Russian *e*-verbs and thematic vowel change

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Abstract: This paper argues for an ablaut process (thematic vowel raising) targeting the thematic vowel *e* of second-conjugation verbs in the present tense, as well as in several other environments. I will argue that thematic vowel raising is obligatory in the present tense and in the past passive participle and conditioned by the verbal root in actor nominalization and in the secondary imperfective. I will also show how this process provides for a better understanding of some exceptional second-conjugation verbs, as well as transitive softening verbs, and offer a reanalysis of some other cases with an unexpected thematic vowel change.

1 INTRODUCTION

This paper is dedicated to the phonology of the thematic vowel in the second verbal conjugation of Russian. The thematic vowel (boldface in examples (1a–4a)) is a vowel of an uncertain (or varying) morphosyntactic status appearing in most Russian verbs between the verbal stem and the past-tense suffix *-l-*; the choice of the vowel is determined by the verbal root or by the outermost verbal suffix.[1]

(1) a. sos-**á**-l-a   b. sos-ʲó-t   1conj
   suck-TH-PAST-FSG   suck-PRES-3SG

(2) a. príg-n-**u**-l-a   b. príg-n-e-t   1conj
   jump-SMLF-TH-PAST-FSG   jump-SMLF-PRES-3SG

(3) a. smotr-**é**-l-a   b. smótr-i-t   2conj
   look-TH-PAST-FSG   look-PRES-3SG

(4) a. lʲub-**í**-l-a   b. lʲúb-i-t   2conj
   love-TH-PAST-FSG   love-PRES-3SG

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. The yers (abstract high lax unrounded vowels) are represented as /ь/ (front) and /ъ/ (back). The letters ч (IPA [t͡ɕ]), ш (IPA [ʂ]), ж (IPA [ʐ]), щ (IPA [ɕʲɕʲ]), and ц (IPA [t͡s]) are traditionally rendered as *č*, *š*, *ž*, *šč*, and *c*. Palatalization induced by the surface back vowels (orthographic *я*, *ю*, *ё*) and by the soft sign (orthographic *ь*) is systematically represented by ʲ. Stress is marked by an acute accent on the vowel.

The two Russian conjugation classes are defined by the vowel appearing between the verbal stem and the agreement suffix in the present tense (examples (1b–4b)). The forms in (1b) and (2b) illustrate the present tense of the first conjugation, where this vowel is *-e-* (turning into [ʲo] under stress),[2] and the forms in (4b–3b), the second conjugation, where this vowel is *-i-*. As is easy to see, while in (1b), (2b), and (3b) there is no sign of the thematic suffix in the present tense, in (4b), where the thematic vowel and the tense suffix are identical, the fate of the thematic vowel is not clear.

The traditional generative analysis of the first conjugation (Jakobson 1948, Halle 1963, Lightner 1965a, etc.), determined by Jakobson's (1948) insight, is that the hiatus created by the thematic vowel and the present-tense suffix is resolved by vowel deletion:[3]

(5) a. $[[[sos-a]_2-e]_3-t]_4 \rightarrow [[[sos-a̸]_2-e]_3-t]_4 \rightarrow sosʲót$ 'suck 3SG' vowel deletion
     b. $[[[prɨg-nu]_2-e]_3-t]_4 \rightarrow [[[prɨg-nu̸]_2-e]_3-t]_4 \rightarrow prɨ́gnet$ 'will jump 3SG'

For the second conjugation two different analyses have been proposed. Melvold (1989) (following Jakobson 1948) argues that the second-conjugation thematic vowel is deleted before the present-tense suffix *-i-* by the general hiatus resolution rule, like in the first conjugation:

(6) a. $[[[gor-e]_2-i]_3-t]_4 \rightarrow [[[gor-e̸]_2-i]_3-t]_4 \rightarrow gorít$ 'burn 3SG' vowel deletion
     b. $[[[lʲub-i]_2-i]_3-t]_4 \rightarrow [[[lʲub-i̸]_2-i]_3-t]_4 \rightarrow lʲúbit$ 'loves 3SG'

Micklesen (1973), Coats and Lightner (1975), and Itkin (2007:129-130) argue, on the other hand, that the second conjugation present-tense suffix is null, and the thematic vowel *-e-* is changed to [i] in the present tense, whereas the thematic suffix *-i-* remains the same:[4]

(7) a. $[[[gor-e]_2-Ø]_3-t]_4 \rightarrow [[[gor-i]_2-Ø]_3-t]_4 \rightarrow gorít$ 'burn 3SG' vowel change
     b. $[[[lʲub-i]_2-Ø]_3-t]_4 \rightarrow [[[lʲub-i]_2-Ø]_3-t]_4 \rightarrow lʲúbit$ 'loves 3SG'

The goal of this paper is to support the latter analysis by providing independent evidence for a zero present-tense suffix and independent evidence for thematic vowel change. I begin with the *a*-subclass of second-conjugation verbs (Section 2), where the surface [a] is derived from the underlying *-e-*. Section 3 shows that all theories of the Russian verb need to postulate a zero present-tense suffix in some cases. Section 4 demonstrates how the hypothesis that the underlying

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[2] While some instances of the Russian surface [e] alternate with [ʲo] under stress, others do not. I will disregard this complication here, but see Lightner (1965a) and Iosad (2019, 2020) for two very different ways of dealing with it.

[3] For the productive thematic suffixes *-aj-* (present)/*-a-* (past) and *-ej-/-e-* both glide formation in the present (Garde 1972, Itkin 2007) and glide deletion in the past (Jakobson 1948, Halle 1963, Lightner 1965a) have been proposed.

[4] Itkin argues for an underlying *-j-* as the representation of the 2nd conjugation thematic suffix.

thematic vowel -*e*- undergoes raising explains the behavior of the thematic vowel in secondary imperfectives. The theoretical advantage of this proposal is that if the vowel [i] appearing in the second-conjugation present-tense is due to the ablaut of the thematic vowel -*e*- and the present-tense suffix is phonologically null in the second conjugation, Russian becomes unexceptional in the distribution of the typologically normal zero present-tense suffix: it is not a special case but rather characterizes one productive verb class. The second half of section 4 adds to this advantage, discussing the implications of this hypothesis for another environment where the *e2i* change may occur: actor nominalizations. Section 5 extends the proposal to the exceptional verb *ssat^j* 'to piss', to -*a*-/-*i*- verbs of both conjugation classes and to the causative-inchoative alternation. Section 6 concludes, and section 7 discusses the potential counterargument coming from -*tel^j*- nouns with the thematic suffix -*i*- not contained in the semantically linked verb.

2 VELAR SOFTENING AND SECOND-CONJUGATION *A*-VERBS

Table 1 presents the full picture of the finite forms of the Russian second conjugation (defined by the presence of the suffix -*i*- in the present tense). In addition to the productive *i*-class, exemplified by *carít^j* 'to reign', the second conjugation also contains verbs with a thematic suffix surfacing in the past tense as [e] and [a] (exemplified, respectively, by the verbs *gorét^j* 'to burn' and *kričát^j* 'to scream'), where [a] appears only after an alveopalatal derived from an underlying velar. While the latter class is usually viewed as closed (ca. 30 *a*-verbs and ca. 50 *e*-verbs), Itkin (2013) points out that it has some limited productivity where it comes to the semantic domain of sound verbs. Before addressing the fate of the thematic vowels in the present tense, in this section I will show, following Halle (1963) and Lightner (1965b), that the surface [a] is derived from underlying /e/.

