that after vowel deletion a conflict arises: one and the same mora receives

[8] It has been suggested (Revithiadou 1999:46-51) that post-accentuation arises from an unaccentable morpheme bearing a floating accent: being unaccentable, it forces the accent to link to its right. Not only will this system not help with the 1sg pattern (because no conflict would arise with the accent of the deleted vowel), post-accentuation and unaccentability can be shown to be independent in Russian, given the existence of unaccentable pre-accenting morphemes, such as the passive past participle suffix *-ĕn-* (Matushansky [to appear]-b). The iambic system proposed here suggests, on the other hand, that pre-accentuation can only be caused by unaccentability.

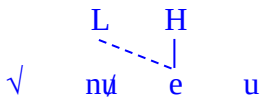
conflicting instructions: both to bear stress (i.e., to become the head of an iambic foot) and to assign stress to its right (i.e., to become the tail of an iambic foot). While I have been assuming so far with Melvold 1989 that both the present-tense suffix and the thematic suffix are accented, I will now adopt the hypothesis that thematic suffixes are systematically post-accenting, while the present-tense suffix is accented:

(21)



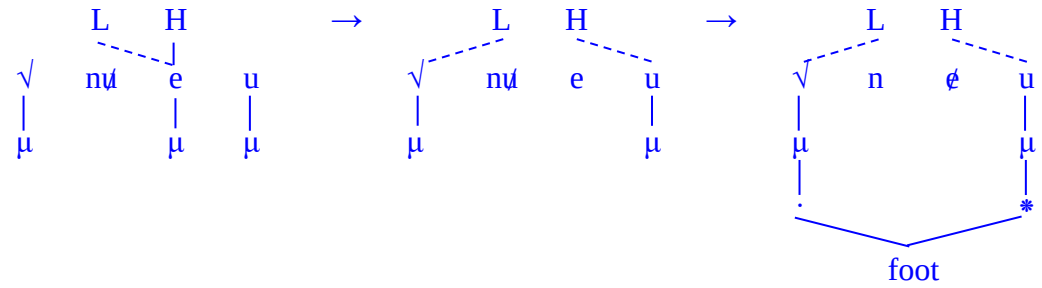
Whereas in the normal circumstances this sequence of tones would have yielded stress on the second vowel, here, because the first vowel is deleted, its tone becomes floating and links to the next vowel:

(22)



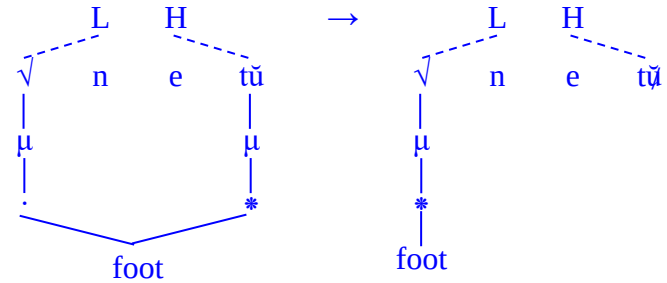
While a lot of languages allow contour tones, in Russian the structure in (22) would give rise to a problem: the same mora is expected to be simultaneously the head and the tail of a foot. I propose that as a result of this conflict the mora is deleted, and the two tones are associated to the neighboring morae. The resulting foot yields surface stress on the 1sg ending:[9]

(23)



When the agreement suffix is extrametrical (like the 2pl suffix -*te*-) or asyllabic (like all other agreement suffixes), a degenerate foot is created (24), just like in (14). Once again, I make life simpler for myself by postulating a yer in the underlying representation of agreement suffixes that is deleted when not followed by another yer (as usual in Russian, see, e.g., Pesetsky 1979):

(24)

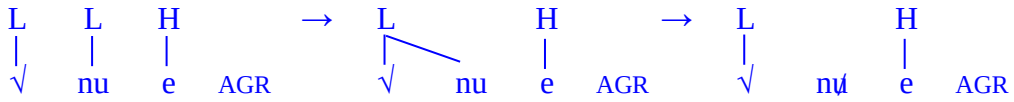


As a result stress is final with vocalic suffixes and stem-final with all others. The question now arises why this does not happen with stems triggering the consistent post-stem pattern.

