The Morphophonology of Russian Adjectival Inflection

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In this article, we present the morphosyntactic structure underlying the Russian adjectival declension and the phonological rules that apply to it to derive the surface representations. We describe the two declension classes of Russian adjectives and argue that adjectives and nouns employ the same theme suffixes (*-oj-* and *-o-*) and, importantly, that choice of theme suffix also determines choice of Case exponents. On this view, there is no special adjectival declension class; instead, Case exponents are shared between adjectives and nouns, and the choice of a ''paradigm'' is determined by the choice of the theme suffix. The article covers all adjectival inflections, including those of the possessives, demonstratives, interrogatives, and paucal numerals.

Keywords: Russian, adjectives, declension, theme suffixes, morphology, phonology

1 Introduction

The goal of this article is to determine the underlying syntactic structure of Russian adjectives in all of their inflected forms. We aim to show that all inflected forms of an adjective have a simple, transparent morphological composition that is obscured by the operation of various phonological rules, independently motivated in Russian. Our more specific objectives are (a) to describe the two declension paradigms of Russian adjectives and (b) to determine the function of the theme suffix *-oj-* and of its absence from the surface representation. We are also concerned in this article with elucidating the nature of theme suffixes (so called by analogy with theme vowels of Latin and Catalan, on which see Oltra-Massuet 2000) and with comparing theme suffixes characteristic of adjectival declension classes with those of nominal declension classes and with those of verbal conjugation classes (Halle and Matushansky, in preparation).

We challenge the standard view of the Russian adjectival declension, which implies that Russian adjectives belong to a special declension paradigm (with the suffix *-oj-* usually treated as part of the adjectival inflection). We argue that instead, Russian is no different from the many languages in which adjectives belong to the same declension classes as nouns, as is the case in Latin, where adjectives can be either of declensions I/II (feminine vs. masculine and neuter; e.g., *prima* 'first', *primus*, *primum*) or of declension III (all three genders; e.g., *felix* 'happy'), just like

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nouns (see any Latin grammar; e.g., Gildersleeve and Lodge 1876). While medieval Russian did possess a special adjectival declension paradigm,[1] derived from the earlier definite adjective declension (diachronically consisting of an adjective and a deictic pronoun declining in parallel), this is no longer the case in modern Russian. Most Case exponents usually associated only with adjectives are in fact shared with nouns (Halle 1994b; see Müller 2003 for a different view).

We argue that Russian adjectives fall into two major declension classes, depending on the choice of their theme suffix in the relevant cells of the paradigm (the direct Cases, for the most part). Variation within the classes is therefore mostly phonological, although some readjustment rules (Chomsky and Halle 1968, Halle 1990) also apply. Importantly, adjectives decline according to syntactic gender. However, unlike nouns, adjectives have no inherent gender, but are assigned the gender of some noun in the sentence or discourse (agreement or concord).

The article is organized as follows. We first discuss the well-known morphosyntactic distinction between long and short forms of Russian adjectives (e.g., Babby 1973, Siegel 1976, Bailyn 1994). In the course of this discussion, we elucidate the behavior of stress in Russian and introduce the abstract vowels of Russian usually known as yers. We then examine the syntactic and morphological status of the suffix distinguishing long and short forms (-oj- vs. -o-). We propose that both -oj- and -o- are theme suffixes. Once this is established, we turn to the details of the attributive (long-form) adjectival declension.

Our examination of the regular adjectival declension begins with the phonological rules that apply to adjectives but are motivated elsewhere. Then we present the major readjustment rule singling out the regular declension paradigm, which is a copying rule applying in the direct Cases. We also discuss the readjustment rules that apply to all adjectives, regular and irregular, in plural and instrumental [−feminine] cells, and their consequences for adjectives with accented stems or stems ending in a velar.

We then examine the irregular adjectival declension and show that its major distinction from the regular adjectival declension is due to the application of the readjustment rule that applies to the theme suffix -oj- in the direct Cases and replaces -oj- with the theme suffix -o-. We show how this rule applies to lexical possessives and then turn to functional adjectives, of which the majority belong to the irregular adjectival declension class. The study ends with a discussion of the exclusively plural adjectives and of 3rd person pronouns.

2 The Framework

Basic to our study is the derivational model of the Distributed Morphology framework (Halle and Marantz 1993, 1994). The standard tree-building operations of the narrow syntax apply to bundles of semantic, syntactic, and phonological features, and as a result, words, like phrases, have a hierarchical structure. These feature bundles serve as targets for Vocabulary Insertion (Marantz 1993), which assigns phonological exponents to abstract morphemes, that is, to mor-

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[1] We note here that we view paradigms as an expository device only, not included in the speaker's knowledge of language (cf. Bobaljik 2002, 2004)—much like alphabetical arrangement of words in a dictionary.

phemes without phonological features. The exponents may be underspecified for the environment of insertion (e.g., plural morphology in Russian is underspecified for gender, which does not mean that the abstract AGR morpheme realizing concord is). When a given structure is subject to more than one rule of lexical insertion (e.g., the English past tense can be realized as *-d* or as *-t*), the selection is subject to the Subset Principle (Halle 1997a): the most highly specified exponent is inserted.

Phonological rules fall into two major categories (e.g., Chomsky and Halle 1968, Pesetsky 1979, Halle and Vergnaud 1987): cyclic rules, which apply to each embedded constituent, and postcyclic rules, which apply once the morphological derivation is complete (although nothing prevents a particular rule from applying both cyclically and postcyclically). The so-called readjustment rules (Chomsky and Halle 1968, Halle 1990), which manipulate phonological exponents of abstract morphemes in unpredictable ways, are cyclic and necessarily precede other phonological rules. We also assume that rule interaction is formally captured by imposing an order on the application of the different rules, and we provide motivation for this assumption below.

3 Long and Short Forms of Russian Adjectives

Russian adjectives may appear in two forms, the short and the long.[2]

(1) MEsto bɪlo pUst-o/pust-Oj-e.
place   was empty-N/empty-LF-N-NOM
'The place was empty.'

The syntactic distribution of short- and long-form adjectives and the semantic differences between them have been discussed by Babby (1973), Siegel (1976), and Bailyn (1994), among others. In modern Russian, short-form adjectives function only as predicates of copular sentences. Long-form adjectives, on the other hand, have been assumed to always be attributive; in predicative positions, they are thought to be part of an extended NP with a null head noun meaning 'person' or 'thing' (Babby 1973, Siegel 1976). For the purposes of this article, the only important syntactic distinction between long- and short-form adjectives is that long-form adjectives are marked for gender, number, and Case, whereas short-form adjectives are marked only for gender and number.

From the morphophonological point of view, the first distinction that we see between the long and short forms in (1) is the presence versus absence of the suffix *-oj-*. Once we start examining other instances of the two types of adjective, we observe that the surface form of the suffix changes.[3]

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[2] The short form is not available for all adjectives. For example, the so-called relational adjectives, such as those designating materials (*derev'Annij* 'wooden') and origins (*gOrnij* 'mountain-ADJ'), never have short forms, and the same is true for most adjectives derived with the suffix *-ɪsk-*.

[3] Here and up to section 5, we disregard neutralization in unstressed syllables (/o/ and /a/ neutralize to schwa [ə]; /e/ and /i/ neutralize to /i/) and palatalization ([αback] assimilation) before front vowels. On both topics, see Lightner 1972 and references cited there.

(2) Mašɪna bɨlA pustA/pustAja.
    car   was empty-SF-F/empty-LF-F-NOM
    'The car was empty.'

(3) a. ČemodAn bɨl pUst/pustOj.
       suitcase   was empty-SF-M/empty-LF-M-NOM
       'The suitcase was empty.'

    b. MAl'čik bɨl zdorOv/zdorOvɨj.
       boy   was healthy-SF-M/healthy-LF-M-NOM
       'The boy was healthy.'

While the exact statement of the rule determining the difference between the surface forms of the long-form suffix in the examples above will be discussed in section 5, it is necessary to mention at this point that the determining factor distinguishing (3a) and (3b) is stress: *pust-Oj* versus *zdorOv-ɨj*.

3.1 A Note on the Russian Vowel System

As in most languages, the phonemes that appear in the underlying representation of Russian words and morphemes differ somewhat from those that are actually pronounced. The difference is especially marked in the vowels, where the underlying representations include two vowels that do not ever surface. These vowels—called *yers*—have to be posited to explain a host of phonological regularities, among which perhaps the most obvious is the appearance of an extra syllable in the stems in (4) and the absence of such alternation in the stems in (5).

(4) a. tUrk-a   tUrok
      'Turk-GEN.SG'   'Turk-NOM.SG'
    b. b'edn-A   b'Ed'en
      'poor-F.SG '   'poor-M.SG'

(5) a. pArk-a   pArk
      'park-GEN.SG'   'park-NOM.SG'
    b. kommun'ɪzm-a   kommun'ɪzm
      'communism-F.SG'   'communism-M.SG'

The difference between the stems in (4) and those in (5) is due to the fact that the stems in (4) include in their underlying representations an abstract vowel (yer) that is not present in the underlying representations of the stems in (5).

    It is well known that historically the yers derive from the short high vowels /ĭ, ɨ̆/ of Proto-Slavic; this is reflected in the fact that when yers surface, they appear as /e, o/, that is, as the [−high] cognates of /ĭ, ɨ̆/. In Russian, as in all East Slavic languages, vowels have lost the length contrasts. Following Pesetsky (1979), Rubach (1984), Czaykowska-Higgins (1988), and Halle (2004), among others, we assume that contrasts in length have been replaced with the contrast

Table 1
Russian vowel system

	[i]	[ɨ]	[u]	[e]	[a]	[ɪ]	[ɨ̆]	[ɛ]	[o]
ATR	+	+	+	+	+	−	−	−	−
back	−	+	+	−	+	−	+	−	+
round	−	−	+	−	−	−	+	−	+
high	+	+	+	−	−	+	+	−	−

between [+ATR] and [−ATR], which in modern Russian serves to distinguish the [−back] vowels [e] in certain environments, as in [r'Ek'-i] 'rivers-NOM' versus [r'ɛk] 'rivers-GEN'.[4]

The Russian system of vowels in underlying representations and their feature compositions are shown in table 1. The two shaded columns in the table indicate the two Russian yers: the front /ɪ/ and the back /ɨ̆/. Various phonological analyses have described them as high and short, high and [−ATR], lacking a nucleus, or lacking the timing slot. Under our analysis, they form an integral part of the Russian vowel system.

3.2 Yers

A crucial difference between short-form and long-form adjectives is illustrated in (6).[5] (The larger size of small capitals indicates that the vowel bears the word stress. Please note especially the difference between the regular-sized ɪ/ɪ (unstressed yers) and the larger-sized I/ɪ (stressed i/ɨ).)

(6) a. [b'Ed'in]   →   [b'Ednɨj]
        'poor-SF-M'   'poor-LF-M-NOM'
    b. [bOl'in]   →   [bəl'nOj]
        'sick-SF-M'   'sick -LF-M-NOM'

Once we have removed the surface effects of the rules of palatalization before front vowels and neutralization in unstressed syllables (see section 5), we obtain the following forms:[6]

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[4] In what follows, we use [e] for both the [−ATR] vowel [ɛ] and the [+ATR] vowel [e].

[5] It should also be observed that before a [−back] (''soft'') consonant, a stressed /e/ surfaces as [+ATR], as in (6a); elsewhere, it surfaces as [−ATR], as in (6b). The [±ATR] distinction will become relevant in the discussion of yers in the next section.

[6] The creation of a consonant cluster in the long form leads to the depalatalization of the root-final [d] in (7a), but not of [l] in (7b).

(7) a. bEden   →   bEdnij
     'poor-SF-M'   'poor-LF-M-NOM'
    b. bOlen   →   bol'nOj
     'sick-SF-M'   'sick -LF-M-NOM'

As noted above, the vowel in the short form in (7) is due to the presence of a yer in the underlying representation. While actual discussion of yer lowering and yer deletion is beyond the scope of this article (see, e.g., Lightner 1972, Pesetsky 1979, Gussmann 1980, Rubach 1986, Halle and Vergnaud 1987, Szpyra 1992, Yearley 1995), what is relevant here is the actual empirical generalization: a yer is lowered (ɪ surfacing as [e], ɨ surfacing as [o]) if followed by a yer, and deleted otherwise, except in certain morphologically conditioned environments.

(i) *Yer Lowering*
$$V_{[+high, -ATR]} \rightarrow [-high] \,/\, \underline{\hspace{2em}} \; [_\sigma \, V_{[+high, -ATR]}$$

(ii) *Yer Deletion*
$$V_{[+high, -ATR]} \rightarrow \emptyset$$

While Yer Lowering (i) can take place both cyclically and postcyclically (see Pesetsky 1979 and Matushansky 2002 for a demonstration that Russian prefixes are postcyclic and thus require postcyclic application of Yer Lowering (i)), Yer Deletion (ii) is strictly postcyclic (had it been cyclic, it would have bled postcyclic Yer Lowering (i)).

Yer Lowering and Yer Deletion allow us to account for the alternation in (7) under the assumption that the masculine singular ending is a back yer -ɨ-, triggering Yer Lowering (i) in the previous syllable.

(8) a. /bedɪn/ + /ɨ/ → bEden
    b. /bolɪn/ + /ɨ/ → bOlen

In the long forms, the suffix *-oj-* intervenes between the root yer and the Case ending, so that Yer Lowering (i) does not apply, while the later Yer Deletion rule (ii) does. The same alternation happens in the feminine form.

(9) a. /bedɪn/ + /a/ → bednA
    b. /bolɪn/ + /a/ → bol'nA

In (9), Yer Lowering (i) does not apply, while Yer Deletion (ii) does. The final consonant of the root is depalatalized before the nasal in (9a) but not in (9b) because depalatalization does not apply to sonorants (Halle and Matushansky 2002).

Importantly, yers interact with stress in that when a syllable containing a yer is accented, the accent is shifted to the preceding syllable (Halle 1997b).

3.3 Stress

Stress location in a Russian word is determined primarily by the accentual properties of the morphemes that compose it. Each Russian morpheme is either accented, unaccented, or postaccent-

ing, though suffixes can also be preaccenting. (Postaccenting morphemes place the stress on the immediately following syllable, while preaccenting morphemes place it on the immediately preceding syllable.) A Russian word consisting of *n* morphemes may therefore have as many as *n* accented syllables or no accented syllables at all. Surface stress falls on exactly one syllable in every word and is determined by the Basic Accentuation Principle (see Kiparsky and Halle 1977, Halle 1978, Halle and Kiparsky 1981).[7]

(10) *Basic Accentuation Principle*
Surface stress falls on the first (leftmost) accented syllable. In words without an accented syllable, surface stress falls on the initial syllable.

Adjectival stress is mostly predictable from the interaction of accentuation of the root and that of derivational affixes. For example, in the adjective *orEx-ov-ij* 'nut-ADJ', the root is accented, and so are both the second and the third morphemes. Because the stem is accented on the second syllable, it is this syllable that is assigned surface stress by the Basic Accentuation Principle. In the adjective *molod-Oj* 'young', the root is unaccented, while the suffix *-oj-* is accented, and therefore surface stress falls on the last syllable. However, there exist minimal pairs containing the same morphemes and differing only in stress, such as *vrEm-en-n-ij* 'temporary' versus *vrem-en-n-Oj* 'temporal'.[8] The stem accent in the first of these two adjectives must be due to a special morphophonological rule, given that the stem is unaccented, as can be seen by comparing the genitive singular *vrEm-en-i* 'time' (having an unaccented Case ending) with nominative plural *vrem-en-A* 'times' (having an accented Case suffix). Nonetheless, in most cases, stress in long forms can be predicted from stress in short forms and knowledge of various stress-shifting rules of Russian (Halle 1994b, 1997b). Therefore, given that the adjectival stem *bol'-ʃn-* in (7) is inherently unaccented, the stress will fall on the first syllable of the stem, since the gender-number suffix *-ɪ* is unaccented in the masculine short form. Since the *-oj-* suffix and the feminine suffix *-a* are accented, the stress shifts to these affixes both in the long form in (7) and in the feminine short form in (9).