Table 1: Second conjugation: *carít^j* 'to reign', *kričát^j* 'to scream', *gorét^j* 'to burn'

		singular-{M/F/N}			plural		
PRES	1	*car-^j-ú*	*krič-[^j]-ú*	*gor-^j-ú*	*car-í-m*	*krič-í-m*	*gor-í-m*
	2	*car-í-š^j*	*krič-í-š^j*	*gor-í-š^j*	*car-í-te*	*krič-í-te*	*gor-í-te*
	3	*car-í-t*	*krič-í-t*	*gor-í-t*	*car-^j-át*	*krič-^j-át*	*gor-^j-át*
PAST		*car-í-l-{Ø/a/o}*	*krič-á-l-{Ø/a/o}*	*gor-é-l-{Ø/a/o}*	*car-í-l-i*	*krič-á-l-i*	*gor-é-l-i*

In Russian derivation (although not in nominal declension) palatalized velars systematically turn into alveopalatals (Halle 1959, Lightner 1965a, Plapp 1999, etc.). This phenomenon, known as velar palatalization, or velar softening, can be triggered by the verbalizer -*i*-, by the diminutive

suffix *-ŭk-* (which does not palatalize non-velars), or by the adjectivizers *-ĭj-* and *-ĭn-*, among others, as illustrated in (8):

(8) a. *ribák* 'a fisher' → *ribačók* 'a fisher.DIM', *ribáčitʲ* 'to fish', *ribáčij* 'fishing, piscatory'
     b. *sneg* 'snow' → *snežók* 'snow.DIM', *snežítʲ* 'to snow', *snéžnij* 'snowy'
     c. *grex* 'sin' → *grešók* 'sin.DIM', *grešítʲ* 'to sin', *gréšnij* 'sinful'

As palatalization is triggered by front vowels, it is fully expected that when a velar-final stem is combined with the suffix *-e-*, the velar is palatalized and mutates. What is not expected is that the suffixal vowel should turn into [a], as in (9), yet the first-conjugation verbalizer *-e[j]-* and the elative suffix *-ejš-* also trigger both velar softening and subsequent backing of the suffixal vowel, as illustrated in (10) and (11), respectively.[5]

(9) second-conjugation verbalizer *-e-*
     a. *-krik-* 'scream' + *-e-* → *kričít/kričál* 'scream PRES.3SG/PAST.MSG'
     b. *-vizg-* 'squeal' + *-e-* → *vizžít/vizžál* 'squeal PRES.3SG/PAST.MSG'

(10) first-conjugation verbalizer *-e[j]-*
     a. *-krasn-* 'red' + *-e-* → *krasnéet/krasnél* 'be/become red PRES.3SG/PAST.MSG'
     b. *-nišč-* 'beggarly' + *-e-* → *niščáet/niščál* 'become a beggar PRES.3SG/PAST.MSG'

(11) a. *-krasn-* 'red' + *-ejš-* → *krasnéjšij* 'the reddest'
     b. *-gorĭk-* 'bitter' + *-ejš-* → *gorčájšij* 'the bitterest'

Since the roots of all second-conjugation *a*-verbs (with the exception of two special verbs, *gnatʲ* 'to chase' and *spatʲ* 'to sleep', discussed in section 5.2) end in an alveopalatal derived from an underlying velar, they should clearly be treated as underlyingly *e*-verbs.

3 THE NULL PRESENT-TENSE SUFFIX IN RUSSIAN VERBS

As already mentioned, the hypothesis defended here is that second-conjugation *e*-verbs, surfacing with the vowel [i] between the verbal stem and the agreement suffix (7), involve a null present-tense suffix and a vowel change, turning the thematic *-e-* into [i] in the present:

(7) a. [[[gor-e]₂-Ø]₃-t]₄ → [[[gor-i]₂-Ø]₃-t]₄ → *gorít* 'burn 3SG'   vowel change
     b. [[[lʲub-i]₂-Ø]₃-t]₄ → [[[lʲub-i]₂-Ø]₃-t]₄ → *lʲúbit* 'loves 3SG'

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[5] All these processes are subject to a few exceptions. The second-conjugation verb *kišétʲ* 'to swarm' and the first-conjugation verb *xorošétʲ* 'to be(come) lovely(er)', as well as a few others, do not undergo the *e2a* change, while the first-conjugation verbs *ploxétʲ* 'to take a turn to the worse' and *tkatʲ* 'to weave' do not undergo velar mutation. On the variability of consonant mutation in Russian see Kapatsinski (2010), Slioussar and Kholodilova (2013), and Magomedova and Slioussar (2017a, 2017b).

Independent evidence for a null present-tense suffix comes from the two Russian verbs that appear with a null present-tense suffix on anyone's story, *jest^j* 'to eat' and *dat^j* 'to give'. As can be seen in Table 2, they differ from a regular athematic verb in two particularities: the non-realization of the present tense (and subsequent consonant cluster resolution processes) and the choice of the 1SG allomorph (made possible by the absence of both the thematic vowel and the present-tense suffix):[6]

Table 2: Singular present forms of the verbs *jest^j* 'to eat' and *dat^j* 'to give' vs. *lézt^j* 'to climb'

		jest^j 'to eat'	*dat^j* 'to give'	*lézt^j* 'to climb'
present	1	*jed-m → jem*	*dad-m → da-m*	*léz-u*
	2	*jed-š^j → ješ^j*	*dad-š^j → da-š^j*	*léz-e-š^j*
	3	*jed-t → jest*	*dad-t → das-t*	*léz-e-t*

I will not focus here on the allomorphic changes brought about by the presence or absence of the present-tense suffix. The former leads to the appearance of the 1sg *-u-* instead of *-m-* (see Lightner 1967, 1969, Melvold 1989:237, and Halle 2004 on lexically conditioned transformations of tautosyllabic VN sequences in Russian), and the latter creates consonant clusters that must be simplified. The deletion of the stem-final /d/ before a sonorant (like in the 1sg) is independently attested in the past tense of athematic verbs (cf. (12a)), and the transformation of the stem-final coronal into [s] before the /t/ of the infinitival suffix (12b) can be extended to the 3sg and also to the 2sg with subsequent assimilation (12c).[7]

(12) a.   ved-l-a → ve*d*-l-a → velá
           lead-PAST-FSG

      b.   ved-ti → vestí
           lead-INF

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c. jed-šʲ → jes-šʲ → ješʲ
  eat-2SG

What is important about these two cases is that they can only be accounted for by assuming a null allomorph of the present-tense suffix (or by root-conditioned deletion thereof, which seems far less motivated). If the zero exponent of the present-tense suffix exists, extending its use to all second-conjugation verbs represents a noticeable simplification. Moreover, the ablaut analysis of second-conjugation verbs makes the null present-tense suffix productive, which, given the fact that the null present-tense morpheme is a cross-linguistic default, would seem to be a further advantage of the vowel-change approach.