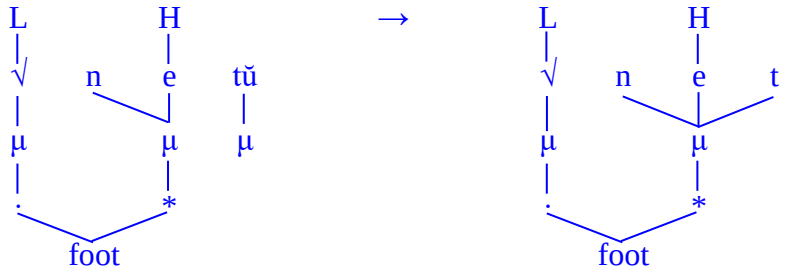
[9] The natural question to ask here is why the low tone does not associate to the left to begin with and thus avoids the conflict. While my intuition is that associating to the right is more structure-preserving, I leave working out the details for future research.

3.3. Post-stem pattern: post-accenting verbal root, post-accenting thematic suffix

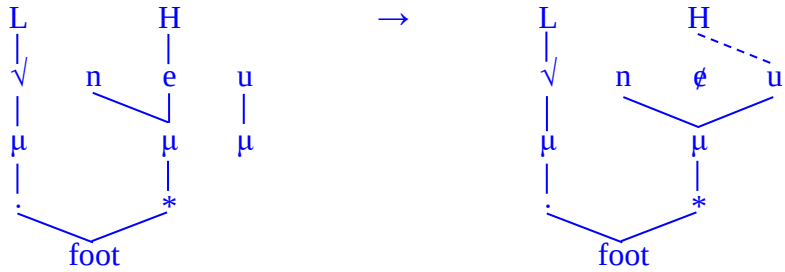
I propose that the consistent post-stem pattern comes from post-accenting stems. As proposed above for the general case, to obey the OCP two adjacent identical tones must be reanalyzed as a multiply linked single tone. Crucially, this means that when the vowel of the thematic suffix is deleted, the tone associated to it is not left floating:

(25) 

If the agreement suffix is the (extrametrical) 2pl *-te-*, nothing further happens to the tones and the main stress is realized on the present-tense suffix. If the agreement suffix contains a yer, as is illustrated in (26a) for the 3sg suffix *-tŭ-*, this yer is deleted, as all yers are in Russian when not vocalized:

(26) a. 

If the ending is vocalic (e.g., in the 1sg), the present-tense suffix is deleted and its tone, like in (22), is linked to the next vowel, i.e., to the ending:

(26) b. 

We therefore obtain the systematic post-stem stress pattern for both vocalic and non-vocalic endings. While the same result is achieved with a much simpler mechanism by Halle, Melvold and work built on their research, the more complex approach advocated here makes accounting for stress retraction more natural.

4. Conclusion and consequences

I have proposed that in Russian, like in many Slavic languages (cf. Inkelas and Zec 1988, Bethin 1998, 2006, Zec 1999, Dubina 2012, among others), the position of the stress system is determined by tone and that a given morpheme can be underlyingly associated with either the high or the low tone. I further proposed that the underlying high tone is associated with the head of an iambic foot, and the underlying low tone is associated with the tail of such a foot. The assumption that the two different tones provide conflicting instructions makes it possible to explain how the 1sg arises. I propose that when the vowel of the thematic suffix is deleted before another vowel, its low tone remains floating and is then linked to the following vowel, which is inherently specified for the high tone. The resulting conflict leads to the deletion of the corresponding syllable from the metrical tier making the present-tense suffix unstressable. The 1sg pattern ensues: stress surfaces after the present-tense suffix when the next morpheme

is syllabic and before it, when it isn't. Crucial for this proposal is the distinction in the underlying representation of the stress arising from an accented stem (high tone is aligned with the head of an iambic foot) and the stress arising from a post-accenting stem (low tone is aligned with the tail of an iambic foot); without such a distinction it is impossible to ensure a conflict giving rise to an unstressable syllable.