3.4 Gender and Number

Adjectives in Russian are composed (minimally) of a stem and an AGR node. While the stem contains the lexical information about the adjective, the AGR node hosts the ф-features (gender and number) assigned to the adjective.[9] Since adjectives characteristically have no inherent ф-

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[7] The Basic Accentuation Principle, as stated in (10), summarizes the surface effects of the Russian accent system, about which a great deal has been learned since 1981 (see Idsardi 1992, Halle and Idsardi 1995, and Halle 1997b for discussion). Below we have been forced to limit radically the information about Russian stress so as not to lengthen the article unduly.

[8] The form of the long-form suffix (*-oj-* vs. *-ij-*) is determined by surface stress (section 6).

[9] As a rule, only Russian singular forms make reference to gender; the only exceptions are the adjective *ob-* 'both' and the cardinal *dv-* 'two' (whose collective variant *dvOe* is [−feminine]; see discussion in section 10.5). We therefore simplify our notation and use [±feminine] or [±neuter] to imply [−plural] as well (unless marked otherwise).

Table 2
Short-form adjectives (surface forms)

Stem	Masculine	Neuter	Feminine	Plural
welik- 'great'	velɪk	velikO	velikA	velikɪ
dobr- 'kind'	dObr	dobrO	dobrA	dobrɨ
bolɪn- 'sick'	bOlen	bol'nO	bol'nA	bol'nɨ

features,[10] the ϕ-features of some DP in the same sentence must be assigned to them via syntactic agreement or concord. Since we are concerned at this point with short-form adjectives, we first examine the morphological expression of gender and number there (see table 2). It is easy to see that the feminine ending is -*a*, the neuter -*o*, and the plural -*i* (no gender distinction), while the masculine ending is -*ɪ*, as argued above. We will show that these are also the nominative exponents of long-form adjectives, to which we now turn.

4 The Long-Form Suffix

As noted above, the obvious difference between short-form and long-form adjectives is the long-form suffix (-*oj*-). In the remainder of this article, we will assume and attempt to prove that -*oj*- is a theme suffix and that its function is intimately correlated with the fact that long-form adjectives inflect for Case,[11] while short-form adjectives do not. First, however, we must address alternative views on the long-form suffix. Of these, the least interesting is the traditional view that it is part of the inflection of long-form adjectives. Our strategy will be to show that -*oj*- can in fact be separated from the Case endings in every cell of the adjectival declension paradigm.

Two views alternative to ours can be suggested on the assumption that -*oj*- is a separate morpheme: its function may be syntactic or semantic. Part of our argument against these views will be to show that under certain circumstances this suffix may be replaced by another; but first we address the possibility that it is an adjectivizing suffix (a^0).

4.1 -oj- = Adjectivizing Suffix?

To see that -*oj*- cannot be an adjectivizing suffix, it is enough to recall that short-form adjectives do not bear this suffix and nevertheless function as adjectives. However, more direct morphological arguments are also available.

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[10] It is for this reason that in all languages we know *pregnant male* is grammatically impeccable but pragmatically self-contradictory.

[11] Attributive adjectives receive the same *morphological* Case as the nouns they modify, as shown by the behavior of the accusative Case. Both on nouns and on adjectives that modify them, accusative [−feminine] and accusative plural are spelled out as nominative if the noun is inanimate and as genitive if it is animate. This means that it is morphological Case (rather than abstract Case) that is spread to the adjective.

On the behavior of Case assignment with the so-called paucal (semiadjectival) numerals 2, 3, and 4, see for example Babby 1973, 1980, 1985, 1986, Mel'čuk 1985, Franks 1994, Halle 1994.

4.1.1 Derivation of Adjectives Most Russian adjectives are derived from nouns or verbs by productive adjective-forming suffixes, among which are *-ɪn-*, *-ɪsk-*, and *-ɪk-*.

(11) a. bed-A 'misery.F-NOM' → bed-ɪn-oj-e → bEdnoje 'poor-N-NOM'
  b. Anglij-a 'England.F-NOM' → anglij-ɪsk-oj-e → anglIjskoje 'English-N-NOM'
  c. lom-At' 'break-INF' → lom-ɪk-oj-e → lOmkoje 'fragile-N-NOM'

As we will show, *-oj-* is subject to the readjustment rule Vowel Copying (ix) (whose output is the allomorphs *-ij-/-aj-/-uj-*), whereas this is not true of any of the adjective-forming suffixes.

(12) a. bEdn-oj-e 'poor-N-NOM' → bEdn-ij 'poor-M-NOM', bEdn-uj-u 'poor-F-ACC'
  b. anglIjsk-oj-e 'English-N-NOM' → anglIjsk-ij 'English-M-NOM', anglIjsk-uj-u 'English-F-ACC'
  c. lOmk-oj-e 'fragile-N-NOM' → lOmk-ij 'fragile-M-NOM', lOmk-uj-u 'fragile-F-ACC'

We conclude that *-oj-* is unlikely to be an adjective-forming suffix.[12]

4.1.2 Deadjectival Derivation The function of an adjectivizing suffix is semantic: it takes a noun or a verb and turns it into an adjective. As shown in (13), Russian has deadjectival suffixes, which, when attached to adjectival stems, form nouns or verbs. The fact that these suffixes attach only to adjectives, and not to verbs or nouns, shows that the lexical category of the stem is preserved in derivation. As also illustrated in (13), the long-form suffix disappears in deadjectival derivation.

(13) a. bed-ɪn-oj-e 'poor-N-NOM' → bednEt' 'to become poor', bedn'Ak 'a poor man'
  b. krasn-oj-e 'red-N-NOM' → krasnotA 'redness', krasnEt' 'to blush', krasnUxa 'German measles'

Since the suffix *-oj-* never appears before deadjectival suffixes, *-oj-* cannot be an adjective-forming suffix.

4.2 Attributive Marking

It might be argued that the function of *-oj-* is that it enables an adjective to be attributive. One way of formulating this proposal is that *-oj-* takes a predicative adjective (semantic type $\langle e, t \rangle$) and turns it into an attributive one with the semantic type $\langle \langle e, t \rangle, \langle e, t \rangle \rangle$ (cf. Babby 1973, Siegel 1976). Unexpectedly, this approach faces difficulties with adjectives that cannot be predicative and do not have a short form (e.g., relational adjectives). The reason is that these adjectives cannot have been derived from some underlying predicative form and therefore the presence of *-oj-* remains unexplained.

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[12] One possible proposal would be to say that Russian adjectives are formed by a ''fissioning'' adjectivizing suffix (cf. Halle 1997a, Noyer 1997), of which the second exponent is *-oj-*. Support for this view might be adduced from the fact that certain Russian adjectives are formed with the help of two unambiguously adjectivizing suffixes, as is the case with *meksik-an-ɪsk-ij* 'Mexican' (cf. *pol'-ɪsk-ij* 'Polish'). This would not, however, explain the existence of short-form adjectives or the deadjectival derivation detailed in the next section.

The alternative is that *-oj-* is a syntactic marking bestowed on an adjective in an attributive position. However, this alternative seems virtually indistinguishable from our view that *-oj-* is a theme suffix, enabling an adjective to bear Case, given that the two proposals make identical predictions in all contexts.

Indeed, recall that attributive positions require long-form adjectives. Given that all NPs are Case-marked, adjectives that appear inside NPs receive Case marking by concord. This means that long-form adjectives always have to bear Case. On the other hand, given that only NPs are Case-marked, Case-marked adjectives will only be attributive. Since positions where adjectives get Case and attributive positions necessarily coincide, the predictions made by the two proposals cannot be empirically distinguished. We prefer the Case-related proposal because it allows us to connect *-oj-* to verbal and nominal theme suffixes, under the assumption that it is their presence that allows a verb or a noun to inflect for φ-features. Moreover, assuming a link between *-oj-* and the attributive position of an adjective would make it impossible to explain the presence of *-oj-* in null-derived deadjectival nominals and certain underived nouns (see section 8.3).

However, one thing that we hope to make clear in the next section is that the constraints on the appearance of *-oj-* are morphological, rather than syntactic or semantic.

4.3 -oj- = *Theme Suffix*

As mentioned above, we believe that the syntactic structure of long-form adjectives is as follows:

(14) STEM + oj + AGR
where STEM contains the adjectivizing suffix a^0, and AGR is a morpheme composed of Case, gender, and number.

On this view, *-oj-* is the adjectival theme suffix. The immediate advantage of this view is that all word classes in Russian take themes (see Halle 1994b on Russian nominal themes and Halle and Vaux 1997 for such an analysis of Latin and Armenian). There are several possible hypotheses about what theme suffixes are:

1. Theme suffixes are category-changing suffixes (n^0, a^0, v^0, . . .).[13] That this view cannot be maintained with respect to Russian adjectives was demonstrated in section 4.1. The same kind of argument can be used for nouns.
2. Theme suffixes are delimiters of a special kind that enable speakers to analyze a word into its main components and that appear between any two word-internal components. This is the approach suggested by Oltra-Massuet (2000) for Catalan and other Romance languages.
3. Theme suffixes allow Case marking and (partially) determine inflection class. On this view, Russian requires delimiters only between the stem and inflection (at least in the

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[13] We assume that all lexical items are introduced into syntax as root + x^0 (+ y^0 . . .), where x^0 and y^0 can be any of a^0, n^0, or v^0 (Halle and Marantz 1993, 1994).

Table 3
Regular adjectival declension paradigm

	[−feminine]	[+feminine]	[+plural]
Nominative	-Ij-ɪ/-Oj-o	-Aj-a	-Ij-i
Accusative		-Uj-u	
Genitive	-Ow-o	-Oj-ɪ	-Ij-xɪ
Dative	-Oj-mu	-Oj-ɪ	-Ij-mɪ
Locative	-Oj-mɪ	-Oj-ɪ	-Ij-xɪ
Instrumental	-Ij-mɪ	-Oj-ɪ (-u)	-Ij-mi

case of declension). If theme suffixes are absent, Case marking is impossible. This position can be viewed as a special case of hypothesis 2.

Regardless of whether hypothesis 2 or 3 is correct for Russian, what we are concerned with here is the fact that the underlying syntactic structure in (14) is often obscured by the application of the various phonological rules discussed below. To see what these rules are and how they interact, we will start our survey of Russian adjectives with the so-called regular paradigm.

5 The Regular Declension Class

The chief goal of this section is to argue for the paradigm in table 3. (Larger small capitals indicate the vowels in inherently accented syllables.[14] Once again, it is important to recall that we use paradigms here only for expository purposes.) Of particular interest in table 3 is the behavior of the theme suffix *-oj-*. We will show that this suffix is present in all cells of the paradigm and discuss the phonological changes that it undergoes.

Certain dialects of Russian, including the standard literary dialect that we are dealing with here, are subject to vowel neutralization in unstressed syllables (i.e., there is no perceived difference between unstressed [o] and [a] or between unstressed [e] and [i]; see footnote 3). Stem-internally,[15] unstressed [−high] vowels surface as [i] after [−back] consonants (the process traditionally known as *ikan'e*, or *iotation*) and as [ə] elsewhere (Avanesov 1949; see also Padgett 2004). This process is illustrated in (15) and (16). (15a) provides two contrasting underlying representations with the root vowels [i] and [e] under stress, while (15b) gives the same roots in the unstressed environment, where no difference between /e/ and /i/ can be detected.

(15) a. lEs 'forest' vs. 1Is 'fox.M' surface as [1'Es] vs. [1'Is]
  b. lesA 'forests' vs. lisA 'fox.F' both surface as [l'isA]

---

[14] Table 3 reflects the assumption that no Russian word underlyingly ends in a consonant. See section 10.3 for confirmation of this assumption based on the position of surface stress in these cells.

[15] In inflectional endings, this process is subject to various restrictions not discussed in this article.

Table 4
Stress on the *-oj-* suffix, surface forms: *sv'atOj* 'holy, saint'

	[−feminine]	[+feminine]	[+plural]
Nominative	sv'it-Oj/sv'it-Oj-ə	sv'it-Aj-ə	sv'it-Ɨj-i
Accusative		sv'it-Uj-u	
Genitive	sv'it-Ov-ə	sv'it-Oj	sv'it-Ɨ-x
Dative	sv'it-O-mu	sv'it-Oj	sv'it-Ɨ-m
Locative	sv'it-O-m	sv'it-Oj	sv'it-Ɨ-x
Instrumental	sv'it-Ɨ-m	sv'it-Oj (-u)	sv'it-Ɨ-mi

As shown in section 3.4, the short-form endings for feminine and neuter singular adjectives are *-a-* and *-o-*, respectively. When the stress is on the stem, the two forms become indistinguishable.

(16) a. welik-A 'great-SF-F' → [v'il'ikA], welik-O 'great-SF-N' → [v'il'ikO]
     b. wEtren-a, wEtren-o 'windy-SF-F/N' → [v'Etr'inə]

The following two rules account for these effects:[16]

(iii) *Ikan'e*
     $V_{[-\text{high}]\ \text{unstressed}} \rightarrow [+\text{high}, -\text{back}] / C_{[-\text{back}]}$ ——

(iv) *Neutralization*
     $V_{[-\text{high}]\ \text{unstressed}} \rightarrow [+\text{back}, -\text{round}]$

These two rules are a typical case of the Elsewhere Condition, which determines the order in which they apply. Since Neutralization (iv) is more general than Ikan'e (iii), it cannot be ordered first; if it were, it would bleed Ikan'e (iii). Therefore, the rules must apply in the order Ikan'e (iii), Neutralization (iv).

Neutralization rules are the reason we begin our survey of the regular inflectional paradigms with that of the adjective *sv'atOj* 'holy, saint', which has an unaccented stem (see table 4). Since the theme suffix *-oj-* is inherently accented, the Basic Accentuation Principle (10) places word stress on the theme suffix. This allows us to establish how *-oj-* changes throughout the paradigm without interference from the vowel reduction rules Ikan'e (iii) and Neutralization (iv), which affect unstressed vowels only.

To determine the underlying form of the unstressed vowel in the stem, we need to find an environment in which the stem would be stressed. To this end, we can use the masculine (singular) short form *sv'At* 'holy, saint'. The surface [i] in the stem is due to Ikan'e (iii). Neutralization (iv)

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[16] The unstressed vowel reduction rules (iii) and (iv) are particular to the literary standard dialect of Russian; other dialects have different rules of vowel reduction. See Avanesov 1949, some additional discussion in Halle 1965, and literature cited there.

Table 5
Stress on the *-oj*-suffix: *sv'atOj* 'holy, saint'—the underlying forms of the
Case suffixes

	[−feminine]		[+feminine]	[+plural]
Nominative	sv'at-Oj	sv'at-Oj-e	sv'at-Aj-a	sv'at-Ɨj-i
Accusative			sv'at-Uj-u	
Genitive	sv'at-Ov-o		sv'at-Oj	sv'at-Ɨ-x
Dative	sv'at-O-mu		sv'at-Oj	sv'at-Ɨ-m
Locative	sv'at-O-m		sv'at-Oj	sv'at-Ɨ-x
Instrumental	sv'at-Ɨ-m		sv'at-Oj (-u)	sv'at-Ɨ-mi

is responsible for the change of the underlying [o] of genitive masculine, the underlying [o] of nominative neuter, and the underlying [a] of nominative feminine into [ə].[17] Finally, the neuter ending [o] (see table 3) is changed to [e] after the [−back] consonant [j] because of the [o]/[e] alternation, which is active elsewhere in Russian phonology (Lightner 1969, 1972).[18]

Once the effect of these rules is undone, we obtain a near-perfect transliteration of the adjective in the standard orthography, as shown in table 5.[19] In what follows, all examples will be cited without showing the effects of Ikan'e (iii) and Neutralization (iv).