In the next section I will argue that the vowel change that is necessary for the derivation of the surface present-tense [i] forms from the underlying thematic suffix *-e-* is independently needed for two more environments: the secondary imperfective and the actor suffix *-telʲ-*.

4 INDEPENDENT EVIDENCE FOR THE *E2I* VOWEL CHANGE

In this section I examine two derivational processes that can target *e*-verbs: secondary imperfective formation and actor nominalization. In both types of derivation *e*-verbs can undergo the *e2i* vowel change, providing independent motivation for this process, although, given that the class of second-conjugation *e*-verbs is a closed one, evidence about it is necessarily limited. Thus only 36 out of the 84 *e*-verbs in my database form secondary imperfectives and only around 10 form actor nouns in *-telʲ-* (derivationally related adjectives in *-telʲn-* (underlying *-tel-ьn-*) would seem to be more productive).

I will begin this section with the discussion of transitive softening in second-conjugation verbs. While in secondary imperfectives formed from *i*-verbs transitive softening of the stem-final consonant is near-obligatory (14 exceptions), in secondary imperfectives formed from *e*-verbs it is not. I will link this difference to whether the *e*-verb in question undergoes the *e2i* change in the secondary imperfective. The hypothesis that the *e2i* change can be triggered in environments other than the present-tense paves the way to the discussion of the *e2i* change in actor nouns, which will provide new evidence for the underlying representation of this thematic suffix.

4.1   Second-conjugation verbs and transitive softening

Transitive softening, a.k.a. *iotation*, or *transitive palatalization* (*perexodnoe smjagčenie*), in Slavic languages and in Russian in particular (Jakobson 1929, Meillet 1934, Kortlandt 1994, Townsend and Janda 1996, *inter alia*; see Halle 1963, Lightner 1972, Coats and Lightner 1975, Bethin 1992, Brown 1998 and Rubach and Booij 2001 for generativist analyses) is the term used for a special type of consonant mutation resulting from an underlying [CjV] cluster:[8]

Table 3: Transitive softening

	consonant	transitive softening	infinitive (*-tʲ-*)	1sg (*-u-*)
a.	s, z	š, ž	*pros-í-tʲ* 'to beg'	*proš-ú* 'beg-1SG'
b.	t, d	č, ž	*vod-í-tʲ* 'to lead'	*vož-ú* 'lead-1SG'
c.	p, b, m, v	plʲ blʲ, mlʲ, vlʲ	*lʲub-í-tʲ* 'to love'	*lʲublʲ-ú* 'love-1SG'
d.	l, r, n	lʲ, rʲ, nʲ	*bel-í-tʲ* 'to whiten, tr.'	*belʲ-ú* 'whiten-1SG'

Barring an occasional exception in some neologisms (see Kapatsinski 2010, Slioussar and Kholodilova 2013, and Magomedova and Slioussar 2017a, b) transitive softening is obligatory in the 1SG of second-conjugation verbs. On the assumption that the second-conjugation present-tense suffix is null, the [Cj] cluster in the 1SG arises as follows:

(13) $[[[\text{pros-i}]_1\text{-Ø}]_2\text{-u}]_3$
            ↓   cycle 3: glide formation
      $[\text{pros-j-Ø-u}]_3$
            ↓   transitive softening and some more rules
         [pro**š**ú]

The same happens before the past passive participle (PPP) suffix *-en-* (surface [en], [n], and [ʲon] under stress) and in the secondary imperfective: the thematic suffix *-i-* turns into a glide before another vowel, thus creating the environment for transitive softening:[9]

(14) a.   *kormítʲ* 'to feed' → *kórml̶ena* 'feed PPP-FSG'
      b.   *gruzítʲ* 'to load' → *grúžena* 'load PPP-FSG'

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[8] The velars *x*, *k* and *g* turn into *š*, *č*, and *ž*, respectively, as a result of both transitive softening and velar softening, which is obligatory before a front vowel (cf. section 2). As in the second conjugation velars are softened in all cells of the present-tense paradigm, the effect of transitive softening is obscured for velar-final verbs, which is why they are not exemplified in Table 3.

[9] The secondary imperfective suffix has three allomorphs: *-ɨw-* (surfacing as [iv] after palatalized consonants, and as [ɨv] otherwise), *-w-* (surface [v]) and *-Ø-* (zero), all followed by the thematic suffix *-a-/-aj-*. The *-w-* allomorph is not used with *i*-verbs.

(15) a. *kormít^j* 'to feed'
    b. *otkormít^j* 'to fatten PRV'
    c. *otkárml ivat^j* 'to fatten IPFV'

(16) a. *gruzít^j* 'to load'
    b. *razgruzít^j* 'to offload PRV'
    c. *razgruž át^j* 'to offload IPFV'

The thematic suffix -*i*- therefore behaves the same in all three environments: it forms a glide, and the stem-final consonant undergoes transitive softening. The picture is subtly different for *e*-verbs, as I will presently show.

4.1.1   Second-conjugation *e*-verbs and transitive softening

The hypothesis that in the present tense the thematic vowel of *e*-verbs changes to [i] predicts that they should also give rise to transitive softening in the 1SG of the present tense. This prediction is correct: all second-conjugation verbs undergo transitive softening in the 1SG, as in (17b) and (18b). Likewise, while only 7 *e*-verbs can form past passive participles, all of them, as (18c) illustrates, undergo transitive softening there:

(17) a. *zakipéla* 'start boiling PAST.FSG'
    b. *zakipít/zakipl ú* 'start boiling 3SG/1SG'

(18) a. *obídela* 'offend PAST.FSG'
    b. *obídit/obiž u* 'will offend 3SG/1SG'
    c. *obiž ena* 'offend PPP.FSG'

The picture is sharply different in the secondary imperfective. While not all *e*-verbs can form secondary imperfective forms, those that do usually do not trigger transitive softening:[10]

(19) a. *zakipát^j* 'start boiling IMPV.INF'   default (21 roots)
    b. *obiž át^j* 'offend IMPV.INF'   non-default (five roots)

While *i*-verbs by default undergo transitive softening in the secondary imperfective, *e*-verbs by default do not. Strikingly, this is combined with no difference between the two verbal classes in the other two environments: all second-conjugation verbs undergo transitive softening in the 1SG and in the past passive participle.

I propose that both patterns can be explained by two assumptions: (a) that glide-formation and thus transitive softening only occur when the thematic suffix of *e*-verbs has been raised to [i]

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[10] Ten more *e*-verbs in my database can form secondary imperfectives. Four of them form secondary imperfectives with the -*v*- allomorph, and the other six end in a sonorant or an alveopalatal making it impossible to decide if transitive softening has occurred.
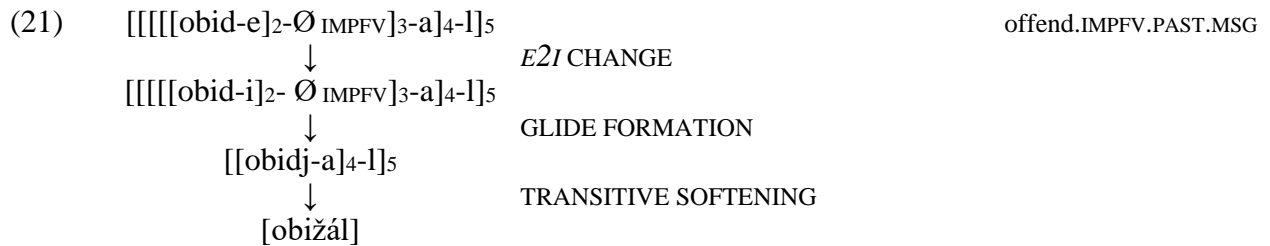
and (b) that this raising is obligatory in the present tense and in past passive participles, but root-conditioned in the secondary imperfective.