4.1. Problems and issues

The introduction of two tones as a means of encoding stress gives rise to overgeneration. Thus a polysyllabic accented stem with non-initial stress could be encoded either via an underlying high tone on the stressed syllable, as in (16a), or via an underlying low tone on the preceding syllable, as in (16b). To avoid such ambiguity one could hypothesize that the low tone is limited to the last syllable of a morpheme, though I cannot offer any independent motivation for this.

(27) a. H b. L 'cow'
| |
ko rov ko rov

Another potential problem stems from the fact that a conflict linked to the assignment of two tones to the same syllable after vowel deletion can equally well arise from the opposite order of tones: suppose that the first vocalic suffix is accented (bearing the high tone) and the second one, post-accenting (bearing the low tone). The question arises what happens after the deletion of the first vowel and whether the two scenarios can be reliably distinguished.

An issue not discussed above is the productivity of the 1sg pattern in different thematic classes. Thus in the productive class of second-conjugation i-verbs (discussed in section 4.2.2 below) 43% exhibit this pattern (Slioussar 2012), and in the closed class of *-a-*/*-i-* verbs (discussed in section 0 below) ca. 60% do. On the other hand, the productive class of semelfactive verbs in *-nu-* contains only six verbs with the 1sg pattern, as does the closed class of second-conjugation e-verbs. While I consider it quite unlikely that the latter two classes contain virtually no unaccented roots, I cannot provide a better proposal at the moment.

4.2. Further developments

The hypothesis that Russian stress is represented as tone in the underlying representation makes it possible to formulate what the difference between unaccentability and unstressability is, as they pertain to different levels of representation. Unaccentability becomes the inability to bear a high tone (the fact that post-accenting roots can be or not be unaccentable, as in row (b) and row (d), respectively, in Table 1, shows that low tone is allowed). Unstressability, on the other hand, is the lack of representation on the metrical tier. As a result, an unaccentable morpheme can be stressed (if the following syllable is absent or deleted), but an unstressable one cannot.

The natural question arises whether the treatment proposed for retraction in the verbal domain can be extended to the nominal and adjectival domains. One way of doing this is a hypothesis that for some Russian nouns the plural may involve an additional morpheme, a vowel, which is deleted before the vowel-initial plural ending as a means of hiatus resolution. Given that all plural endings in Russian are accented, assuming that this additional vowel is post-accenting would create the same conflict with, presumably, the same resolution. While the idea seems promising, its realization runs into certain issues, which I leave for future research.

Another potential development is the treatment of the past-tense suffix. It is tempting to link retraction in the past tense to the fact that the past-tense suffix is consonantal and asyllabic, and therefore, when combining with a post-accenting stem cannot be associated with the head of a metrical foot. That retraction is phonological rather than linked to some special property of the

suffix is supported by the fact that the past-tense retraction does not affect the accent assigned by the feminine singular suffix that is merged after the past-tense suffix.

Finally, as we will now see, independent evidence for the link between post-accentuation (low tone) and the lack of the 1sg pattern in the paradigm comes from another set of verbs, those undergoing transitive softening in the present.

4.2.1. Transitive softening verbs and the stem-final pattern

The question of what happens to the accent of the thematic suffix when the vowel of this suffix is deleted before the vowel of the present-tense suffix was first addressed by Melvold 1989, who argued (pp. 240-267) that when an unaccented stem is combined with an accented thematic suffix and then this suffix is deleted before the vowel of the present-tense suffix, stress is shifted one syllable to the left. This pattern is, indeed, attested for four verbal roots[10] and for all verbs derived with the suffix *-ow-* (surfacing as [u] in the present and as [ov] in the past):

(28) a. *kolíšu/kolíšet* 'sway.PRES.1SG/3SG' underived TS verb
b. *kolixála* 'sway.PAST.FSG'

(29) a. *riskúju/riskújet* 'risk.PRES.1SG/3SG' *-ow-* verbs
b. *riskovála* 'risk.PAST.FSG'

Verbs exhibiting this pattern form a subset of the so-called transitive softening (TS) verbs: their thematic suffix surfaces as [a] in the past tense and as the glide [j] in the present. While Melvold proposes that the glide formed directly from [a], Bethin 1992 proposes an intermediate stage, at which [a] turns into [i]. Crucially, this thematic suffix, triggering as it does the loss of a mora as well, can also give rise to the 1sg pattern:

(30) a. *pišú/píšet* 'write.PRES.1SG/3SG' 1sg pattern, TS verb
b. *pisála* 'write.PAST.FSG'

The class of TS verbs, with the exception of those derived with the suffix *-ow-*, is a closed one, so all verbs in it could be examined. Remarkably, it is the only class of verbs that shows uniform stress retraction to the stem in the present tense. It is also the only class that does not exhibit the post-stem pattern, as illustrated in Table 5:

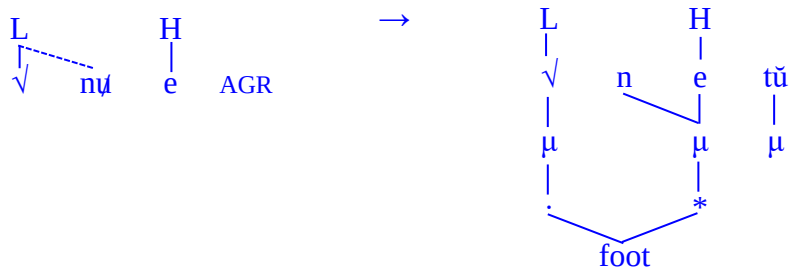
Table 5: Accentual interaction with the 1st conjugation TS suffix *-a-/-i-*

		accented PRES-3SG	**accented** PRES-1SG	**accented** PAST-FSG	**unaccented** PAST-PL
a.	stem (accented): *-maz-* 'smear'	*máž-e-t*	*máž-u*	*máz-a-l-a*	*máz-a-l-i*
b.	post-stem: N/A				
c.	variant 1sg: *-vʲaz-* 'tie'	*vʲáž-e-t*	*vʲaž-ú*	*vʲaz-á-l-a*	*vʲaz-á-l-i*
d.	variant present: *-koleb-* 'rock'	*koléblʲ-e-t*	*koléblʲ-u*	*koleb-á-l-a*	*koleb-á-l-i*

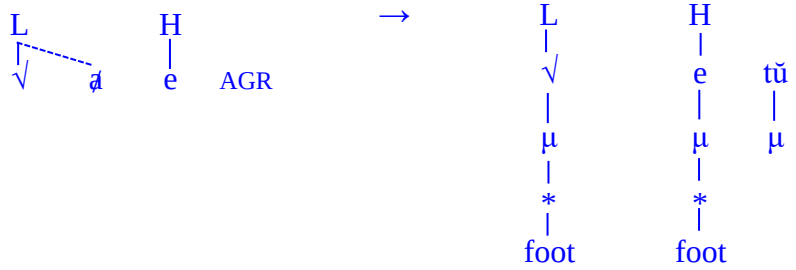
I propose that the difference between TS verbs and other verbs exhibiting the 1sg pattern lies in what happens when the vowel of the thematic suffix is deleted. Whereas I have hypothesized in (25)-(26) that the dissociation of a multiply linked low tone from a deleted vowel gives rise to an iambic foot whose head is the next mora, as in (31a), the alternative outcome is a defective foot, as in (31b). As is easy to see, (31b) yields stem-final stress for post-accenting stems.

[10] Gladney 1995:115 lists *-koleb-* 'rock', *-kolix-* 'sway', *-alk-* 'crave', and archaic secondary imperfectives of the cranberry root *-im-* (e.g., *vnimátʲ/vnémlʲu* 'heed', *prinimátʲ/priémlʲu* 'accept'), which take the thematic suffix *-aj-* in contemporary Russian. Only the first two of these four roots are non-archaic.

(31) a.



b.



What is the difference between the verbs that give rise to the post-stem stress pattern in the present tense and those that yield the stem-final pattern? One possibility would seem to be that only for the latter the suffix is deleted altogether. The other, that TS verbs involve a vowel change, which might affect the behavior of the tone (see Myers and Tsay 2003 for a discussion and references on the possible interactions between tone and vowel height). While I cannot provide a hypothesis for the facts discussed in this section, the remaining two classes of Russian verbs add further data to take into consideration.