The suffixes shown in table 5 differ considerably from their underlying forms in table 3 because of the effects of various phonological rules that we now discuss. We start with the minor rules, which affect the shaded cells in table 5.

5.1 Glide Truncation

In the dative and locative [−feminine] cells, the glide of the suffix *-oj-* has disappeared. This is due to one of the major rules of Slavic phonology advanced by Jakobson (1948) to explain stem alternations in the Russian conjugation, namely, the deletion of a glide before a consonant.[20] The Glide Truncation rule (v) immediately explains what happens in these cells of the paradigm.

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[17] We are assuming the nominative Case endings to be identical to those of short-form adjectives (i.e., *-ɨ*, *-a*, *-o*, *-i*) and the genitive [−feminine] Case ending to be *-o*. We support this proposal with examples of these endings under stress in section 10.1 and below.

[18] Because more than one rule is involved, we do not go into details here.

[19] The first deviation is the plural suffix *-iji*, which is traditionally spelled *-ie*, since [j] is never spelled out after a vowel and before a front vowel. The second deviation is the genitive [−feminine] ending, which is traditionally rendered as *-ogo*. See section 5.3 for the underlying form; footnote 32 for discussion of the surface realization of this Case ending in different dialects; and section 10.1, where Case endings under stress are presented.

[20] In fact, Jakobson (1948) suggested that both glides and nasals are deleted before consonants. As first shown by Kayne (1967), only glides are deleted; the VN sequence in syllable-final positions is modified in the following way:

(i) $V_{[-\text{back}]}C_{[\text{nasal}]}]_\sigma \rightarrow$ /a/

(ii) $V_{[+\text{back}]}C_{[\text{nasal}]}]_\sigma \rightarrow$ /u/

Historically, the VN sequence gave rise to a nasal vowel, which was then denasalized.

(v) *Glide Truncation*

    w, j → Ø / _____ [+cons]

Since the dative and locative masculine endings (*-mu* and *-mɨ*, respectively; see table 3) begin with a consonant, Glide Truncation (v) applies. The same process takes place in the instrumental [−feminine] and oblique plural cells of the paradigm, but there it is augmented by a readjustment rule that we discuss in section 5.6. The effects of Glide Truncation (v) noticeably obscure the underlying syntactic structure of a word. The underlying structure is further obscured by the important rule of Vowel Truncation (viii), to be discussed in section 5.4.

5.2 Nominative Plural Fronting

As mentioned above, we assume the nominative plural ending to be [ɨ]. Nonetheless, in table 5 (and throughout) it surfaces as [i], because Russian does not tolerate the sequence of a consonant and a high vowel differing in the feature [αback] (Halle 1959, Lightner 1972, Rubach 2000, Padgett 2001, 2003b, Halle and Matushansky 2002, among many others). Of the many effects of the feature [αback], two are relevant here: palatalization (regressive [αback] assimilation) and hi-switch (progressive [αback] assimilation).

The Palatalization rule applies before front vowels, both cyclically and postcyclically (Halle and Matushansky 2002).

(vi) *Palatalization*

    C   V

           [−back]
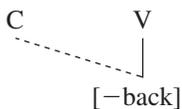
While not directly relevant here, this rule affects all our subsequent representations in that we do not mark the obligatory palatalization before front vowels (see footnote 3), thus bringing our transcriptions closer to the standard orthography of Russian.

Conversely, high unrounded back vowels are fronted after [−back] (palatalized) consonants as a result of the Hi-Switch rule (vii). Because of their partially overlapping environments, Hi-Switch (vii) applies obligatorily when Palatalization (vi) fails to do so.

(vii) *Hi-Switch*

    C   V   [+high, −round]

    [αback]
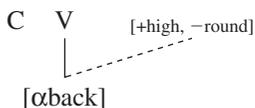
It is Hi-Switch (vii) that is responsible for the change of the underlying *-ɨ* of the plural nominative Case ending to the surface [i] after the inherently palatalized [j].

5.3 Genitive Masculine

From its surface form [ovə], it is hard to guess the underlying form of the genitive Case ending of the [−feminine] adjectives. To understand what is going on, one needs to know that the

Russian voiced labial fricative [v] is underlyingly a glide, /w/[21] (see, e.g., Coats and Harshenin 1971, Lightner 1972, Jakobson 1978, Kavitskaya 1999, Padgett, to appear). This fact already brings us closer to the postulated underlying /oj-o/. What completes the picture is the observation by Flier (1972, 1974) that in some morphological environments in Russian the glides [j] and [w] alternate. The two primary examples of Flier's alternation are genitive plural of the 2nd nominal declension and present tense of verbs in *-va-*.

5.3.1 2nd Declension Genitive Plural   In the 1st nominal declension, the genitive plural ending is a back yer *-ɪ* (which is clear from the fact that it triggers Yer Lowering (i) in the last syllable of the stem; see (17a)). For masculine nouns of the 2nd declension, two more options are possible, as shown in (17b–c).

(17) a. okn-O 'window-NOM' → Okon 'windows-GEN'   -ɪ
     b. car' 'king-NOM' → car'-Ej 'kings-GEN'   -ej-ɪ
     c. pir 'feast-NOM' → pir-Ov 'feasts-GEN'   -ow-ɪ
        boj 'battle-NOM' → boj-Ov 'battles-GEN'

The choice between the two allomorphs in (17b) and (17c) is determined by the noun stem. The noun takes *-ej-* if the stem ends with a palatalized consonant, and *-ow-* otherwise. In the 3rd nominal declension, where the stem-final consonant is obligatorily [−back], the *-ej-* allomorph is obligatory.

5.3.2 -va- Verbs   A similar effect occurs in the verbal conjugation with stems ending in underlying *-wa-*. In the past tense *-wa-* surfaces as *-va-*, while in the present tense it is modified to *-j-*. The effect does not depend on whether the underlying *-wa-* results from the combination ''verbalizing suffix + theme suffix''*-ow-a-*, as with *linč-ev-A-t'* 'to lynch',[22] or from the combination ''verbal stem + theme suffix,'' as with *dav-A-t'* 'to give'.

(18) a. linč-ev-A-l-a 'lynched-F'
     b. s-ov-A-l-a 'shoved-F'
     c. dav-A-l-a 'gave-F'

(19) a. linč-Uj-e-t 'lynches'
     b. s-uj-O-t 'shoves'
     c. daj-O-t 'gives'

We propose that the unexpected replacement of the glide /j/ with /w/ in genitive [−feminine] forms of the adjectival declension (table 5) is yet another instance of Flier's glide alternation, which is morphologically conditioned to apply to [−feminine] stems only.[23]

---

[21] One piece of evidence in favor of this is the deletion of stem-final /w/ before a consonantal suffix with verbs like *žiw-tɪ* 'live-INF' → *žit* and *žiw-l-a* 'live-PAST-F' → *žilA* versus *žiw-u* 'live-PRES.1SG' → *živU*. Recall that only glides are deleted before C.

[22] The suffix surfaces with an [e] because of the already mentioned [o]/[e] alternation after a [−back] consonant, which is also responsible for the difference between the 3SG suffixes in (18).

[23] Because it raises issues that are beyond the confines of this article, we have not stated Flier's rule formally, but only mention it where relevant.

5.4 Vowel Truncation

One of the most important results reported in Jakobson 1948 was the discovery that Russian morpheme sequences are subject to Vowel Truncation (viii), which deletes a vowel before a morpheme beginning with a vowel.

(viii) *Vowel Truncation*
$$V \rightarrow \emptyset / \underline{\hspace{2cm}} V$$

Many effects of this important rule will be seen in the discussion below. At this point, we illustrate it with the examples in (20) from the inflection of Russian verbs.

(20) a. lEz-e-m   lEz-u   lEz-l-a
          'climb-PRES-1PL'   'climb-PRES.1SG'   'climb-PAST-F'
      b. zn-Aj-e-m   zn-Aj-u   zn-A-l-a
          'know-PRES-1PL'   'know-PRES.1SG'   'know-PAST-F'
      c. lAj-e-m   lAj-u   lAj-a-l-a
          'bark-PRES-1PL'   'bark-PRES.1SG'   'bark-TH-PAST-F'

As shown by the 1st person plural present tense form /lEz-e-m/ in (20a), the verb stem is followed by the present tense exponent *-e-* and by the 1st person plural suffix *-m-*. In the 1st person singular present tense form /lEz-u/, the present tense exponent fails to surface because it is deleted by Vowel Truncation (viii). In the feminine singular past tense form /lEz-l-a/, all three pieces—stem, tense, and agreement suffix—appear on the surface.

The forms in (20b) are exact parallels of those in (20a), except that in the feminine singular past tense form, the stem-final glide is deleted by Glide Truncation (v), which turns underlying /zn-Aj-l-a/ into surface [zn-A-l-a].

The verb in (20c) differs from those in (20a–b) in that its stem is followed by the vocalic theme suffix *-a-*. As expected, the theme is deleted by Vowel Truncation (viii) before the present tense suffix *-e-*, which, as illustrated in (21), is itself deleted by Vowel Truncation (viii) before the 1st person singular present tense suffix *-u-*.

(21) lAj-a-e-u → lAj-∅-u → lAj-u

As shown below, Vowel Truncation (viii) also plays a major role in the derivation of the surface forms of different adjectives.

5.5 Intermediate Summary: Phonological Rules

At this point, it will be helpful to list all the rules we have explicitly introduced so far, in the order in which they apply. The additional assumption we will make here is that phonological rules are divided into two blocks: a cyclic block, whose rules apply to every constituent of the word, followed by a postcyclic block, whose rules apply only once to the entire word after the cyclic rules have applied to the outermost constituent (e.g., Chomsky and Halle 1968, Pesetsky 1979, Halle and Vergnaud 1987).

The cyclic rules of Yer Lowering (i), Palatalization (vi), and Glide Truncation (v) do not interact, so no order can be established among them. Vowel Truncation (viii) precedes Palatalization (vi).[24] The cyclic rules of Palatalization (vi) and Yer Lowering (i) also apply postcyclically and do not interact in this module either. Palatalization (vi) precedes both Hi-Switch (vii) (Halle and Matushansky 2002) and Yer Deletion (ii) (Matushansky 2002), but the latter do not seem to interact and so no ordering can be established. The postcyclic rules of Ikan'e (iii) and Neutralization (iv) follow all of the abovementioned rules, with Ikan'e (iii) necessarily preceding Neutralization (iv). Since we have not formulated the rules underlying the phenomena of [j]/[w] alternation (Flier's rule) and [o]/[e] alternation (both involving at least two rules, one in each direction), they are not included in our ordering.

In the schema that follows, we assume arbitrary ordering for the rules that are not ordered with respect to each other.

Cyclic rules

(i) *Yer Lowering*

$$V_{[+high, -ATR]} \rightarrow [-high] / \underline{\hspace{1em}} [_\sigma V_{[+high, -ATR]}$$

(viii) *Vowel Truncation*

$$V \rightarrow \emptyset / \underline{\hspace{1em}} V$$

(v) *Glide Truncation*

$$w, j \rightarrow \emptyset / \underline{\hspace{1em}} [+cons]$$

(vi) *Palatalization*

Postcyclic rules

(i) *Yer Lowering* (see above)

(vi) *Palatalization* (see above)

(vii) *Hi-Switch*

(ii) *Yer Deletion*

$$V_{[+high, -ATR]} \rightarrow \emptyset$$

(iii) *Ikan'e*

$$V_{[-high]\,unstressed} \rightarrow [+high, -back] / C_{[-back]} \underline{\hspace{1em}}$$

(iv) *Neutralization*

$$V_{[-high]\,unstressed} \rightarrow [+back, -round]$$

---

[24] Evidence for this order comes from verbal morphology. We will not discuss it here.

Table 5 (repeated)

Stress on the-*oj*-suffix: *sv'atOj* 'holy, saint'—the underlying forms of the Case suffixes

	[−feminine]		[+feminine]	[+plural]
Nominative	sv'at-Oj	sv'at-Oj-e	sv'at-Aj-a	sv'at-Ij-i
Accusative			sv'at-Uj-u	
Genitive	sv'at-Ov-o		sv'at-Oj	sv'at-Ɨ-x
Dative	sv'at-O-mu		sv'at-Oj	sv'at-Ɨ-m
Locative	sv'at-O-m		sv'at-Oj	sv'at-Ɨ-x
Instrumental	sv'at-Ɨ-m		sv'at-Oj (-u)	sv'at-Ɨ-mi

5.6 The Direct Cases

The rules discussed above are all purely *phonological* rules, even if some of them (Flier's glide rules) are morphologically conditioned. Besides such purely phonological rules there are also readjustment rules (Halle 1990), which differ from phonological rules in two ways:

1. The outcome of a readjustment rule is unpredictable: for example, in English *stand* surfaces as *stood* in the context of the past tense as the result of a readjustment rule (Halle 1990).
2. Readjustment rules apply before all others. This means that at each cycle the rules discussed above (phonological rules) are necessarily ordered after the readjustment rules we will discuss in this section.

The readjustment rules discussed here and in the next sections are responsible for the remaining discrepancies between the surface forms of regular adjectival Case endings (table 5, repeated here) and their underlying representations (table 3).

In the direct Cases of the ''regular'' (i.e., the most productive) adjectival paradigm, the vowel of the suffix *-oj-* is changed to become the same as the vowel of the Case ending. This is illustrated in table 6.

Table 6

The direct Cases of the regular declension class

	Masculine	Neuter	Feminine	Plural
Nominative	-ij-ɨ	-oj-o	-aj-a	-ij-ɨ
Accusative			-uj-u	

The historical source of this phenomenon is the so-called pronominal declension, where all adjectives of a definite DP were combined with the encliticized definite article. Since both the adjective and the article declined, Case was marked on both. Given that modern Russian does not have articles (and long-form adjectives are not interpreted as contributing definiteness), the question arises how to describe the effects in table 6 in synchronic terms. We suggest the copying rule (ix).[25]

(ix) *Vowel Copying*
$V_1 \rightarrow V_2$ / [theme suffix ————]-V_2
where V_2 is a direct Case ending

Two comments are in order. First, the existence of Vowel Copying (ix) shows that copying rules exist in morphophonology. It is hard to imagine how else to encode the effects in table 6. Second, comparing table 5 with table 6 shows that in the nominative masculine the theme vowel surfaces as [o], while the yer [ɪ] in table 6 reflects an intermediate representation. This returns us to the notion of yers discussed in section 3.2.

As mentioned above, a yer is lowered if followed by a yer in the next syllable (rule (i)). This is a rule that applies both at each cycle of the morphological derivation (cyclic) and when the derivation is complete (postcyclic). If a yer has not been lowered, it is deleted by rule (ii); this rule is exclusively postcyclic. As we explain in section 5.7, this means that in the nominative masculine, the combination of the theme suffix *-oj-* (turned into *-ɪj-* by Vowel Copying (ix)) with the adjectival Case ending *-ɪ* creates a perfect environment for Yer Lowering (i). When a back yer [ɪ] is lowered, it surfaces as [o] (see section 3.2), which is exactly what we find in table 6.

It can be immediately observed that the nominative Case endings of the regular adjectival paradigm are identical to short-form gender endings (see table 2). We believe that this identity is not accidental but rather reveals a deeper fact about nominative Case realization in Russian: nominative forms are marked only for gender and number, be they underlying or not. In section 8, we will show that these gender/number endings are actually nominal.