4.1.2 The *e2i* change as a stem-conditioned readjustment raising rule

As discussed above, transitive softening is contingent on glide formation. I propose, *pace* Halle (1963), Lightner (1965a), and Flier (1972), that only the high front vowel [i] can become a glide in a prevocalic position. If [e] cannot turn into a glide, it also cannot give rise to transitive softening. Transitive softening is therefore not to be expected for *e*-verbs in environments where *e2i* change has not occurred. While *e2i* change has already been shown to be obligatory in the present tense, the obligatory transitive softening of the stem-final consonant in past passive participles of *e*-verbs follows if the PPP suffix also triggers *e2i* change:

(20) $[[[\text{obid-e}]_2\text{-en}]_3\text{-a}]_4$ offend.PPP.FSG
                              $\downarrow$ *E2I* CHANGE
          $[[[\text{obid-i}]_2\text{-en}]_3\text{-a}]_4$
                              $\downarrow$ GLIDE FORMATION
          $[[\text{obidj-en }_{\text{PPP}}]_3\text{-a}]_4$
                              $\downarrow$ TRANSITIVE SOFTENING
                    $[\text{obížena}]$
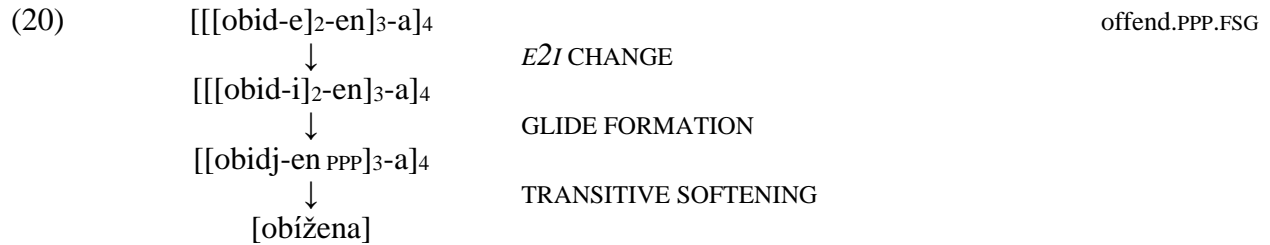
In the secondary imperfective, on the other hand, the *e2i* change is root-dependent: it happens only with five verbs (*vertétʲ* 'to spin', *zudétʲ* 'to itch', *obídetʲ* 'to offend', *sidétʲ* 'to sit', and *smotrétʲ* 'to look'). The derivation then proceeds along the same lines, yielding transitive softening, as illustrated in (21) for the zero allomorph of the secondary imperfective suffix (the remaining four verbs take the *-ɨw-* allomorph).

(21) $[[[[[\text{obid-e}]_2\text{-Ø }_{\text{IMPFV}}]_3\text{-a}]_4\text{-l}]_5$ offend.IMPFV.PAST.MSG
                              $\downarrow$ *E2I* CHANGE
          $[[[[[\text{obid-i}]_2\text{- Ø }_{\text{IMPFV}}]_3\text{-a}]_4\text{-l}]_5$
                              $\downarrow$ GLIDE FORMATION
              $[[\text{obidj-a}]_4\text{-l}]_5$
                              $\downarrow$ TRANSITIVE SOFTENING
                    $[\text{obižál}]$

If no *e2i* change has occurred, a glide is not formed, and no transitive softening is expected. If the secondary imperfective suffix is realized as *-ɨw-* (the default case), the thematic suffix *-e-* is simply deleted (22a). The zero allomorph is followed by the vocalic thematic vowel, which leads to a hiatus, resolved either by the deletion of the first vowel (22b) or by the appearance of a surface

[v] (22c), which can be regarded as either another allomorph of the secondary imperfective suffix or as an epenthetic vowel.

(22) a. *poglʲadétʲ/poglʲádivatʲ* 'to take a glance PFV/IMPFV'   no TS, *-iw-* allomorph (17 roots)
  b. *dogorétʲ/dogorátʲ* 'to finish burning PFV/IMPFV'   no TS, Ø allomorph (three roots)
  c. *povelétʲ/povelevátʲ* 'to command/rule PFV/IMPFV'   e, *-w-* allomorph (three roots)

Reasons of space preclude a discussion of how these forms are derived, yet we can note that the hypothesis that in secondary imperfectives *e2i* change is root-conditioned correctly implies that the default case should be no change rather than a change. Another prediction is that there could be other suffixes triggering root-conditioned *e2i* change, and I will now show that such is indeed the case: the suffix *-telʲ-* also creates an environment for root-conditioned *e2i* change.

4.2 Actor nominalization as evidence for the underlying /e/

The suffix *-telʲ-* creates actor nouns (denoting agents, experiencers, instruments, and other external arguments of the base verb). While *-telʲ-* nearly always attaches to the thematic stem (see the Appendix for the exceptions to this generalization and some discussion), (23c) demonstrates in addition that the base for the suffix *-telʲ-* is the past-tense stem: the verb *pisátʲ* 'to write' is subject to transitive softening in the present tense, showing that its thematic vowel is changed to [i] in the present, yet the thematic vowel in the actor noun surfaces as [a], like in the past tense:

(23) a. *vladéet* PRES.3SG/*vladél* PAST.MSG 'own' → *vladételʲ* 'owner'   *-ej-/-e-*, I conj
  b. *čitaét* PRES.3SG/*čitál* PAST.MSG 'read' → *čitátelʲ* 'reader'   *-aj-/-a-*, I conj
  c. *píšet* PRES.3SG/*pisál* PAST.MSG 'write' → *pisátelʲ* 'writer'   *-i-/-a-*, I conj
  d. *lʲúbit* PRES.3SG/*lʲubíl* PAST.MSG 'love' → *lʲubítelʲ* 'amateur'   *-i-/-i-*, II conj

According to Russian dictionaries, six *e*-verbs form actor nouns, but the empirical picture is different for second-conjugation *a*-verbs (resulting from velar softening followed by *e2a* change) and for *e*-verbs. While in the latter group three out of four verbs form actor nouns from the present-tense *i*-stem (24) and the one exception, (25), exhibits an idiomatic interpretation, in the former group the past-tense stem seems to be preferred (26).[11] Other *e*-verbs do not form actor nouns,

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[11] A potential counterexample is the set phrase (i), which belongs to OCS vocabulary. While (i) looks like it is derived from the same verbal root as (26a), its semantics reflects the archaic meaning of this verb ('to rule', cf. *deržáva* 'state', *samodéržec* 'autocrat') and has to be idiomatic in contemporary Russian. See the Appendix for a discussion of similar data.