4.2.2. Second-conjugation verbs and the 1sg pattern

Second-conjugation verbs are characterized by the thematic vowels *-i-* and *-e-* that both surface as [i] in the present tense. The same three accentual patterns arise:

Table 6: Accentual interaction in second-conjugation verbs with the theme vowel *-i-*

		accented PRES-3SG	**accented** PRES-1SG	**accented** PAST-FSG	**unaccented** PAST-PL
a.	stem stress: *-žal-* ‘sting’	*žál-i-t*	*žálʲ-u*	*žál-i-l-a*	*žál-i-l-i*
b.	post-stem: *-govor-* ‘speak’	*govor-í-t*	*govorʲ-ú*	*govor-í-l-a*	*govor-í-l-i*
c.	variant 1sg: *-lʲub-* ‘love’	*lʲúb-i-t*	*lʲublʲ-ú*	*lʲub-í-l-a*	*lʲub-í-l-i*

Table 7: Accentual interaction in second-conjugation verbs with the theme vowel *-e-*

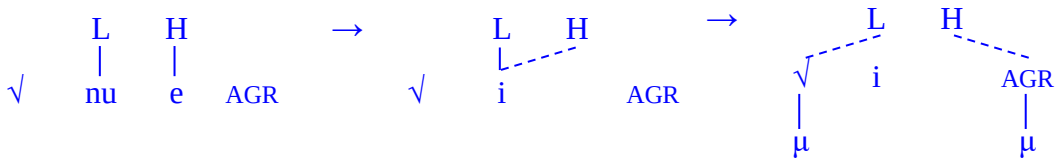
		accented PRES-3SG	**accented** PRES-1SG	**accented** PAST-FSG	**unaccented** PAST-PL
a.	accented: *-vid-* ‘see’	*víd-i-t*	*víž-u*	*víd-e-l-a*	*víd-e-l-i*
b.	post-stem: *-vel-* ‘order’	*vel-í-t*	*velʲ-ú*	*vel-é-l-a*	*vel-é-l-i*
c.	variant: *-vert-* ‘spin’	*vért-i-t*	*verč-ú*	*vert-é-l-a*	*vert-é-l-i*

While Melvold 1989 (following Jakobson 1948) suggests that the thematic vowels are deleted before the present-tense suffix, as sketched in (32a), Micklesen 1973, Coats and Lightner 1975, Itkin 2007:129-130 propose that the second-conjugation present-tense suffix is null, and the thematic vowel [e] is raised to [i] in the present tense, as in (32b).

(32) a. [[[gor-e]$_2$-i]$_3$-tŭ]$_4$ → [[[gor-ø]$_2$-i]$_3$-t]$_4$ → [gorit] vowel deletion
b. [[[gor-e]$_2$-Ø]$_3$-tŭ]$_4$ → [[[gor-i]$_2$-Ø]$_3$-tŭ]$_4$ → [gorit] vowel change

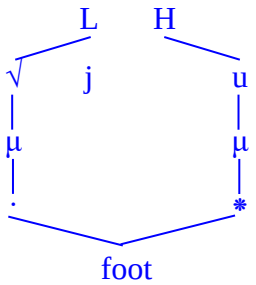
With the former approach the derivation of the three accentual patterns proceeds along exactly the same lines as for *nu*-verbs in sections 3.2 and 3.3 and unlike the TS verbs in section 4.1. For the latter approach it becomes necessary to hypothesize that the present-tense suffix, while segmentally null, nonetheless introduces a floating high tone that is associated to the preceding vowel, yielding a conflict and the deletion of the offending mora:

(33)

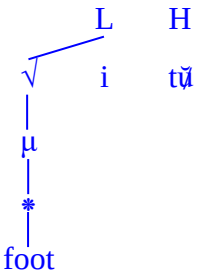


With a vocalic ending the resulting foot will have its tail on the final syllable of the stem and its head, on the ending, and the vowel of the present-tense suffix will turn into a glide, as in (34a). With an asyllabic or extrametrical ending a deficient foot will be created, as in (34b):

(34) a.



b.



Since these intermediate representations are essentially identical to those discussed above, the only remaining question is why post-accenting second-conjugation verbs should pattern with those discussed in sections 3.2 and 3.3 (post-stem stress) rather than with those discussed in section 0 (stem-final stress). While I hypothesize once again that this might be due to the fact that no deletion takes place, I cannot offer a real explanation at this point.

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