5.7 Stem Yers

The formulation of Vowel Copying in (ix) predicts that the vowel of the suffix *-oj-* in the nominative masculine form is turned into the back yer *-ɪ-*. We can now consider the interaction of Vowel Copying (ix) with Yer Lowering (i).

Yer Lowering (i) applies in both the cyclic and postcyclic components (Pesetsky 1979, Halle and Vergnaud 1987). What about Vowel Copying (ix)?

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[25] The application of the readjustment rule (ix) is triggered only when a direct Case is realized as a direct Case *morphologically*. Thus, accusative [− feminine] and accusative plural are spelled out as nominative if the noun is inanimate and as genitive if it is animate. In the latter case, no vowel copying occurs. See Mel'čuk 1985 and Halle 1994a for further discussion.

To understand the situation, it is necessary to recall our assumption that like phrases and sentences, words have syntactic structure. Since cyclic rules apply at each cycle of the morphosyntactic derivation, the morphosyntactic structure of a derived adjective is essential for establishing the rule ordering. The example we have chosen here—the adjective surfacing as *lesnOj* 'forest-ADJ' in the nominative masculine—has the immediate constituents in (22).

(22)

$$
\begin{array}{c}
\text{Adj}_3 \\
\diagup \quad \diagdown \\
\text{Adj}_2 \qquad \text{AGR} \\
\diagup \quad \diagdown \qquad | \\
\text{Adj}_1 \qquad \text{TH} \qquad \text{-ɨ} \\
\diagup \quad \diagdown \qquad | \\
\text{N} \qquad a^0 \qquad \text{-oj-} \\
| \qquad | \\
\text{les-} \qquad \text{-ɪn-}
\end{array}
$$
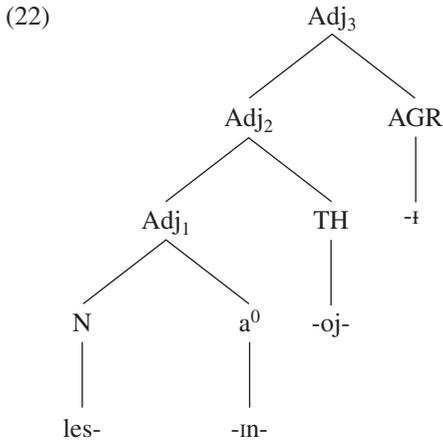
Since Vowel Copying (ix) is a readjustment rule, it is ordered before all phonological rules of the given cycle, including Yer Lowering (i).

(23) $[[[\text{les-ɪn}]_1\text{-oj}]_2\text{-ɨ}]_3$
    ↓   Cycle 2: Yer Lowering (i) fails (no environment)
   $[[[\text{les-ɪn}]_1\text{-oj}]_2\text{-ɨ}]_3$
    ↓   Cycle 3: Vowel Copying (ix)
   $[[[\text{les-ɪn}]_1\text{-ɪj}]_2\text{-ɨ}]_3$
    ↓   Cycle 3: Yer Lowering (i)
   $[[[\text{les-ɪn}]_1\text{-oj}]_2\text{-ɨ}]_3$
    ↓   Postcyclic Yer Deletion (ii)
    $[\text{lesnOj}]$
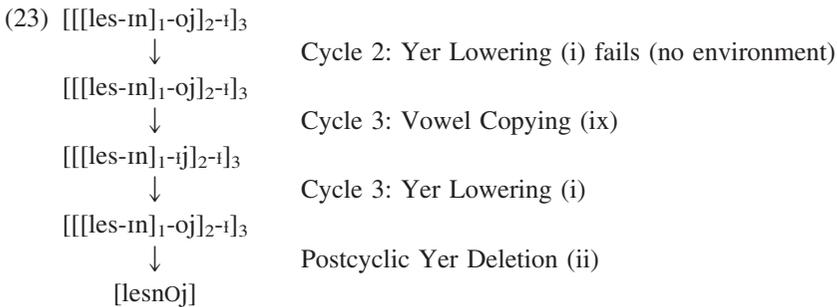
This rule ordering gives the correct results. The fact that the yer in the adjectivizing suffix *-ɪn-* is not lowered despite the yer in the next syllable in (23) is due to strict cyclicity (e.g., Mascaró 1976, Halle 1978, Kiparsky 1985). In our example, the suffix *-ɪn-* is introduced at cycle 1. However, the context for Yer Lowering (i) is not created until the end of cycle 3, when the contents of cycle 1 are no longer accessible. Yer Lowering (i) then applies postcyclically, where it is no longer constrained by strict cyclicity.

On the other hand, if our assumption about ordering readjustment rules at the beginning of the cyclic rules of the phonological component had been wrong and Vowel Copying (ix) followed Yer Lowering (i), strict cyclicity would not be able to rule out the incorrect derivation in (24).

(24) $[[[les\text{-}ɪn]_1\text{-}oj]_2\text{-}ɪ]_3$

       ↓   Cycle 3: Yer Lowering (i) fails (no environment)

$[[[les\text{-}ɪn]_1\text{-}oj]_2\text{-}ɪ]_3$

       ↓   Cycle 3: Vowel Copying (ix)

$[[[les\text{-}ɪn]_1\text{-}ɪj]_2\text{-}ɪ]_3$

       ↓   Postcyclic Yer Lowering (i), applies twice

$[[[les\text{-}en]_1\text{-}oj]_2\text{-}ɪ]_3$

       ↓   Postcyclic Yer Deletion (ii)

     *[lesenoj]
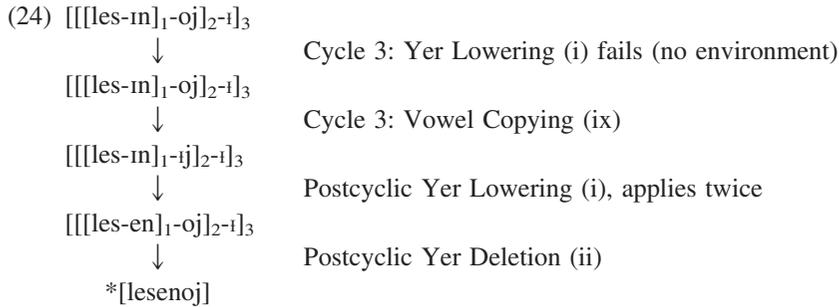
Since postcyclic rules apply to the entire word regardless of its constituent structure, strict cyclicity does not rule out the derivation in (24). Since this is an incorrect prediction, Vowel Copying (ix) must be ordered before Yer Lowering (i).

We observe here how the interplay of strict cyclicity and the assumption that readjustment rules apply early provides the correct result, once again confirming the importance of rule ordering.

5.8 Instrumental [−feminine] and Plural

As can be seen from the shaded cells in the repeated version of table 5, in the instrumental [−feminine] and in all plural forms a readjustment rule changes the vowel [o] of the theme suffix *-oj-* to [ɨ]. The Unrounding rule responsible for this is shown in (x). Moreover, in all these forms except nominative plural, the glide is deleted by Glide Truncation (v), since these suffixes begin with a consonant.

(x) *Unrounding*

    $V \rightarrow V_{[+high, -round, +ATR]}$ / in the theme suffix of [PL]

                                 [INSTR] [−F]

We have no explanation for why this readjustment rule applies to all plural forms and also to the singular instrumental [−feminine], but unlike Vowel Copying (ix), it applies to all adjectives, both regular and irregular. That the output of Unrounding (x) feeds later rules, discussed in sections 10.3.1 and 10.3.2, is even more important.

5.9 Summary

We have now examined all forms of regular adjectives with stress on the *-oj-* suffix. As noted, we started with this stress pattern because it allows us to show exactly what happens to the theme suffix during the derivation, without being distracted by the side effects of neutralization.

We have shown that for the most part, discrepancies between the underlying representations and the surface forms are due to independently motivated phonological rules, such as Ikan'e (iii), Neutralization (iv), Hi-Switch (vii), the [o]/[e] alternation, and Jakobson's Glide Truncation (v) and Vowel Truncation (viii). Apart from the independently needed glide rules proposed by Flier,

we need two new readjustment rules: Unrounding (x) and Vowel Copying (ix). Vowel Copying is specific to the regular adjectival declension.

    We update our ordering to include the new rules.

Readjustment rules (precede all rules at each cycle)

   (ix) *Vowel Copying*
        $V_1 \rightarrow V_2$ / $[_{\text{theme suffix}}$ ——]-V_2
        where V_2 is a direct Case ending

   (x) *Unrounding*
        $V \rightarrow V_{[+\text{high}, -\text{round}, +\text{ATR}]}$ / in the theme suffix of [PL]
                                                              [INSTR] [$-$F]

Cyclic rules

   (i) *Yer Lowering*
       $V_{[+\text{high}, -\text{ATR}]} \rightarrow [-\text{high}]$ / —— $[_\sigma V_{[+\text{high}, -\text{ATR}]}$

  (viii) *Vowel Truncation*
       $V \rightarrow \emptyset$ / —— V

   (v) *Glide Truncation*
       w, j $\rightarrow \emptyset$ / —— [+cons]

   (vi) *Palatalization*
        C   V

                    |

            [$-$back]

Postcyclic rules

    (i) *Yer Lowering* (see above)

   (vi) *Palatalization* (see above)

  (vii) *Hi-Switch*
           C $V_{[+\text{high}, -\text{round}]}$

           |

        [αback]

   (ii) *Yer Deletion*
        $V_{[+\text{high}, -\text{ATR}]} \rightarrow \emptyset$

  (iii) *Ikan'e*
        $V_{[-\text{high}] \text{ unstressed}} \rightarrow [+\text{high}, -\text{back}]$ / $C_{[-\text{back}]}$ ——

   (iv) *Neutralization*
        $V_{[-\text{high}] \text{ unstressed}} \rightarrow [+\text{back}, -\text{round}]$

Table 7
Stress on the stem (surface forms)

	[−feminine]	[+feminine]	[+plural]
Nominative	b'Edn-ij/b'Edn-əj-i	b'Edn-əj-i	b'Edn-ij-i
Accusative		b'Edn-uj-u	
Genitive	b'Edn-əv-ə	b'Edn-əj	b'Edn-ɨ-x
Dative	b'Edn-ə-mu	b'Edn-əj	b'Edn-ɨ-m
Locative	b'Edn-ə-m	b'Edn-əj	b'Edn-ɨ-x
Instrumental	b'Edn-ɨ-m	b'Edn-əj (-u)	b'Edn-ɨ-mi

6 Regular Adjectives with Stress on the Stem

We now turn to regular adjectives with stress on the stem. We will show that an unstressed theme suffix undergoes a dialectal readjustment rule, whose output feeds other, more general, phonological rules.

We begin our discussion of regular adjectives with stress on the stem (see table 7) by focusing on the effect of yet another very general phonological rule of Russian, already discussed in section 5.1: Palatalization (vi). It is easy to see that when unstressed, the [o] of the theme suffix turns into a schwa [ə] (as does the [a] it has changed to in the nominative feminine). Ikan'e (iii) is responsible for the neutralization of the direct Case endings following the suffix *-oj-*. The apostrophe in table 7 marks the obligatory palatalization ([αback] spreading by Palatalization (vi)) of [b] before a front vowel. Disregarding both of these effects, we obtain the near-perfect transliteration of the official Russian orthography displayed in table 8 (see footnote 19).

6.1 Nominative Singular

The only difference between table 5 and table 8 is in the nominative masculine cell. In table 5, the vowel of the theme suffix is stressed and surfaces as [o]. However, when unstressed (table

Table 8
Stress on the stem

	[−feminine]	[+feminine]	[+plural]
Nominative	bEdn-ɨj/bEdn-oj-e	bEdn-aj-a	bEdn-ɨj-i
Accusative		bEdn-uj-u	
Genitive	bEdn-og-o	bEdn-oj	bEdn-ɨ-x
Dative	bEdn-o-mu	bEdn-oj	bEdn-ɨ-m
Locative	bEdn-o-m	bEdn-oj	bEdn-ɨ-x
Instrumental	bEdn-ɨ-m	bEdn-oj (-u)	bEdn-ɨ-mi

8), the theme suffix surfaces as [ij], rather than [əj]. This phenomenon is part of standard literary Russian, but in many other dialects, the unstressed nominative masculine exponent surfaces as [əj] as expected (Vinogradov 1952:319). Since the vowel in the nominative masculine cell is exactly the one that surfaces in all plural forms and in the [−feminine] instrumental, it is most natural to view this phenomenon as a special case of Unrounding (x), suitably adjusted.

(x) *Unrounding (new version)*

$V \rightarrow V_{[+high, -round, +ATR]}$ / in the theme suffix of [PL]

[INSTR] [−F]

[NOM] [+M] when unstressed

While standard Russian uses the adjusted Unrounding rule (x), the original Unrounding rule is confined to dialects where the unstressed nominative masculine exponent surfaces as [əj].

However, as discussed in section 5.6, direct Case forms are subject to Vowel Copying (ix). Since the adjusted Unrounding rule (x) targets the same environment as Vowel Copying (ix), what order do they apply in? If Vowel Copying (ix) precedes the adjusted Unrounding rule (x), then the latter incorrectly fails to apply: after the application of Vowel Copying (ix), the vowel of the theme suffix is a back yer rather than [o].

(25) $[[[bed\text{-}ɪn]_1\text{-}oj]_2\text{-}ɪ]_3$

$\downarrow$ Cycle 3: Vowel Copying (ix)

$[[[bed\text{-}ɪn]_1\text{-}ɪj]_2\text{-}ɪ]_3$

$\downarrow$ Cycle 3: adjusted Unrounding rule (x) fails (no environment)

$[[[bed\text{-}ɪn]_1\text{-}ɪj]_2\text{-}ɪ]_3$

$\downarrow$ Cycle 3: Yer Lowering (i)

$[[[bed\text{-}ɪn]_1\text{-}oj]_2\text{-}ɪ]_3$

$\downarrow$ Postcyclic Yer Deletion (ii)

*[bednoj]

On the other hand, if the adjusted Unrounding rule (x) precedes Vowel Copying (ix), then Vowel Copying (ix) simply obliterates the outcome of the adjusted Unrounding rule (x).

(26) $[[[bed\text{-}ɪn]_1\text{-}oj]_2\text{-}ɪ]_3$

$\downarrow$ Cycle 3: adjusted Unrounding rule (x)

$[[[bed\text{-}ɪn]_1\text{-}ij]_2\text{-}ɪ]_3$

$\downarrow$ Cycle 3: Vowel Copying (ix)

$[[[bed\text{-}ɪn]_1\text{-}oj]_2\text{-}ɪ]_3$

$\downarrow$ Cycle 3: Yer Lowering (i) fails (no environment)

$[[[bed\text{-}ɪn]_1\text{-}oj]_2\text{-}ɪ]_3$

$\downarrow$ Postcyclic Yer Deletion (ii)

*[bednoj]

To solve this problem, we need to adjust Vowel Copying (ix) in such a way that it does not

Table 9
Stress on the stem, palatalized stem-final consonant

	[−feminine]		[+feminine]	[+plural]
Nominative	zAdn'-ij	zAdn'-ej-e	zAdn'-aj-a	zAdn'-ij-i
Accusative			zAdn'-uj-u	
Genitive	zAdn'-ev-o		zAdn'-ej	zAdn'-i-x
Dative	zAdn'-e-mu		zAdn'-ej	zAdn'-i-m
Locative	zAdn'-e-m		zAdn'-ej	zAdn'-i-x
Instrumental	zAdn'-i-m		zAdn'-ej (-u)	zAdn'-i-mi

apply to the nominative masculine. We propose to constrain Vowel Copying (ix) to apply to [+ATR] vowels only, thus making the order of the two rules moot.[26]

(ix) *Vowel Copying (new version)*
$V_{1[+ATR]} \rightarrow V_2 /$ [theme suffix _____]-V_2
where V_2 is a direct Case ending

Importantly, the phonological change in the unstressed nominative masculine exponent can feed further phonological processes, which we discuss presently.