  (i) *Spas-Vsederžítelʲ* 'Christ Pantocrator, *lit.* All-Holder'

though some can form their corresponding adjectives (27), with the same preferences as to the form of the thematic vowel.

(24) a. *smotrítelʲ* 'custodian' ← *smótrit/smotrél* 'look (after) PRES.3SG/PAST.MSG'   *e*-verbs
  b. *povelítelʲ* 'sovereign ruler' ← *povelít/povelél* 'enjoin PRES.3SG/PAST.MSG'
  c. *zrítelʲ* 'spectator' ← *zrit/zrel* 'behold PRES.3SG/PAST.MSG'

(25) *svidételʲ* 'witness' (cf. *vídetʲ* 'to see', *svídetʲsʲa* 'to see each other again')

(26) a. *déržit/deržál* 'hold PRES.3SG/PAST.MSG' → *deržátelʲ* 'holder'   *a*-verbs
  b. *kričít/kričál* 'yell PRES.3SG/PAST.MSG' → *kričátelʲ* 'yeller'

(27) a. *bdítelʲnij* 'vigilant' ← *bdit/bdel* 'keep watch PRES.3SG/PAST.MSG'   *e*-verb
  b. *drožátelʲnij* 'shaking [palsy]' ← *drožít/drožál* 'tremble PRES.3SG/PAST.MSG'   *a*-verb

Setting the idiomatic cases aside (see also fn. 11), the empirical picture appears to be that for the *a*-verbs the *-telʲ-* noun is based on the past-tense stem, while for *e*-verbs the present-tense stem is used. Stated differently, the *e2i* change appears to be obligatory in *-telʲ-* nouns, but the *e2a* change bleeds it, strongly suggesting *-e-* rather than *-i-* as the underlying representation for the thematic suffix.

An informal check for neologisms in the Yandex search engine confirms this conclusion (the first number in parentheses represents the rounded number of unanalyzed Yandex search hits, the second, the number of hits in the General Internet Corpus of Russian (http://www.webcorpora.ru/, Belikov et al. 2013, Piperski et al. 2013); none of these words can be found in the Russian national corpus (https://ruscorpora.ru/)):[12]

(28) a. *terpítelʲ* (160/3)/*terpételʲ* (20/2) 'sufferer'
  b. *vertítelʲ* (110/0)/*vertételʲ* (130/0) 'turner'
  c. *dudítelʲ* (30/0)/*dudételʲ* (50/1) 'wind instrument player'

(29) a. *zvučítelʲ* (70/0)/*zvučátelʲ* (250/0) 'sounder'
  b. *dišítelʲ* (20/0)/*dišátelʲ* (250/5) 'breather'

For *e*-verbs both options are possible to roughly the same degree, suggesting that the *e2i* change, while an active process in derivation, is root-conditioned. With *a*-verbs, however, *a*-actor nouns overwhelmingly outnumber their *i*-counterparts, once again suggesting that the *e2a* change bleeds the *e2i* change, triggered at the next morpho-phonological cycle, when the suffix *-telʲ-* is merged.

Note that the exceptional (25) also has an idiomatic interpretation, as well as the unexpected stress position.

[12] Morris Halle would probably have pointed out that the futurist poet Aleksei Kruchenykh had created the neologism *zudítelʲ* (from *zudétʲ* 'to itch'), yet it had not caught up at all.

4.3 Intermediate summary

I have argued that the thematic vowel in second-conjugation *e*-verbs is raised to [i] in a number of environments, some of which trigger this *e2i* change obligatorily (the present tense, the past passive participle) and others, only for certain verbal stems (the secondary imperfective, the actor nominalizer -*telʲ*-). While *e2i* change is independently motivated by the nominalizer -*telʲ*-, with which the resulting [i] surfaces intact (though see the Appendix), in past passive participles and in the secondary imperfective, evidence for the underlying /i/ can be drawn from transitive softening, which is obligatory for past passive participles of *e*-verbs and non-default with their secondary imperfectives, supporting the hypothesis that it is conditioned by the root in the latter case, but not in the former.

Combined with the existence of a null present-tense suffix, independently required for two exceptional verbs, *jestʲ* 'to eat' and *datʲ* 'to give' (see section 3), the *e2i* change permits the analysis of the Russian second conjugation as involving a null present-tense suffix, which thereby becomes a derivational default in Russian. The alternative (vowel deletion) can explain what happens in the present of *e*-verbs but not in the secondary imperfective or in actor nouns (where no (variation in) transitive softening is predicted). In other words, the hypothesis that *e*-verbs can undergo vowel changes permits us to account for the otherwise inexplicable patterns in their behavior with respect to transitive softening, which can now be treated as obligatory in environments of unconditional *e2i* change (1SG, PPPs) and stem-conditioned in the secondary imperfective and in actor nouns.

In the next section I will provide additional evidence for the ability of the present-tense suffix to trigger thematic vowel change. While I argue in Matushansky (2023) that thematic vowel changes should be assimilated to independently motivated root ablauts, here I remain agnostic on the topic, simply demonstrating how the postulation of such processes simplifies the empirical description of the Russian conjugation.

5 FURTHER EVIDENCE FOR THEMATIC VOWEL RAISING IN THE PRESENT TENSE

Independent evidence for the ability of the Russian present tense to trigger vowel change is found in Matushansky (2023) (and also in all Russian grammars). In addition to the various forms of ablaut in the verbal root (30), the thematic vowel -*a*- and its allomorph -*o*- can also change in the present, as exemplified in (31).

(30) a.   *zovú/zvalá* 'call.PRES.1SG/PAST.FSG' (root *-zŭv-*)   lowering (seven roots)
      b.   *ljú/lilá* 'pour.PRES.1SG/PAST.FSG' (root *-lĭj-*)   laxing (five roots)
      c.   *melʲú/molóla* 'grind.PRES.1SG/PAST.FSG' (root *-mol-*)   fronting (one root)

(31) a.   *pišú/pisála* 'write.PRES.1SG/PAST.FSG' (stem *-pis.a-*)   a-verbs (ca. 100 roots)
      b.   *kolʲú/kolóla* 'stab.PRES.1SG/PAST.FSG' (stem *-kol.o-*)   o-verbs (five roots)

In the next sub-section I will argue that the vowel change in (31) consists of two processes, one of which is the *e2i* change suggested above for second-conjugation *e*-verbs.

5.1 Transitive softening verbs as an instance to the *e2i* raising

As other verbs of the same class show, the change in the stem-final consonant in (31a) is caused by transitive softening. While the change in the stem-final consonant in (31b) could theoretically also be simple palatalization, it is also compatible with transitive softening, which yields a surface-identical result. Importantly, none of the verbs in this class exhibit transitive softening either in the past passive participle (where they appear with the past-tense allomorph, the surface [a]) or in the secondary imperfective (where they generally take the secondary imperfective allomorph *-ɨw-*).

In Matushansky (2023) I proposed that both thematic vowels, *-a-* and *-o-*, are fronted and that /e/ can turn into a glide before a non-front vowel. Given, however, the independent evidence for *e2i* change, this assumption is no longer necessary (and in fact undesirable in view of the different patterns of transitive softening for *e*-verbs and *i*-verbs).

Two approaches to the verb classes exemplified in (31) can be envisaged. One option is that the underlying representations of the thematic suffixes in question are identical to their surface forms in the past, to wit, *-a-* and *-o-*. As discussed above, the present-tense suffix can trigger vowel changes, among which fronting is independently motivated by ablaut (30c), and raising (*e2i*), by *e*-verbs. Assuming both processes apply, the correct outcome ensues:

(32) a. $[[[\text{pis-a}]_1\text{-e}]_2\text{ -t}]_3$ *a2e2i* glide formation
                   ↓   cycle 2: FRONTING
        $[[[\text{pis-e}]_1\text{-e}]_2\text{ -t}]_3$
                   ↓   cycle 2: RAISING (e2i)
        $[[[\text{pis-i}]_1\text{-e}]_2\text{ -t}]_3$
                   ↓   cycle 2: glide formation
        $[[[\text{pis-j}]_1\text{-e}]_2\text{ -t}]_3$
                   ↓   cycle 2: transitive softening
            [píšet]

b.　[[[kol-o]₁-e]₂ -t]₃　　　　　　　　　　　　　　　　*o2e2i* glide formation
　　　　↓　　　　cycle 2: FRONTING
　　[[[kol-e]₁-e]₂ -t]₃
　　　　↓　　　　cycle 2: RAISING (e2i)
　　[[[kol-i]₁-e]₂ -t]₃
　　　　↓　　　　cycle 2: glide formation
　　[[[kol-j]₁-e]₂ -t]₃
　　　　↓　　　　cycle 2: transitive softening
　　[kólet]
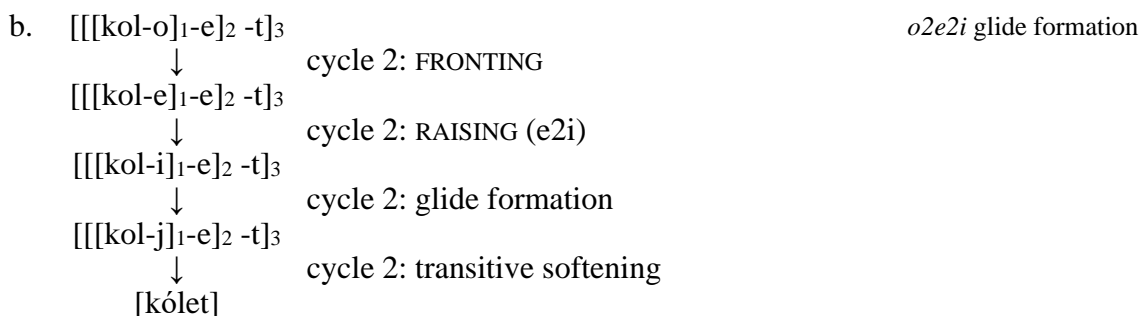
In this scenario thematic vowel fronting (characterizing *write*-verbs and the five verbs in /o/) feeds the raising *e2i* change, yielding a front vowel, with subsequent glide formation and transitive softening. Evidence for this order of events comes from past passive participles. While *write*-type verbs with the thematic vowel -*o*- take the special *t*-allomorph of the past passive participle (33a), the thematic vowel -*a*- requires the n-allomorph of the suffix (33b), clearly showing that *e2i* change has not applied:

(33)　a.　*kolótʲ* 'to stab' → *kólot* 'stabbed.MSG'
　　　b.　*pisátʲ* 'to write' → *písan* 'written.MSG'

Since *e2i* change has been argued to be obligatory in the past passive participle, its failure in (33b) has to be due to the lack of the appropriate context: if fronting (*a2e* change) only happens in the present tense, this would also be the only environment where *e2i* change would occur. The fact that no transitive softening is observed either in the actor noun (23c) corresponding to (33b) or in any of the secondary imperfectives formed from *write*-type verbs further supports this hypothesis. A different approach is needed, however, for the two exceptional second-conjugation verbs: *gnatʲ* 'to chase' and *spatʲ* 'to sleep', to which I now turn.

5.2　Evidence for a2i change in the second conjugation

As shown below, the verbs *gnatʲ* 'to chase' and *spatʲ* 'to sleep' exceptionally appear with the vowel [a] before the past-tense suffix and with [i] in the present:[13]

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[13] While these two verbs exhaust the list of non-palatal second-conjugation *a*-verbs in traditional grammars, Itkin (2012) points out that in colloquial Russian the verb *mʲaúkatʲ* 'to meow', as well as a few others on [-ukatʲ], follow the second-conjugation pattern in the present tense. These, however, may be not heteroclite verbs but rather instances of transitive softening obscured by vowel neutralization in unstressed syllables.

As is well-known (see Halle 1959, 1965, Crosswhite 1999, 2000, Padgett 2001, Iosad 2012, Enguehard 2018, among others), in unstressed syllables after a palatalized consonant all vowels except /u/ are neutralized to [i]. As all these

(34) a. *gónit/gonʲú/gnal* 'chase PRES.3SG/PRES.1SG/PAST.MSG'
 b. *spit/splʲú/spal* 'sleep PRES.3SG/PRES.1SG/PAST.MSG'

Besides belonging to the second rather than to the first conjugation, these verbs differ from *write*-verbs also in their secondary imperfectives and derived actor nouns. While the verb *gnatʲ* 'to chase' exhibits transitive softening in the secondary imperfective and in the derived actor noun, the verb *spatʲ* 'to sleep' doesn't:

(35) a. *dogonʲátʲ* 'to finish chasing IMPFV'   transitive softening, like (19b)
 b. *dosipátʲ* 'to finish sleeping IMPFV'   no transitive softening, like (19a)

(36) a. *gonʲítelʲ* 'oppressor'
 b. %*spátelʲ* 'sleeper' (occasionally attested as a neologism)

If the underlying representation of the thematic suffix is -*a*-, in order for the *e2i* change to take place in (34–36), -*a*- should first be fronted. Why would fronting go hand in hand with *e2i* change for *gnatʲ* 'to chase' and *spatʲ* 'to sleep', but not for *write*-verbs?

This similarity of *gnatʲ* 'to chase' and *spatʲ* 'to sleep' to *e*-verbs and their difference from *write*-verbs can be handled on the assumption that their thematic suffix is also -*e*-, which is raised in the same environments as for other *e*-verbs (*e2i* change), but unlike with other *e*-verbs, it is also backed in the past:

(37)   [[gъn-e]₁-l]₂   exceptional second-conjugation *a*-verbs, past
             ↓   cycle 2: BACKING (*e2a*)
          [[gъn-a]₁-l]₂
             ↓   post-cyclic: yer-deletion
           [gnal]

Given that in the secondary imperfective and in actor nouns (unlike in the present tense) the *e2i* raising is root-conditioned (section 4), it is reasonable to assume that the root of *gnatʲ* 'to chase' triggers it in the appropriate environments, while the root of *spatʲ* 'to sleep' doesn't, the contrasts in (35–36) can be easily derived. If the underlying -*e*- undergoes backing in all environments where it has not been raised, *e2i* change would bleed backing, but in all other environments the thematic