6.2 Palatalized [−back] Stems

As mentioned in section 5.1, Russian does not tolerate a $CV_{[+high]}$ sequence differing in the feature [αback] (e.g., Halle 1959, Lightner 1972, Rubach 2000, Padgett 2001, 2003b, Halle and Matushansky 2002). However, the application of Unrounding (x) to the relevant cells of the paradigm makes it inevitable that this sequence is created whenever the final consonant of a stressed adjectival stem is palatalized (e.g., the stem *zadn'*- 'back').[27] Hi-Switch (vii) applies, correctly deriving [i] instead of [ɨ] in the shaded cells in table 9. (As above, we follow the standard Russian orthographic tradition in our rendition of surface forms, departing from it here only by marking palatalization before front vowels.)

Once the stressed stem *zadn'*- is combined with, say, the nominative plural suffix *-iji*, Hi-Switch (vii) applies, fronting the vowels after palatalized consonants. Just as expected is the

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[26] An alternative to adjusting Unrounding (x) and Vowel Copying (ix) is to bite the bullet and postulate a separate readjustment rule of Dialectal Yer Tensing, which would apply after Vowel Copying (ix).

[27] In the regular declension class, there are no adjectives with a palatalized stem-final consonant and an unstressed stem. It is not clear whether this is systematic.

appearance of [e] (later neutralized to [i] by Ikan'e (iii)) instead of the underlying [o] in the oblique [feminine], nominative neuter, and genitive, dative, and locative [−feminine] cells. This [e] is obviously due to the [o]/[e] alternation discussed briefly in section 5. No special rules are needed to deal with this class of Russian adjectives.

Before we turn to the other major class of regular adjectives, we should mention the two sources of stem-final palatalization. In the first, wholly unremarkable one, the final consonant of the stem is underlyingly palatalized, as with the root *sin'*- 'blueness' → *sInij* 'blue'. The second source of stem-final palatalization is more interesting. In some adjectives formed with the suffix -*ɪn*-, unpredictable palatalization may occur throughout the long-form paradigm.

(27) zim- 'winter.F.1DECL' → zim-ɪn-oj-ɪ 'winter-ADJ' → [zImn'ij]
      zad- 'behind, posterior.M.2DECL' → zad-ɪn-oj-ɪ 'back, posterior' → [zAdn'ij]
      mat(er)- 'mother.F.3DECL' → mater-ɪn-oj-ɪ 'motherly' → [mAtern'ij]

Certain -*ɪn*- adjectives with a palatalized stem have a short form (e.g., *dAven* 'olden', *drEven* 'ancient' vs. [dAvn'ij], [drEvn'ij]),[28] where the suffixal nasal is not palatalized. This leads us to conclude that the palatalization of the nasal in the suffix -*ɪn*- in long forms results from a readjustment rule, which applies to a list of adjectives.[29]

6.3 Velars

Unrounding (x) can feed Velar Palatalization (xi), which applies before [−back] high vowels (Lightner 1972, Halle and Matushansky 2002, Padgett 2003a; but see also Halle 2005a for a novel approach to these data).

(xi) *Velar Palatalization*
       $C_{[dorsal]} \rightarrow [-back]$ / ＿＿＿ $V_{[+high, -round]}$

The resulting conflict in [αback] is resolved by the application of Hi-Switch (vii). For both *morskOj* 'marine' (table 10) and *glubOkij* 'deep' (table 11), Unrounding (x) applies in the relevant shaded cells, creating the environment for palatalization of the stem-final velar by Velar Palatalization (xi). (To bring out these facts, we mark with an apostrophe the obligatory velar palatalization in the shaded cells (unmarked in standard orthography). The effects of various neutralization rules are disregarded.)

Worth special notice is the behavior of nominative masculine in the dialects that are not

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[28] As observed before (footnote 6), [v] is not palatalized here because of a surface depalatalization rule.

[29] It should be noted further that in adjective-adjective compounds, palatalization of the stem-final consonant becomes unpredictable: compare *drEvne-evrEjskij* 'ancient Hebrew' and *dal'nevostOčnij* 'Far Eastern', where it is palatalized, with *davnoprošEdšij* 'long gone' and *dal'nozOrkij* 'far-sighted', where it is not.

Table 10
Velar stems, stress on the theme suffix

	[−feminine]	[+feminine]	[+plural]
Nominative	morsk-Oj/morsk-Oj-e	morsk-Aj-a	morsk'-Ij-e
Accusative		morsk-Uj-u	
Genitive	morsk-Ov-o	morsk-Oj	morsk'-I-x
Dative	morsk-O-mu	morsk-Oj	morsk'-I-m
Locative	morsk-O-m	morsk-Oj	morsk'-I-x
Instrumental	morsk'-I-m	morsk-Oj(-u)	morsk'-I-mi

subject to the adjusted Unrounding rule (x) discussed in section 6.1. Thus, in the old Moscow dialect, where the nominative masculine adjectival ending is pronounced as *-əj-*, the stem-final velar is *not* palatalized (for some examples, see Trubetzkoy 1934:32). (In both dialects, all plurals and instrumental [−feminine] forms are pronounced the same—with a palatalized velar and [i] in the ending.)

(28) peg-oj 'piebald', russk-oj 'Russian'
    Dialect 1: [p'Eg'ij], [rUssk'ij]
    Dialect 2: [p'Egəj], [rUsskəj]

The existence of such examples shows that when Unrounding (x) applies, it does so before Velar Palatalization (xi), a state of affairs fully compatible with the latter being postcyclic (see Halle and Matushansky 2002).

    We conclude that adjectives whose stems end in a velar, though superficially different from

Table 11
Velar items, stress on the stem

	[–feminine]	[+feminine]	[+plural]
Nominative	glubOk'-ij/glubOk-oj-e	glubOk-aj-a	glubOk'-ij-e
Accusative		glubOk-uj-u	
Genitive	glubOk-ov-o	glubOk-oj	glubOk'-i-x
Dative	glubOk-o-mu	glubOk-oj	glubOk'-i-m
Locative	glubOk-o-m	glubOk-oj	glubOk'-i-x
Instrumental	glubOk-i-m	glubOk-oj	glubOk'-i-mi

Table 12
Themes and endings of irregular adjectives

	[−feminine]	[+feminine]	[+plural]
Nominative	-ɪ/-O	-A	-ɨ
Accusative		-U	
Genitive	-ow-o	-Oj-ɨ	-ɨj-xɨ
Dative	-Oj-mu	-Oj-ɨ	-ɨj-mɨ
Locative	-Oj-mɨ	-Oj-ɨ	-ɨj-xɨ
Instrumental	-ɨj-mɨ	-Oj-ɨ (-u)	-ɨj-mi

the regular paradigm in table 3, do not require the introduction of any special rules. We can now turn to the irregular declension classes.

7 Irregular Declension Classes

Irregular adjectives fall into two semantically defined categories:

1. lexical possessives, of which there are two subclasses (cf. Garde 1998:226):[30] *generic possessives* in *-ɪj-*, denoting possession by a nonspecific instantiation of the kind or a property of the kind, and *individual possessives* in *-in-* (with 1st declension stems) or *-ow-* (with 2nd declension stems, though in literary speech some 1st declension stems also form individual possessives with *-ow-*; see Avilova et al. 1982:sec. 611 for discussion), which denote possession by a definite individual belonging to the kind denoted by the noun;

2. functional adjectives, such as *ves'* 'all', *tot* 'this', and nonlexical possessives.

The difference between this declension class and the regular one lies in the direct Case cells of the paradigm, as shown in table 12.

We first review lexical possessives, which in Russian behave like adjectives in that they agree in gender, number, and Case with the noun they modify. The formation of lexical possessives is not fully productive. First, only animate nouns (including those designating mythological creatures, such as *drakon* 'dragon'; Švedova 1970:177) can form lexical possessives, though see

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[30] The two classes of lexical possessives appear to be somewhat in competition: as a rule, stems that form a generic possessive do not form individual possessives. The only exception that we are aware of is the possibility of the individual possessive ??*zAjceva* 'the hare's' alongside the standard generic possessive *zAjačja*.

Table 13
Individual lexical possessive

	[−feminine]	[+feminine]	[+plural]
Nominative	mAm-in/mAm-in-o	mAm-in-a	mAm-in-ɨ
Accusative		mAm-in-u	
Genitive	mAm-in-ov-o	mAm-in-oj	mAm-in-ɨ-x
Dative	mAm-in-o-mu	mAm-in-oj	mAm-in-ɨ-m
Locative	mAm-in-o-m	mAm-in-oj	mAm-in-ɨ-x
Instrumental	mAm-in-ɨ-m	mAm-in-oj (-u)	mAm-in-ɨ-mi

Avilova et al. 1982 for some exceptions. Second, DPs consisting of more than one prosodic word (e.g., *a/the clever girl next door* or *a/the handsome boy* as opposed to *Maya* or *Mom*) cannot serve as a base for the formation of a lexical possessive (individual or generic).

8 Individual Possessives

We noted above that Russian does not have a declension that is exclusively restricted to adjectives. Many Russian nouns are inflected in accordance with the adjectival pattern (e.g., *vselEnnaja* 'universe', *nasekOmoe* 'insect', *portnOj* 'tailor'), but no adjective is inflected in accordance with the nominal pattern. Recall that the main difference between the adjectival and the nominal declensions is the theme: it is *-oj-* in the adjectival pattern, and *-o-* in the nominal, and the two types of declension have somewhat different Case exponents.

Individual possessives are formed on the basis of animate 1st and 2nd declension nouns by the preaccenting suffix *-in-* (and its unproductive variant *-nin-*) and the unaccented suffix *-ov-* (underlying *-ow-*), respectively; see table 13. Third declension nouns do not seem to be able to form individual lexical possessives.

Two points distinguish the forms in table 13 from the regular adjectival declension discussed earlier (see table 3): the behavior of the direct Cases (which is different for all irregular adjectives) and the behavior of the genitive and dative [−feminine] (which is specific for individual lexical possessives). We address them in order.

8.1 The Direct Cases

It is easy to see in table 13 that in the direct Cases, the adjectival theme suffix *-oj-* is not present in the surface forms. This is a characteristic of the entire irregular adjectival declension class. The resulting forms can be viewed as simply lacking the theme suffix since direct Case endings are the same as those in table 3. However, we will argue that in those cells in table 13 that lack

the theme suffix on the surface, nominal rather than adjectival Case inflection obtains (see, e.g., Švedova 1970:398). We begin by showing that the direct Case exponents in table 3 and table 13 are identical to those of the productive nominal declension classes, that is, the 1st and 2nd declensions.

Nothing special needs to be said about the nominative neuter and nominative plural endings. Nominal declension class differences are collapsed in the plural. The 2nd declension consists of [−feminine] nouns exclusively. In this declension, neuter nouns differ from masculine nouns only in the exponent of the direct Cases: the exponent is [ɪ] for masculine nouns and [o] for neuter nouns. The sole exception is the masculine noun *podmastEr'e* 'apprentice', which unexpectedly takes the [o] exponent in the nominative. (We disregard nominal theme suffixes here.)

(29) *Nominative singular neuter*
Neuter nouns: [koles + o] → kolesO 'wheel'

(30) *Nominative plural*
Most plural nouns of any declension class: [rɪt + ɨ] → rtɪ 'mouths'

Feminine nouns can belong to either the 1st (productive) or the 3rd (unproductive) declension class. Importantly, 1st declension nouns and [+feminine] adjectives pattern together in that in the singular, both morphologically distinguish nominative and accusative. In all other instances, the accusative form is surface-identical to the nominative form for 3rd declension nouns, inanimate nouns, and neuters, and to the genitive form for other animate nouns.

(31) *Nominative singular feminine*
1st declension feminine nouns: [rot + a] → rOta '(military) company-NOM'

(32) *Accusative singular feminine*
1st declension feminine nouns: [rot + u] → rOtu '(military) company-ACC'

(33) a. *Neuter*
    ogrOmnoje   čudOvišče   selEnie
    'huge-N-NOM/ACC'   'monster.N-NOM/ACC'   'settlement.N-NOM/ACC'
  b. *Animate*
    ogrOmnovo   velikAna
    'huge-[−F]-GEN/ACC'   'giant.M-GEN/ACC'
  c. *Inanimate nonneuter*
    ogrOmnɪj   *gOrod*
    'huge-M-NOM/ACC'   'city.M-NOM/ACC'

Finally, masculine irregular adjectives have the same Case ending in the nominative singular as 2nd declension masculine nouns, namely, *-ɪ*. This back yer triggers Yer Lowering (i) in the stem, just as it does in masculine short-form adjectives (section 3.2).

(34) *Nominative singular masculine*
2nd declension masculine nouns: [rɪt + ɪ] → rOt 'mouth' (genitive singular *rta*)

Table 14
Individual lexical possessives

	[−feminine]	[+feminine]	[+plural]
Nominative	otc-Ow/otc-Ow-o	otc-Ow-a	otc-Ow-ɨ
Accusative		otc-Ow-u	
Genitive	otc-Ow-a	otc-Ow-oj	otc-Ow-ɨ-x
Dative	otc-Ow-u	otc-Ow-oj	otc-Ow-ɨ-m
Locative	otc-Ow-o-m	otc-Ow-oj	otc-Ow-ɨ-x
Instrumental	otc-Ow-ɨ-m	otc-Ow-oj (-u)	otc-Ow-ɨ-mi

In sum, nominal and adjectival direct Case endings are the same. This, however, is not enough. We will now show that the irregular adjectival Case endings cannot be the same as the regular ones.

8.2 Genitive and Dative [−feminine]

While individual lexical possessives formed by the suffix -*in*- have the regular genitive and dative [−feminine] adjectival endings -*ovo* and -*omu* given in table 13, individual lexical possessives formed by the suffix -*ow*- must appear with the alternative Case endings in -*a* and -*u*, as shown in table 14.[31]

These are the nominal Case endings (genitive and dative of the 2nd ([−feminine]) declension):

(35) *Genitive singular [−feminine]*
    2nd declension [−feminine] nouns: [rɪt + a] → rta 'mouth-GEN'

(36) *Dative singular [−feminine]*
    2nd declension [−feminine] nouns: [rɪt + u] → rtu 'mouth-DAT'

With this in mind, we suggest that the direct irregular Case endings reflect a switch to the nominal declension pattern.[32] In other words, we propose that the behavior of individual lexical

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[31] In the nineteenth century, Russian individual possessives formed by the suffix -*in*- also had such alternative Case endings (Garde 1998:229).

[32] A word of caution is in order. The underlying form for the adjectival genitive [−feminine] inflection is probably not the same in all dialects. In Old Russian it was [oɣo], which later developed into the surface [ovə] of standard literary Russian (see section 10.1 for evidence that the underlying form is best conceptualized as [owo]). In various dialects of contemporary Russian, it is pronounced as -*ogo*, -*oɣo*, -*oo*, -*ovo*, and -*ova*, the last form being allowed even in dialects without Neutralization (iv) (Kuznecov 1953, Borkovskij and Kuznecov 1965:250–252). The existence of this last form

possessives shows that Russian is in transition from a dichotomy between several nominal declension classes and two adjectival ones toward a system where declension classes are shared between nouns and adjectives (as in Latin; see Gildersleeve and Lodge 1876). Further support for this proposal comes from null-derived deadjectival nominals.

8.3 Null-Derived Deadjectival Nominals

Null-derived deadjectival nominals decline exactly like their source adjectives, following either the regular adjectival paradigm (37) or the irregular one (38).