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verbs have accented stems, the inflectional endings are unstressed, and transitive softening ensures that the stem-final /k/ surfaces as [čʲ]. This means that with the consonantal 2SG, 3SG, 1PL, and 2PL endings the underlying -*e*- and the underlying -*i*- cannot be distinguished on the surface, and the 1SG ending is -*u*- in both conjugation classes. The remaining distinction is that of the 3PL, for which the transitive softening hypothesis predicts the first-conjugation ending -*ut*-. While this form would be clearly detectable in contrast to the observed -ʲ*at*-, the vowel can be hypothesized to have dissimilated from the [u] of the stem, a process that is facilitated by additional vowel neutralization in the presence of the intervening palatalized affricate [t͡s].

suffix will surface as [a]. The backing process will then not need to be restricted in any way: *e2a* change would be triggered in all environments where *e2i* change has not applied.[14]

5.3 Independent evidence for a non-*e2i* raising ablaut

The exceptional verb *ssatʲ* 'to piss' might be taken as evidence for a raising ablaut in the present tense that is not limited to *e2i* and, by extension, for a null present-tense suffix. As Table 4 shows, the verb *ssatʲ* exhibits a unique conjugation pattern surfacing with [ɨ] in the present tense:

Table 4: Special verb *ssátʲ* 'to piss'

		singular.M (F/N)	**plural**
present	1	ss-ú	ss-ɨ́-m
	2	ss-ɨ́-šʲ	ss-ɨ́-te
	3	ss-ɨ́-t	ss-ú-t
past		ss-á-l (a/o)	ss-á-l-i

Assuming that *e2i* change is a special case of a more general stem-triggered raising rule in the present tense, the underlying -*a*- (be it a thematic suffix or part of the root) would naturally be raised to the [+back][–round] [ɨ], which differs from [a] only in the feature [α high].[15]

5.4 The causative-inchoative alternation

I would like to conclude this section with a tentative proposal. As is well-known (see Jabłońska 2007, Medová 2013, Arsenijević and Milosavljević 2021, Mišmaš and Simonovic 2022, etc.), in

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[14] One possibility is that the -*e*- in question is the nasal [ẽ], with the nasal feature contributed by the root. Historically Russian tautosyllabic VN sequences underwent nasalization and then denasalization, with [–low] vowels turning to [a] and [+low], to [u] (see also fn. 6). For the verb *spatʲ* 'to sleep' evidence for such a feature can be adduced from the deverbal noun *son* 'sleep, dream'. I will not try to develop this idea here leaving it for future research.

[15] While I am not aware of any prior attempts to account for this verb, the deletion hypothesis can assimilate *ssatʲ* 'to piss' to the verbs *gnatʲ* 'to chase' and *spatʲ* 'to sleep' and stipulate that this root forces backing of the thematic vowel in the present. Evidence for this view comes from the dialectal/archaic variant of this verb, *scatʲ*, where the stem-final consonant has no palatalized counterpart and would therefore trigger "backness switch" (cf. Rubach 2000), followed by assimilation. While such an assimilation appears to be contradicted by the [sc] sequences in, e.g., *soscí* 'nipples' or *scápatʲ* 'to grab', in those environments the consonant cluster is broken by an underlying yer. I thank George Fowler for drawing my attention to the relevance of this variant.

To complete the empirical picture, this verb can also be conjugated in another class, with the thematic vowel deleted before the present-tense suffix (like in the verb *sosátʲ* 'to suck').

Slavic deadjectival verbs transitivity is linked to the choice of the thematic vowel: the thematic vowel *-e-* correlates with inchoatives, while *-i-* correlates with their causative counterparts:

(38)　a.　*belétʲ* 'to be white' : *belítʲ* 'to make white' (from *bélɨj* 'white')
　　　b.　*pʲjanétʲ* 'to grow intoxicated' : *pʲjanítʲ* 'to intoxicate' (from *pʲánɨj* 'drunk')

If *-i-* is regarded as a thematic vowel, the fact that it replaces the thematic vowel *-e-* rather than combines with it appears problematic on the assumption that causatives are derived from underlying inchoatives. However, if the causative morpheme here is null and merely triggers *e2i* change (as well as requires the null present-tense suffix), full compositionality can be achieved.

Support for this view can be drawn from the fact that not all deadjectival intransitives are *e*-verbs and not all of those are inchoatives (Dyachkov 2023):

(39)　a.　*gorčítʲ* 'to be bitter' ← *górʲkij* 'bitter'
　　　b.　*tupítʲ* 'to be/act dumb' ← *tupój* 'dumb'

If (39a) is regarded as a case of root-conditioned *e2i* change in the entire paradigm, (39b), as an instance of a regular *i*-verb (which can be transitive or intransitive, but not inchoative), and the *i*-verbs in (38), as cases of *e2i* change triggered by the null causative morpheme, the exceptional nature of (39a) and the composition of (38) will both be accounted for without impinging on the general underspecified semantics of verbalization in *-i-*.

6　CONCLUSION

I have argued in this paper for the general treatment of second-conjugation verbs as involving a zero present-tense morpheme, which is independently motivated for Russian (section 3). To deal with the fact that in the present tense *e*-verbs surface with the vowel [i], I have proposed the *e2i* change rule, independent evidence for which has been provided from several sources. Transitive softening with *e*-verbs, discussed in section 4, provided one piece of evidence. I have shown that while *i*-verbs (as expected) exhibit transitive softening in the 1SG, in past passive participles and (barring a few exceptions) in the secondary imperfective and in actor nouns, *e*-verbs do not behave uniformly in these environments. I argued that exceptionless transitive softening in past passive participles of *e*-verbs can be explained by the unconditional application of the same *e2i* change as in the present tense, whereas the sporadic transitive softening in secondary imperfectives and actor nouns is due to its root-conditioned application.

I continued by showing (section 5) that *e2i* change can also be useful in accounting for the class of first-conjugation verbs that surface with the thematic vowel *-a-* in the past and transitive softening in the present: I suggested that their thematic vowel is subject to fronting in the present and that fronting feeds *e2i* change. The two special second-conjugation verbs *gnat^j* 'to chase' and *spat^j* 'to sleep' are amenable to a slightly different treatment. I hypothesized that *e2i* change can itself be regarded as a special case of a more general raising process, which would permit a simple account of the special conjugation of the unique verb *ssat^j* 'to piss'. Finally, I discussed one more possible application of *e2i* change that resolves two outstanding issues in the causative-inchoative alternation in Slavic.

I believe that the major advantages of my proposal are that it not only explains the different transitive softening patterns in secondary imperfectives of two types of second-conjugation verbs, but also renders unexceptional the zero allomorph of the present-tense suffix. Given that the ability of the present-tense morpheme to trigger vowel change in the stem is undisputed (see Matushansky 2023 for a discussion of Russian ablaut verbs), its extension to the thematic suffix is unsurprising.

Several issues necessarily remain outside the scope of this analysis. While I have addressed transitive softening in the secondary imperfective of *e*-verbs, I have not discussed what happens when *e2i* change does not occur. I have not dealt with the few potential cases of *e2i* change in first-conjugation *e*-verbs, exemplified in (40) below, or with the failure of transitive softening with 14 *i*-verbs, exemplified in (41).

(40) a. *razgovéets^{j}a/razgovéls^{j}a* 'break fast FUT.3SG/PAST.MSG' → *razgovl^{j}át^{j}s^{j}a* (IMPFV)
      b. *vízdoroveet/vízdorovel* 'recover/heal FUT.3SG/PAST.MSG' → *vizdorávlivat^j* (IMPFV)

(41) a. *zaxvatít^j/zaxvátivat^j* 'to conquer PFV/IMPFV'   *-iw-*
      b. *otrubít^j/otrubát^j* 'to chop off' PFV/IMPFV'   *-Ø-*
      c. *zatmít^j/zatmevát^j* 'to eclipse PFV/IMPFV'   *-w-* + thematic *-e-*

While I believe that these cases can show that *e2i* change might be a more general process than evidenced by second-conjugation *e*-verbs, space reasons preclude me from discussing them here. One issue, however, needs to be addressed: that of non-deverbal *-tel^j-* nouns and thematic suffix change in them.

7 APPENDIX: ON THE STATUS OF *-I-TEL^j-*

Agapova (1974) (via Zvezdova and Gou 2013) hypothesizes the existence of an exceptional suffixal complex *-i-tel^j-* deriving *-tel^j-* nouns from non-verbal stems, like in (42). The process is

even more advanced with adjectives in *-tel^jn-* (43). Independently, Itkin (2007:168) also notes that *-tel^j-* nouns can surface with thematic suffixes other than those of the semantically linked verbs and proposes that the thematic suffix can be added (with athematic verbs, like in (43) or (44)) or replaced (45).[16]

(42) a. *vlast^j* 'power' → *vlastítel^j* 'ruler' (**vlastit^j*, *vlástvovat^j* 'to rule')
      b. *pokróv* 'cover, cloak, protection' → *pokrovítel^j* 'protector' (**krovit^j*, **pokrovit^j*)

(43) a. *rastí* 'to grow' → *rastítel^jnij* 'vegetal' (cf. #*rastit^j* 'to grow (tr.)')   Ø class
      b. *predpočést^j* 'to prefer' → *predpočtítel^jnij* 'preferable'

(44) a. *bl^justítel^j* 'protector' ← **bl^justit^j*, cf. *bl^ustí* 'to safeguard'   Ø class
      b. *spasítel^j* 'Savior' ← **spasit^j*, cf. *spastí* 'to save'
      c. *popečítel^j* 'warden' ← **(po)pečít^j*, cf. *péč^js^ja* 'to care for'

(45) a. *skazítel^j* 'storyteller' ← **skazít^j*, cf. *skazát^j* (*-a-/-i-*) 'to tell'   *-a/i-* class
      b. *dvížitel^j* 'engine' ← **dvižit^j*, cf. *dvígat^j* (*-a-/-i-*) 'to move'   *-a/i-* class
      c. *voítel^j* 'warrior' ← **vojít^j*, cf. *voevát^j* (*-ov-/-u-*) 'to wage war'   *-ow-* class
      d. *revnítel^j* 'zealot' ← **revnít^j*, cf. *revnovát^j* (*-ov-/-u-*) 'to be jealous'   *-ow-* class

Given that the surface [i] can appear not only as a counterpart of the thematic suffix *-e-*, but also where no thematic suffix is present (44) or where another verbalizing suffix is used (45) in a semantically linked verb, can these examples be used to argue against *e2i* change and in favor of the replacement of the thematic suffix?

I believe that the answer is no. Firstly, while ablaut can be straightforwardly explained as a lexical property of a given root, thematic replacement needs an explanation: what properties should a thematic suffix have so that three out of the four *e*-verbs forming actor nouns cannot do so with their thematic vowel (24) and the remaining one can (25)? Why no such problem arises for second-conjugation *a*-verbs (26) and first-conjugation *e*-verbs (46)?

(46) a. *vladéet* PRES.3SG/*vladél* PAST.MSG 'own' → *vladétel^j* 'owner'
      b. *radéet* PRES.3SG/*radél* PAST.MSG 'care for' → *radétel^j* 'caregiver (arch.)'
      c. *déet* PRES.3SG/*déjal* PAST.MSG do' → *blagodétel^j* 'benefactor'

Secondly, the only unexpected thematic suffix in derived nouns and adjectives in *-tel^j-* is the thematic vowel *-i-*, the only exception that I am aware of is *znamenátel^j* 'denominator', which may or may not be semantically linked to the verb *znamen*⟨*ov*⟩*át^j* 'to signify'. While the ablaut hypothesis

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[16] Itkin's examples are not limited to *-tel^j-* nouns, but the replacement thematic suffixes in his lists are limited to *-i-* and occasionally *-e-* (e.g., *molél^jn^ja* 'meeting house, chapel' from *molít^js^ja* 'to pray'). If this is an empirical generalization rather than an accident, this restriction provides additional evidence for *e2i* change along with the cases in (40).

links this restriction to the phonological properties of the trigger, the actor suffix *-telʲ-*, the thematic replacement hypothesis requires an alternative explanation, which is unlikely to be phonological (since the suffix *-telʲ-* by itself is compatible with all thematic suffixes).

Thirdly, there is a systematicity to exceptional *-i-telʲ-* nouns that links them to *e2i* change. A closer examination divides them into three classes. The first one (42) does not seem to be motivated by existing verbs, and hence can be regarded on a par with non-motivated actor nouns like *račítelʲ* 'zealot' (though the verb *račítʲ* is attested in some dialects). The second (43–44) consists of nouns based on athematic verbs. While athematic verbs generally cannot combine with the suffix *-telʲ-*,[17] several Ø/-*i*- verbal pairs (sometimes corresponding to the distinction between directed vs. non-directed motion and sometimes with no clear difference in meaning) are attested, both with and without ablaut (47). An *-i-telʲ-* noun can be derived via such an intermediate step that is not attested as an independent word ([–lexical insertion], in the terms of Halle 1973).

(47) a.   *nes-tí/nos-i-tʲ* 'to carry.DIR/INDIR' (roots *-nes-/-nos-*)   ablaut
       b.   *ves-tí/vod-í-tʲ* 'to lead.DIR/INDIR' (roots *-ved-/-vod-*)
       c.   *-čes-tʲ/čt-i-tʲ* 'to honor' (root *-čĭt-*)   no ablaut
       d.   *volóčʲ/voločítʲ* 'to drag' (root *-volok-*)

Finally, the remaining cases are all based on verbs whose thematic vowel changes to *-i-* in other environments: either on second-conjugation *e*-verbs (24), or on first-conjugation *-a-/-i-* verbs (section 5.1), which *-ow-* verbs are part of (see Melvold 1989). Likewise, Zvezdova and Gou (2013), when discussing (p.43) theme-changing adjectives in *-itelʲn-*, also point out that they are derived from verbs in *-e-* and *-ow-*. I believe that this set of data, albeit a closed one, provides additional support for the hypothesis that the suffix *-telʲ-* triggers root-conditioned *e2i* change with verbal roots that are subject to it in other environments.

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[17] I am aware of two exceptions: *rabotodátelʲ* 'employer' (built by compounding from *datʲ* 'to give', cf. Section 3) and *žítelʲ* 'inhabitant' (from *žitʲ* 'to live', present-tense 3sg *živʲót*).

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