> (37) a. stolovaja posuda → stolov-oj-ɨ posud-ɨ
>   'table$_{Adj}$-F dishes-NOM/GEN' (i.e., 'dinnerware')
>   b. stolovaja → stolov-oj-ɨ
>   'dining room-NOM/GEN'

> (38) a. Galkina kvartira → Galkin-oj-ɨ kvartir-ɨ
>   'Galka's-F apartment-NOM/GEN' (where *Galka* is a second diminutive from *Galina*)
>   b. Galkina → Galkin-oj-ɨ
>   'Galkin-F-NOM/GEN' (where *Galkin* is a surname, like *Pushkin*)

In these examples, the nominalized forms are indistinguishable from the source adjectives. This need not be the case. There are some minimal pairs distinguishable only by stress (e.g., *mAsterskaja* 'masterly-F' vs. *masterskAja* 'a workshop'; also some surnames derived from possessives in *-ov-*, such as *ivAnova* 'Ivan's-F' vs. *ivanOva* 'Ivanov.F'). Moreover, as already noted, quite a few nouns decline like adjectives without having adjectival counterparts (*soxAtij* 'a moose', *vselEnnaja* 'the universe', etc.), showing that an analysis postulating a null nominal head would be inapplicable (see Pereltsvaig 2001 for more examples and some discussion). This further supports the claim that the so-called adjectival declension class does not contain adjectives only.

8.4 Proposal

Our examination of the irregular adjectival declension as exemplified by individual lexical possessives can be summarized in the empirical generalization that the theme suffix *-oj-* is absent in the surface forms of the direct Cases for all irregular adjectives and of alternative genitive and dative

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suggests the collapse in these dialects of the distinction between adjectival and nominal paradigms in this cell (except under stress).

Importantly, even if the genitive [−feminine] form is the same for adjectives and nouns, the distinction must still be drawn between dative [−feminine] forms: the adjectival *-mu* cannot be reduced to the nominal *-u*.

The genitive plural exponent /ɨ/ is subject to different readjustment rules depending on the theme suffix. With the *-o-* theme, the glide /j/ or /w/ is inserted between the theme and the genitive plural ending in a subset of nominal stems of masculine gender (the choice of the glide being determined by the feature [αback] of the stem-final consonant; see Jakobson 1971 for some discussion). With the *-oj-* theme, the consonant /x/ is inserted everywhere.

[−feminine] forms for individual lexical possessives. In the absence of this suffix, individual lexical possessives surface with nominal Case endings.

Suppose that the choice of declension endings is (partially) determined by the theme suffix. We propose that in the relevant cells of the irregular adjectival paradigm, a readjustment rule replaces the theme suffix *-oj-* (mostly appearing with adjectives) with the nominal theme suffix *-o-*.

(xii) *Theme Substitution*
TH → TH$_N$ in direct Cases (and some others) of irregular adjectives
where TH$_N$ is the nominal theme *-o-*

This changes the context for the lexical insertion of Case exponents and as a result, default ''nominal'' Case exponents are used instead of ''adjectival'' ones. This happens in the direct Cases for the entire irregular paradigm and optionally in the genitive and dative [−feminine] cells of individual lexical possessives. Given that all these Case endings start with a vowel, the nominal theme suffix, being the vowel /o/, is deleted by Vowel Truncation (viii).

The question to ask at this point is whether this special readjustment rule is required. One alternative is to make use of the possibility of theme suffix deletion in Russian verbs (as in *m'Orz-nu-t'* 'freeze-TH-INF' vs. *m'Orz-l-a* 'freeze-PAST-F'; see Halle and Matushansky, in preparation, for details); another is to compare irregular adjectives with genitive plurals (briefly discussed in section 5.3.2), where the presence or absence of the glide depends on the phonology of the stem.

8.4.1. Theme Suffix Deletion   It is easy to show that a simple phonological rule deleting the theme suffix *-oj-* in particular environments will not be enough to account for the alternative genitive and dative [−feminine] cells of the paradigm.

(39) a. [[[[otɪc]-ow]-oj]-o] → otcov-o̶j̶-o, otcov-o̶w̶-o → *otcov-o   Genitive
     b. [[[[otɪc]-ow]-oj]-mu] → otcov-o̶j̶-mu, otcov-o̶-mu → *otcov-mu   Dative

This means that a theme suffix deletion rule will have to influence the lexical insertion of Case exponents and the absence of a theme suffix would result in the insertion of default nominal Case exponents. This account is then substantively different from theme replacement only in the additional (and probably undesirable) assumption that phonological rules can influence lexical insertion.[33]

8.4.2 Glide Truncation   A possible analysis of the difference between the genitive plural ending in (17a) and those in (17b−c), discussed in section 5.3.1 and repeated here, is that the genitive

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[33] Russian has a small class of indeclinable nouns and adjectives, such as *kengurU* 'kangaroo' and *bordO* 'Bordeaux (color)'. A simple way of formally encoding their inability to decline is to suggest that they take no theme suffix, which results in the absence of the context for lexical insertion of Case exponents. This would make presence of a theme suffix substantially different from its absence.

plural Case ending is always *-ej-ı*, but in (17a) the glide is deleted by a readjustment rule. Given that this creates a sequence of two vowels, Vowel Truncation (viii) intervenes, resulting in the surface Case ending *-ı*, later deleted by Yer Deletion (ii), just as in (17b–c).

(17) a. okın-o 'window-NOM' → Okon 'windows-GEN'   -ı
     b. car' 'king-NOM' → car'-Ej 'kings-GEN'   -ej-ı
     c. pir 'feast-NOM' → pir-Ov 'feasts-GEN'   -ow-ı

This stratagem can also be applied to adjectives. Suppose that in the relevant cells of the paradigm, [j] is deleted by the same readjustment rule, resulting in what looks like the default nominal theme suffix *-o-*. The nominal theme suffix *-o-* never surfaces in these cases for the same reason as above: it precedes another vowel (that of the direct Case ending) and is therefore deleted by Vowel Truncation (viii).

There are three problems with this approach, of which two are shared with the proposal in the previous section: first, the alternative genitive and dative [−feminine] cells of the paradigm will not be generated correctly, and second, the approach requires assuming that the change in the phonological form can influence lexical insertion. The third problem is that postulating an underlying glide in the genitive plural and its deletion in (17a) does not seem to correctly describe the facts.

Indeed, a possible analysis of the difference between the genitive plural ending in (17a) and those in (17b–c) is that the genitive plural Case ending is always *-ı*. Since the nominal theme *-o-* is a vowel, Vowel Truncation (viii) applies, deleting *-o-* in (17a). On the other hand, in (17b–c), a readjustment rule inserts a glide between the theme and the genitive plural Case ending, and Vowel Truncation (viii) does not apply.

(17) a′. okın-o-ı → Okon 'windows-GEN'   -o-ı
     b′. car'-o-ı → car'-oj-ı → car'-Ej 'kings-GEN'   -e-j-ı
     c′. pir-o-ı → pir-oj-ı → pir-ow-ı → pir-Ov 'feasts-GEN'   -o-w-ı

Confirmation of this proposal comes from Czech (Halle 2004) and Serbo-Croatian (Halle 2005b), where the genitive plural Case ending is identical to that in Russian (*-ı*), but the glide insertion rule exceptionally does not apply. Instead, vowel deletion is blocked in this context.

The Czech and Serbo-Croatian facts indicate that genitive plural nouns do not offer sufficient motivation for an underlying glide and an intervocalic glide deletion readjustment rule. Therefore, this alternative to Theme Substitution (xii) should also be disregarded.

8.4.3 Rule Ordering   We now have two rules applying to the same set of environments: Theme Substitution (xii) and Vowel Copying (ix). Which order do they apply in?

We will assume that Vowel Copying (ix) follows Theme Substitution (xii). This means that Vowel Copying (ix) replaces the vowel of the nominal theme *-o-* (resulting from application of Theme Substitution (xii)) with the vowel of the Case ending *-a-*, which is then deleted by Vowel Truncation (viii).

Could Vowel Copying (ix) precede Theme Substitution (xii)? A closer look at the syntactic derivation of the adjective shows that this ordering is possible, but it yields the same result as the alternative, with more steps in the derivation.

(40) $[[[\text{otɪc-ow}]_1\text{-TH}]_2\text{-M-NOM}]_3$

      ↓   Cycle 2: lexical insertion of the adjectival theme *-oj-*

   $[[[\text{otɪc-ow}]_1\text{-oj}]_2\text{-M-NOM}]_3$

      ↓   Cycle 2: Vowel Copying (ix) fails (no environment)

   $[[[\text{otɪc-ow}]_1\text{-oj}]_2\text{-M-NOM}]_3$

      ↓   Cycle 2: Theme Substitution (xii)

   $[[[\text{otɪc-ow}]_1\text{-o}]_2\text{-M-NOM}]_3$

      ↓   Cycle 3: lexical insertion of the Case ending

   $[[[\text{otɪc-ow}]_1\text{-o}]_2\text{-ɨ}]_3$

      ↓   Cycle 3: Vowel Copying (ix)

   $[[[\text{otɪc-ow}]_1\text{-ɨ}]_2\text{-ɨ}]_3$

                       Cycle 3: Vowel Truncation (viii)

   $[[[\text{otɪc-ow}]_1]_2\text{-ɨ}]_3$

      ↓   Postcyclic Yer Deletion (ii)

     [otcov]

Vowel Copying (ix) cannot apply before Theme Substitution (xii) in the cyclic component, because Vowel Copying (ix) requires the relevant Case endings to have been inserted, which must necessarily happen after Theme Substitution (otherwise, the wrong Case endings will be inserted in the alternative genitive and dative [−feminine] of individual lexical possessives).

Given that lexical insertion applies at the beginning of each cycle, we assume that Theme Substitution (xii) precedes Vowel Copying (ix). This assumption is further motivated by the fact that Theme Substitution (xii) has a more specified environment than Vowel Copying (ix).

8.5 Summary

We have adjusted two cyclic rules required to deal with regular adjectives whose theme suffix is unstressed (section 6): Unrounding (x), to which we added a new environment, and Vowel Copying (ix), which we restricted to apply to [+ATR] vowels only. Unrounding (x) feeds both Hi-Switch (vii) if the stem ends in a palatalized consonant (section 6.2) and Velar Palatalization (xi) with stems ending in a velar (section 6.3). Both effects are predicted by the fact that Hi-Switch (vii) and Velar Palatalization (xi) are postcyclic and therefore must follow Unrounding (x), which is a readjustment rule.

The facts about irregular adjectives have thus required us to introduce the new readjustment rule of Theme Substitution (xii). Being a readjustment rule, it applies before all phonological rules in the cyclic component. As discussed in section 5.7, Vowel Copying (ix) must precede Unrounding (x). Following the discussion in section 8.4.3, we will assume that Theme Substitution (xii) applies before Vowel Copying (ix) and therefore bleeds Unrounding (x). This gives the following rule ordering:

Readjustment rules

(xii) *Theme Substitution*

TH $\rightarrow$ TH$_N$ in direct Cases (and some others) of irregular adjectives

where TH$_N$ is the nominal theme *-o-*

(ix) *Vowel Copying (new version)*

$V_{1[+ATR]} \rightarrow V_2$ / [$_{\text{theme suffix}}$ ____]-V_2

where V_2 is a direct Case ending

(x) *Unrounding*

$V \rightarrow V_{[+\text{high, } -\text{round, } +\text{ATR}]}$ / in the theme suffix of [PL]

[INSTR] [−F]

[NOM] [+M] when unstressed

Cyclic rules (no change)

(i) *Yer Lowering*

$V_{[+\text{high, } -\text{ATR}]} \rightarrow [-\text{high}]$ / ____ [$_\sigma$ $V_{[+\text{high, } -\text{ATR}]}$

(viii) *Vowel Truncation*

$V \rightarrow \emptyset$ / ____ V

(v) *Glide Truncation*

$w, j \rightarrow \emptyset$ / ____ [+cons]

(vi) *Palatalization*

Postcyclic rules

(i) *Yer Lowering* (see above)

(vi) *Palatalization* (see above)

(xi) *Velar Palatalization*

$C_{[\text{dorsal}]} \rightarrow [-\text{back}]$ / ____ $V_{[+\text{high, } -\text{round}]}$

(vii) *Hi-Switch*

(ii) *Yer Deletion*

$V_{[+\text{high, } -\text{ATR}]} \rightarrow \emptyset$

(iii) *Ikan'e*

$V_{[-\text{high] unstressed}} \rightarrow [+\text{high, } -\text{back}]$ / $C_{[-\text{back}]}$ ____

(iv) *Neutralization*

$V_{[-\text{high] unstressed}} \rightarrow [+\text{back, } -\text{round}]$

Table 15
Generic possessive adjectives

	[−feminine]	[+feminine]	[+plural]
Nominative	lIs-ij-ɪ/lIs'-j-e	lIs'-j-a	lIs'-j-i
Accusative		lIs'-j-u	
Genitive	lIs'-j-ev-o	lIs'-j-ej	lIs'-j-i-x
Dative	lIs'-j-e-mu	lIs'-j-ej	lIs'-j-i-m
Locative	lIs'-j-e-m	lIs'-j-ej	lIs'-j-i-x
Instrumental	lIs'-j-i-m	lIs'-j-ej (-u)	lIs'-j-i-mi

When we consider the entire adjectival paradigm, it is the behavior of the theme suffix *-oj-* that defines the distinction between the regular and the irregular adjectival declensions. In the regular adjectival declension, *-oj-* is subject to the readjustment rule Vowel Copying (ix) in the direct Cases, while in the irregular class, it is replaced by the nominal theme suffix. Importantly, while no adjectives take the nominal theme suffix *-o-* throughout the paradigm, there exists an open class of null-derived deadjectival nominals (of which ''premises'' nominalizations such as *parikmAxerskaja* 'the hairdresser's' form a productive subclass) that decline like adjectives. In other words, while the choice of the theme suffix *-oj-* is largely dependent on the lexical category of the stem (most items with this theme suffix are adjectives), it is not exclusively determined by the lexical category (e.g., *portnOj* 'tailor' is a noun). Once chosen, the theme suffix determines Case exponents.[34]

We can now consider what happens in nondefault subclasses of the irregular adjectival declension class.

9 Generic Possessives

Generic possessives, like individual possessives, can only be formed on the basis of animate DPs that consist of a single prosodic word. They are interpreted as 'typical of the kind X' or 'belonging to the kind X' (Vinogradov 1952:303), similarly to *a girls' bicycle* in English. Thus, *lIs-ij* 'fox's-ᴍ' (from *lis-a* 'fox') is interpreted as 'belonging to a representative of the genus *Vulpes vulpes*' (e.g., *a fox's den*) or 'characteristic of foxes' (e.g., *foxes' habits*), rather than as 'belonging to a particular fox'.[35]

As table 15 shows, the official orthography reflects the fact that the theme suffix surfaces as [i] rather than [ɨ] in the instrumental [−feminine] and plural cells owing to Hi-Switch (vii) and as *-ej-* elsewhere (neutralized to [ij] in standard literary Russian) owing to the previously mentioned [o]/[e] alternation. A complicating point about the surface phonology of generic pos-

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[34] The fact that a theme suffix is chosen on the cell basis (e.g., in irregular adjectives, direct Cases require the *-o-* theme, as do genitive and dative singular cells in lexical possessives in *-ow-*) further supports our view that paradigms have no theoretical status.

[35] The ordinal *trEtij* 'third' also belongs to this subclass.

sessives is that, in addition to the theme suffix *-oj-*, they contain a phonologically similar adjective-forming suffix *-ɪj-*.

That the adjective-forming suffix for generic possessives contains a yer is indicated by the vowel alternation between the nominative masculine and all other cells. It is further confirmed by the fact that in stems whose final syllable contains a yer, this yer is lowered (/sElezɪn/ 'drake' (cf. [sElezen']/[sElezn'a] 'drake-NOM/GEN') → *selezEnij*).[36] Finally, the palatalization of the stem-final consonant (from the underlying *lis-* 'fox') shows that it is a front yer.[37]

This view is supported by the fact that what seems to be the same suffix also appears in the negative and interrogative possessives (*č-ɪj-* 'whose' (surface form [čEj] in the masculine) and *ni-č-ɪj-* 'no one's' (surface form [ničEj])). There the lowered yer is stressed and surfaces as the expected [e],[38] suggesting that the official orthography of the nominative masculine form in table 15 reflects the application of Ikan'e (iii) in the unstressed syllable (see footnote 37).

10 Functional Adjectives

Among functional adjectives, two groups may be distinguished:

- Some behave like regular adjectives: the archaic demonstratives *sej* 'this' and *Onij* 'that'; the universals *kАždɪj* 'each', *l'ubOj* 'any', and *vs'Akɪj* 'any, whatever'; the interrogatives *kakOj* 'what' and *kotOrɪj* 'which' (the latter also functions as the relative pronoun); *takOj* 'such' and its colloquial or dialectal variants *takovOj*,[39] *s'akOj*, *Èkɪj*, *Ètakɪj*; the intensifier and superlative marker *sAmyj* (to be distinguished from the emphatic *sam* discussed in section 10.3.1); and the adjectives *inOj* and *drugOj* 'other'.[40] The dialectal regular 3rd person possessives *Ejnɪj* 'her(s)', *evOjnɪj* 'his', and *Ixnij* 'their(s)', as well as nearly all ordinals (*trEtij* 'third' declines like the generic possessives discussed in section 9), also fall into this category, about which little needs to be said.
- Some behave like irregular adjectives but have minor quirks (special nominative masculine; [e] in the instrumental [−feminine] and plural inflections; etc.).

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[36] Yer Lowering (i) exceptionally does not apply with the generic possessive derived from /orɪl/ 'eagle' → *Orlij* (cf. [or'Ol]/[orlA] 'NOM/GEN'), but it does apply in the one derived from /pɪs/ 'dog' → *p'Osij* (cf. [p'Os]/[psA] 'NOM/GEN'). Stems with a similar phonological shape (/osɪl/ 'donkey', /kozɪl/ 'goat', etc.) do not allow generic possessives.

The explanation for this fact is that in the adjective *Orlij*, as well as in the adjectives *Otčij* 'paternal, fatherly', *monАršij* 'monarchical', and *patriАršij* 'patriarchal', the generic possessive suffix *-ɪj-* has been reanalyzed as the unstressed theme suffix *-oj-*. Support for this analysis comes from the fact that these four adjectives decline in the regular adjectival paradigm (see Švedova 1970:393).

[37] The standard orthography is also compatible with the idea that the front yer of the possessive suffix is exceptionally tensed rather than lowered by a rule applying before Yer Lowering (i). Tensing turns the yer into [i], which is reflected by the orthography. The same rule can be argued to apply to the cardinal *odɪn-* 'one' (section 10.3), but not to the quantified possessives *čɪj-* 'whose' and *ničɪj-* 'no one's'.

[38] The suffix *-ɪj-* is preaccenting. Since the interrogative possessive consists of a single syllable, it must be stressed. Since the negative prefix *ni-* is unstressable, stress in the negative possessive also falls on the suffix *-ɪj-*.

[39] Unlike other functional adjectives, this one also has a completely regular short form, *takOv*.

[40] We believe this to be the complete list.

Table 16
Archaic demonstrative *s'-*

	[−feminine]		[+feminine]	[+plural]
Nominative	s'-Ej-ɪ	s'-ej-E	s'-ej-A	s'-ej-I
Accusative			s-ej-U	
Genitive	s'-ev-O		s'-Ej	s'-I-x
Dative	s'-e-mU		s'-Ej	s'-I-m
Locative	s'-O-m		s'-Ej	s'-I-x
Instrumental	s'-I-m		s'-Ej (-u)	s'-I-mi

After briefly examining these two groups, we address the double paradigm adjective *nEkij* 'certain' and the quirky behavior of numerals and quantity adjectives.

10.1 Regular Paradigm

Russian has a number of nonlexical adjectives (*vs'Ak-ij* 'any, whatever', *kAžd-ij* 'each', *tak-Oj* 'such', etc.) that decline like regular adjectives. We believe that their very existence shows that declension class is not determined by semantics or syntactic distribution. Nothing special needs to be said about any of them, given the account proposed above.

10.2 The Archaic Proximate Demonstrative

The archaic proximate demonstrative *s-ej-* (root *s'-*)[41] is nearly completely regular—a fact that is easy to miss owing to the shortness of the stem. As in many cases discussed above, the suffix *-oj-* is subject to the [o]/[e] alternation depending on the value of the [αback] feature of the surrounding consonants. Importantly, this otherwise regular adjective is exceptionally not subject to Vowel Copying (ix), as table 16 illustrates.

What is particularly interesting about the archaic demonstrative *s'-* is the position of the stress. It is the only regular adjective with stress falling on the Case ending rather than on the theme suffix. This allows us to confirm the underlying forms for regular Case endings in table 3, which are normally neutralized. Importantly, we see that the nominative [+feminine] is *-a*, while genitive [−feminine] is *-o*.[42] Further evidence for these Case endings is provided by functional adjectives, discussed in the next section, of which many are subject to a readjustment rule right-shifting the underlying accent of the theme suffix *-oj-* toward the Case ending.

In the section that follows, we provide similar evidence for the irregular declension class.

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[41] The standard orthography spells the unstressed [e] as *i* in the direct Cases.

[42] The nominative neuter ending surfaces as a stressed *-e* rather than the expected [o] because the relevant rule of [o]/[e] alternation (see Lightner 1969) does not apply to Old Church Slavonic roots (cf. *žitiE* 'life (of a saint)' or *bitiE* 'existence'), of which *s'-* is one. As an anonymous reviewer points out, there exists an alternative neuter form *s'o* (as in *to da s'o* 'this and that'), which behaves as expected.

Table 17
Emphatic *sam-* 'oneself'

	[−feminine]	[+feminine]	[+plural]
Nominative	sAm/sam-O	sam-A	sAm-i
Accusative		sam-U	
Genitive	sam-ov-O	sam-Oj	sam-I-x
Dative	sam-o-mU	sam-Oj	sam-I-m
Locative	sam-O-m	sam-Oj	sam-I-x
Instrumental	sam-I-m	sam-Oj (-u)	sam-I-mi

10.3 Irregular Paradigm

Functional adjectives are distinguished from lexical possessives by an additional readjustment rule applying to instrumental [−feminine] and plural forms. Within this class, two subclasses may be distinguished:

- Some undergo this readjustment only, but may have a special nominative masculine form ([i]-plurals). This subclass also includes possessives.
- Some undergo an additional readjustment rule in the plural ([e]-plurals).

10.3.1 [i]-Plurals and Possessives   The class of irregular functional adjectives that includes [i]-plurals and possessives undergoes a special readjustment rule in the instrumental [−feminine] and all plural cells. A perfect example of functional adjectives is the emphatic *sam-* 'oneself' (e.g., *samA korolEva* 'the queen herself; the queen and none other'); see table 17.

The functional adjective *sam-* 'oneself' is subject to a stress shift rule that moves the stress from the theme suffix to the ending (except in the nominative plural, which is unstressed in the nominal declension as well).[43] As a result, the fact that Case endings surface under stress here allows us to establish the underlying forms of the irregular adjectival declension. It is easy to see that they correspond exactly to what has been suggested in table 12 (identical to the regular adjectival declension in table 3 except in the direct Cases).

Finally, the behavior of stress confirms the yer endings in locative and instrumental [−feminine] and in oblique feminine forms, since the back yer of these endings triggers an independently motivated rule of stress retraction (Lightner 1972, Halle 1994b), which returns the stress to the theme suffix.

The peculiarity of this paradigm is that, even though the high vowel of the theme is fronted,

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[43] Alternatively, Case endings are all accented, except for nominative plural.

Table 18
Archaic interrogative/relative *koj-*

	[−feminine]	[+feminine]	[+plural]
Nominative	kɔj/kɔj-e	kɔj-a	kɔj-i
Accusative		kɔj-u	
Genitive	kɔj-ev-o	kɔj-ej	kɔj-i-x
Dative	kɔj-e-mu	kɔj-ej	kɔj-i-m
Locative	kɔj-e-m	kɔj-ej	kɔj-i-x
Instrumental	kɔj-i-m	kɔj-ej (-u)	kɔj-i-mi

Table 19
Proximate demonstrative *èt(ɨt)-*

	[−feminine]	[+feminine]	[+plural]
Nominative	Ètot/Èt-o	Èt-a	Èt-i
Accusative		Èt-u	
Genitive	Èt-ov-o	Èt-oj	Èt-i-x
Dative	Èt-o-mu	Èt-oj	Èt-i-m
Locative	Èt-o-m	Èt-oj	Èt-i-x
Instrumental	Èt-i-m	Èt-oj (-u)	Èt-i-mi

the final consonant of the stem is not underlyingly palatalized.[44] Fronting is accomplished by the following rule:

(xiii) *Theme Fronting*
   [ɨ] → [−back] in the theme of functional irregular adjectives

The two adjectives with exactly the same paradigm are the archaic interrogative/relative adjective *koj-* 'which' and the proximate demonstrative *èt(ɨt)-*, with stress on the stem; see tables 18 and 19. Nothing special needs to be said about *koj-*,[45] except for observing the effect of the familiar [o]/[e] alternation in the theme suffix in many of the singular cells. Conversely, the proximate demonstrative *èt(ɨt)-* has an augmented nominative masculine form, and the same is

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[44] The intuition that the Case ending and the theme suffix should be treated alike (as inflection) is due here to the way we chose to formalize the empirical generalization about functional adjectives. An immediately obvious alternative is to restate (xiii) as fronting the stem-final consonant. However, this solution would not work for the two adjectives discussed in section 10.3.2, /t(ɨt)/ and /vɪs'/.

[45] Given that *koj-* ends in a [−back] glide, the [i] in the inflection may be due to Hi-Switch (vii) rather than Theme Fronting (xiii).

Table 20
Cardinal *odın-* 'one', 'alone, only'

	[−feminine]	[+feminine]	[+plural]
Nominative	odIn/odn-O	odn-A	odn-I
Accusative		odn-U	
Genitive	odn-ov-O	odn-Oj	odn-I-x
Dative	odn-o-mU	odn-Oj	odn-I-m
Locative	odn-O-m	odn-Oj	odn-I-x
Instrumental	odn-I-m	odn-Oj (-u)	odn-I-mi

true for the distant demonstrative *t(ıt)-* (see section 10.3.2). A possible analysis of this effect is to assume, as we have done above, that the roots of these two adjectives contain a back yer. While in the nominative masculine this yer is lowered (being followed by the yer of the Case ending), in all other cells an illegitimate geminate [tt] sequence is created and then simplified by a surface rule.[46]

(41) a. ètıt + ı $\xrightarrow{\text{Yer Lowering}}$ ètot + ı $\xrightarrow{\text{Yer Deletion}}$ Ètot

b. ètıt + a $\xrightarrow{\text{Yer Deletion}}$ ètt-a $\xrightarrow{\text{Degemination}}$ Èta

Another functional adjective with a special nominative masculine form is the cardinal numeral *odın-* 'one'; see table 20.[47] The special feature of this root is that the root vowel (a front yer) is exceptionally tensed (turns [+ATR]) rather than lowered in the nominative masculine (see footnote 37).

As can be seen from table 17 and table 20, with these functional adjectives Case endings are also stressed, permitting us to verify that table 12 does indeed characterize the Russian irregular adjectival declension correctly.

Finally, Russian possessives are morphologically adjectives, except the 3rd person pronominal possessives *ego* [jevO] 'his', *eë* [jejO] 'hers', and *ix* [jIx] 'theirs', which are pronominal genitives (except in certain dialects, such as Tver', Pskov, and Siberian, that allow possessive adjectives formed by the suffix *-ın-* (Dal' 1863–1866); i.e., *Ejnij* 'her(s)', *evOjnij* 'his', *Ixnij* 'their(s)').

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[46] In the verb inflection, a sequence of two [t]'s is resolved by spirantizing the first of the two consonants (e.g., /met-ti/ 'sweep-INF' → [mes-tI]). This rule does not apply in the adjective inflection.

[47] The cardinal numeral *odın-* 'one' appears with plural marking when it modifies *pluralia tantum* nouns, but also with plural DPs with the meaning 'alone, only'.

Table 21
Singular pronominal possessives

	[−feminine]	[+feminine]	[+plural]
Nominative	mOj/moj-O	moj-A	moj-I
Accusative		moj-U	
Genitive	moj-ov-O	moj-Ej	moj-I-x
Dative	moj-o-mU	moj-Ej	moj-I-m
Locative	moj-O-m	moj-Ej	moj-I-x
Instrumental	moj-I-m	moj-Ej (-u)	moj-I-mi

All singular nonlexical possessives (*moj-* 'my', *tvoj-* 'your', *svoj-* 'self's', *čij-* 'whose', and *ničij-* 'no one's') have the stress on the inflection, just like the cardinal numeral *odin-* 'one' and the emphatic *sam-* 'oneself'; see table 21.

The [+feminine] forms show the already familiar [o]/[e] alternation. It is not clear whether the theme vowel in the plural and instrumental [−feminine] forms is fronted by the usual Hi-Switch rule (vii) or by the readjustment Theme Fronting rule (xiii), but one of them will apply.

The only way in which plural pronominal possessives differ from singular pronominal possessives is the position of the stress; compare table 21 with table 22. Unlike singular pronominal possessives, plural possessives do not contain a clearly distinguishable suffix showing that they are formed on the basis of roots *n-* '1PL' (cf. *nas* '1PL-GEN/LOC') and *v-* '2PL' (cf. *vas* '2PL-GEN/LOC').

Although Russian [š], [ž], and [c] are [+back] (''hard,'' in the terminology of traditional grammar) on the surface, at intermediate stages of the derivation they are [−back] (and turn [+back] in the postcyclic block; see Lightner 1972). As a result, the already familiar [o]/[e] alternation occurs in the shaded cells, as reflected by the traditional orthography and our transliteration. We conclude that plural pronominal possessives behave just like other functional adjectives.

Table 22
Plural pronominal possessives

	[−feminine]		[+feminine]	[+plural]
Nominative	vAš	vAš-e	vAš-a	vAš-i
Accusative			vAš-u	
Genitive	vAš-ev-o		vAš-ej	vAš-i-x
Dative	vAš-e-mu		vAš-ej	vAš-i-m
Locative	vAš-e-m		vAš-ej	vAš-i-x
Instrumental	vAš-i-m		vAš-ej (-u)	vAš-i-mi

Table 23
Universal quantifier *vɪs'-*

	[−feminine]	[+feminine]	[+plural]
Nominative	vEs'/vs'-O	vs'-A	vs'-E
Accusative		vs'-U	
Genitive	vs'-ev-O	vs'-Ej	vs'-E-x
Dative	vs'-e-mU	vs'-Ej	vs'-E-m
Locative	vs'-O-m	vs'-Ej	vs'-E-x
Instrumental	vs'-E-m	vs'-Ej (-u)	vs'-E-mi

Table 24
Distant demonstrative *t(ɪt)-*

	[−feminine]	[+feminine]	[+plural]
Nominative	tot/t-O	t-A	t-E
Accusative		t-U	
Genitive	t-ov-O	t-Oj	t-E-x
Dative	t-om-U	t-Oj	t-E-m
Locative	t-O-m	t-Oj	t-E-x
Instrumental	t-E-m	t-Oj (-u)	t-E-mi

10.3.2 [e]-Plurals The universal quantifier *vɪs'-* and the distal demonstrative *t(ɪt)-* differ from other irregular adjectives in that the stressed vowel in the instrumental singular and plural endings is [e] rather than [i]; see tables 23 and 24.[48] The distal demonstrative *t(ɪt)-* behaves exactly like the proximate demonstrative *èt(ɪt)-* in the nominative masculine; see table 19.

We capture this formally with the readjustment rule of Theme Lowering (xiv), which relies on the fact that in the plural and instrumental [−feminine] cells the theme suffix *-oj-* has already been converted to [ij] by Unrounding (x) and/or by Vowel Copying (ix), and then to [ij] by the readjustment rule Theme Fronting (xiii), applying to all functional adjectives.[49]

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[48] This phenomenon is not limited to functional adjectives; with certain nationality nouns, nominative plural has exactly the same exponent.

(i) arm'-an-In − arm'-An-e 'Armenian-SG/PL-NOM', gražd-an-In − grAžd-an-e 'citizen-SG/PL-NOM', cig-An − cig-An-e 'gypsy-SG/PL-NOM'

This exponent shows completely regular behavior with respect to palatalization.

[49] Suppose we had replaced the readjustment rule Theme Fronting (xiii) with palatalization of the stem-final consonant. The environment for Theme Lowering (xiv) would have arisen only after postcyclic Hi-Switch (vii). However, if all readjustment rules precede phonological rules, Theme Lowering (xiv) cannot follow postcyclic Hi-Switch (vii).

Table 25
Specific adjective *nek(oj)-*

	[−feminine]	[+feminine]	[+plural]
Nominative	nEk-ij-/nEk-oj-e	nEk-aj-a	nEk-ij-i
Accusative		nEk-uj-u	
Genitive	nEk-oj-ev-o/nEk-ov-o	nEk-oj-ej/nEk-oj	nEk-(oj)-i-x
Dative	nEk-oj-e-mu/nEk-o-mu	nEk-oj-ej/nEk-oj	nEk-(oj)-i-m
Locative	nEk-oj-e-m/nEk-o-m	nEk-oj-ej/nEk-oj	nEk-(oj)-i-x
Instrumental	nEk-oj-im/nEk-i-m	nEk-oj-ej (-u)/nEk-oj (-u)	nEk-(oj)-i-mi

(xiv) *Theme Lowering*
　　　[i] → [−high] / in *vɪs'-*, *t(ɪt)-*

Nothing further needs to be said, apart from noting that the [o]/[e] alternation in table 23 versus table 24 is conditioned by the palatalization of the surrounding consonants, as above.

10.4 Double Paradigm Adjectives

The specific adjective *nEkij* 'certain' exhibits a double paradigm, illustrated in table 25.

The double derivation can be explained by the two analyses of the stem, available from the surface form of the nominative masculine cell:

- The root can be identified as *k-* (*ne-* being the negative prefix) and then *-oj-* is interpreted as the theme suffix (parallel to *sej*). The changes in *-oj-* follow straightforwardly from Unrounding (x), followed by Velar Palatalization (xi).
- The stem can be identified as *ne-koj-* (parallel to *moj-*). The *-oj-* suffix then appears in the nondirect Cases. The changes in the direct-Case cells are not predicted and are probably due to a readjustment rule.

In its first guise, the functional adjective *nek(oj)-* behaves like a regular adjective.

10.5 Exclusively Plural Adjectives

Most cardinal numerals in Russian belong to various nominal declension classes. One exception is the cardinal *odɪn-* 'one' (see table 20), which behaves like an irregular functional adjective. The interesting cases are the so-called paucal numerals *dvA/dvE* 'two-[−F]/F-NOM', *trI* 'three-NOM', *četIre* 'four-NOM', and *Oba/Obe* 'both-[−F]/F-NOM' (see Franks 1994, Halle 1994a, Garde 1998), as well as quantifiers and collectives, whose declension paradigm is more similar to that of plural adjectives than to that of singular nouns. While paucal numerals show unusual behavior in the direct Cases, indefinite quantifiers and collectives behave like singular nouns in the nominative/

Table 26
Paucal numerals

	2	3	4
Nominative	dv-A/dv-E	tr'-I	četɨr'-e
Accusative			
Genitive	dv-U-xɨ	tr'-O-xɨ	četir'-O-xɨ
Dative	dv-U-mɨ	tr'-O-mɨ	četir'-O-mɨ
Locative	dv-U-xɨ	tr'-O-xɨ	četir'-O-xɨ
Instrumental	dv-u-m'A	tr'-e-m'A	četir'-m'A

accusative Case and like plural adjectives in the oblique Cases. Specific to this group of adjectives is the absence of singular cells in the paradigm (naturally due to their semantics).

10.5.1 Paucal Numerals   As mentioned earlier, the cardinal numeral *odɨn-* 'one' (which agrees both in gender and in number with the noun it modifies) is clearly adjectival in Russian, while the numerals *dv-* 'two', *tr-* 'three', and *četɨr-* 'four' are considerably less so: on the one hand, only the numeral *dv-* 'two' agrees with the noun in gender and then only in the morphological nominative Case, and on the other hand, these numerals assign paucal Case to the noun they combine with (see, e.g., Franks 1994, Halle 1994a, Garde 1998). The forms for these numerals are shown in table 26.

The differences among the three numerals are minimal and concern the nature of the vowel in the theme suffix: [u] for 'two', [o] for 'three', and [ɪ] for 'four'.[50] For the sake of completeness, we assume that with these stems the theme suffix *-oj-* is subject to the relevant readjustment rules, turning into *-uj-*, *-ej-*, and *-ɨj-*, respectively, after which the expected rules (Theme Substitution (xii) in the direct Cases, Glide Truncation (v)) apply.

The yer in the theme suffix of the numeral *četɨr-* 'four' provides another confirmation for the yers in the plural oblique Case exponents postulated in table 3 and table 12, since the theme suffix undergoes the familiar vowel/zero alternation: the yer is lowered in the genitive, dative, and locative cells and deleted in the instrumental cell.[51]

Apart from the numeral *dv-* 'two', the only other adjective that shows gender distinctions in the plural is the quantifier *ob-* 'both', which also does not have a singular form; see table 27. Just like the reanalyzed stem *nek(oj)-* 'certain' discussed in section 10.4, *ob-* 'both' exhibits

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[50] It is possible that the final [e] in the orthography of the nominative *četɨre* reflects the application of Theme Lowering (xiv). Since the unstressed vowel in the ending is neutralized, it is impossible to determine what it is.

Alternatively, the nominative *četɨre* is a plural form and has the same nominative exponent as the nationality nouns discussed in footnote 48. This would also account for the nominative feminine plurals *dve* 'two' and *obe* 'both'.

[51] These numerals are also the only examples where the instrumental plural Case ending is *-m'a*.

Table 27
The quantifier *ob-* 'both'

	[+ feminine]	[− feminine]
Nominative	Ob-e	Ob-a
Accusative		
Genitive	ob-Ej-i-x	ob-Oj-i-x
Dative	ob-Ej-i-m	ob-Oj-i-m
Locative	ob-Ej-i-x	ob-Oj-i-x
Instrumental	ob-Ej-i-mi	ob-Oj-i-mi

Table 28
Quantity adjectives

	Quantifiers	Collectives
Nominative	mɪnOg-o	čEtver-o
Accusative		
Genitive	mɪnOg-i-x	četver-ɨ-x
Dative	mɪnOg-i-m	četver-ɨ-m
Locative	mɪnOg-i-x	četver-ɨ-x
Instrumental	mɪnOg-i-mi	četver-ɨ-mi

doubling of the theme suffix. Interestingly, the inner theme suffix appears to be subject to [o]/[e] alternation in the [+ feminine] paradigm only.

10.5.2 Indefinite Quantifiers and Collectives   The quantifiers *skOl'ko* 'how many', *nEskol'ko* 'a few', *stOl'ko* 'so/that/as many', *mnOgo* 'many', and *mAlo* 'few', and the collectives *dvOe* 'a couple', *trOe* 'a triple', *čEtvero* 'a quadruple', and so on until 10, differ from all other adjectives in their behavior in the direct Cases (accusative being identical to nominative except with animate nouns, where it is identical to genitive). While their nominative form is that of irregular nominative neuter (no visible theme suffix, or the standard nominal theme *-o-* deleted before the vocalic Case ending), in all other Cases they surface in the regular adjectival plural (with the theme suffix *-oj-*), as shown in table 28.[52]

While formally, the nominative Case exponent in this group is that of a neuter noun, we do not expect quantity adjectives to possess an inherent gender in this Case (which would obviously be surprising). Instead, we propose that morphological gender agreement/concord fails in this cell of the paradigm and the adjective reverts to the neuter singular marking simply because this is

[52] It should be noted that the quantifier *mnOgo* 'many' has an adjectival nominative form *mnOgie* 'many'. No other adjective in this category does.

Table 29
3rd person pronoun *on-*

	[−feminine]	[+feminine]	[+plural]
Nominative	On on-O	on-A	on-I
Accusative/Genitive	j/n-ev-O	j/n-ej-O	j/n-I-x
Dative	j/n-e-mU	j/n-Ej	j/n-I-m
Locative	n'-O-m	n-Ej	n-I-x
Instrumental	j/n-I-m	j/n-Ej (-u)	j/n-I-mi

the default agreement specification in Russian. Once this concord failure is taken into account, quantity adjectives decline like other irregular functional adjectives: with a nominal exponent in the direct Cases and with an adjectival exponent elsewhere.

10.5.3 3rd Person Pronouns and Simplex Interrogatives   Without being adjectival, 3rd person pronouns decline like adjectives in all cells except nominative (as with other animate nouns, the accusative Case of pronouns is identical to their genitive Case); see table 29. It is worth noting that /o/ is the exponent of the singular genitive Case for the 3rd person pronouns in all three genders. The surface phonetic contrast between the genders is due to the application of Flier's rule, which turns /j/ to /w/, and which, as noted above, applies only to the [−feminine] adjectives.

The alternation between [j] and [n] in the stem is fully predictable and depends on whether the pronoun is preceded by a preposition ([n]-stem) or not ([j]-stem). The lack of alternation in the locative Case is due to the fact that locative is assigned only by prepositions.

Finally, the two simplex interrogatives of Russian, *k-to* 'who', *č-to* 'what', and their derivatives, also belong to the adjectival declension class in the oblique Cases. The nominative form of both involves insertion of the demonstrative base *-t-* and the neuter ending, as shown in table 30. Their instrumental singular form is subject to Theme Lowering (xiv). As before, the accusative form is identical to the genitive one for the [+animate] *kto* and to the nominative one for the [−animate] *čto*.

Table 30
Simplex interrogatives

	[+animate]	[−animate]
Nominative/Accusative	k-t-O	č-t-O
Genitive/Accusative	k-ov-O	č-ev-O
Dative	k-o-mU	č-e-mU
Locative	k-O-m	č-O-m
Instrumental	k-E-m	č-E-m

11 Conclusion

We began with the assumption that the underlying syntactic structure of a Russian adjective must include a stem and an AGR morpheme. This immediately forced us to raise the question of the grammatical function of the morpheme *-oj-* distinguishing between short- and long-form adjectives. We showed that its function cannot be that of an adjectivizing suffix a^0 and suggested instead that it is a theme suffix. The hypothesis that the presence of a theme suffix is intimately related to Case marking makes it possible to link the presence of *-oj-* with the attributive syntax of long-form adjectives.

We have argued that the major difference between the regular and irregular adjectival declensions is the behavior of *-oj-* in the direct Cases: while in the regular adjectival declension it undergoes the rule of Vowel Copying (ix), in the irregular adjectival declension it is replaced by the nominal theme suffix *-o-*.

Apart from the standard, independently motivated phonological rules of Russian grammar, the regular adjectival declension undergoes three readjustment rules:

- In the instrumental [−feminine] and plural cells, the theme suffix *-oj-* changes to *-ij-* (Unrounding (x)).
- In the morphological direct Cases, the vowel of the *-oj-* theme is matched with that of the Case ending (Vowel Copying (ix)).
- When unstressed, the nominative masculine form surfaces with *-ij-* instead of the expected *-oj-*, which is found in certain dialects.

The irregular adjectival declension also undergoes Unrounding (x), but in the direct Cases the adjectival theme *-oj-* is replaced by the nominal theme *-o-*. As a result, the context for lexical insertion rules changes, and nominal Case exponents are used instead of adjectival ones. In individual lexical possessives, this readjustment rule can also apply in the dative and genitive [−feminine] cells.

In both regular and irregular adjectival declensions, the theme suffix *-oj-* is subject to readjustment in instrumental [−feminine] and plural cells:

- The inflectional vowel becomes [ɨ] (Unrounding (x); see table 3).
- The resulting [ɨ] becomes [i] in the declension of all irregular functional adjectives (Theme Fronting (xiii)). The preceding consonant is palatalized by the regular Palatalization rule (vi).
- The resulting [i] becomes [e] in the declension of the functional adjectives *vɪs'*- and *t(ɪt)*- (Theme Lowering (xiv)).

Since instrumental [−feminine] does not form a natural class with plural, we have chosen to formulate a single readjustment rule applying in these two environments (Unrounding (x)) and state the remaining two changes as morphologically constrained rules applicable to lists (irregular functional adjectives and the adjectives *vɪs'*- and *t(ɪt)*-).

In sum, leaving aside various small irregularities, a Russian adjective belongs to one of two major declension classes: the regular one, where Vowel Copying (ix) applies in the direct Cases, and the irregular one, where the theme suffix *-oj-* is replaced by the nominal theme suffix *-o-* in the same environment. We have shown that when the latter happens, the affected adjective declines like a noun. This, along with the fact that null-derived deadjectival nominals decline like the adjectives they are derived from, confirms that Case exponents are not determined on the basis of lexical category but rather depend on the particular theme suffix, which provides new insight into the nature of theme suffixes and their role in derivation.

12 Final Rule List

We have introduced the following rules with the following ordering:

Readjustment rules (new rules (xiii) and (xiv))

(xii) *Theme Substitution*
TH → TH$_N$ in direct Cases (and some others) of irregular adjectives
where TH$_N$ is the nominal theme *-o-*

(ix) *Vowel Copying (new version)*
$V_{1[+ATR]} \rightarrow V_2$ / [$_{\text{theme suffix}}$ ———]-V_2
where V_2 is a direct Case ending

(x) *Unrounding*
$V \rightarrow V_{[+high, -round, +ATR]}$ / in the theme suffix of [PL]
[INSTR] [−F]
[NOM] [+M] when unstressed

(xiii) *Theme Fronting*
[ɨ] → [−back] in the inflection of functional irregular adjectives

(xiv) *Theme Lowering*
[i] → [−high] / in *vɪs'*-, *t(ɪt)*-

Cyclic rules

(i) *Yer Lowering*
$V_{[+high, -ATR]} \rightarrow [-high]$ / ___ [$_\sigma$ $V_{[+high, -ATR]}$

(viii) *Vowel Truncation*
$V \rightarrow \emptyset$ / ___V

(v) *Glide Truncation*
w, j → ∅ / ___ [+cons]

(vi) *Palatalization*

C   V
⌇⋯⋯⋯⋯⋯ |
          [−back]

Postcyclic rules

  (i) *Yer Lowering* (see above)

 (vi) *Palatalization* (see above)

 (xi) *Velar Palatalization*
$$C_{[dorsal]} \rightarrow [-back] / \_\_\_V_{[+high, -round]}$$

(vii) *Hi-Switch*

$$
\begin{array}{l}
C \qquad\quad V_{[+high, -round]} \\
| \\
[\alpha back]
\end{array}
$$

 (ii) *Yer Deletion*
$$V_{[+high, -ATR]} \rightarrow \emptyset$$

(iii) *Ikan'e*
$$V_{[-high]\ unstressed} \rightarrow [+high, -back] / C_{[-back]} \_\_\_$$

(iv) *Neutralization*
$$V_{[-high]\ unstressed} \rightarrow [+back, -round]$$

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