

Russian Genitive Plurals are Impostors

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1. Markedness and Allomorphy within Distributed Morphology

Our primary focus in this paper is on the distribution of allomorphs for the Russian genitive plural. The Russian genitive plural has been a topic of interest to morphological theory because various authors have claimed that its derivation involves some or all of the following grammatical principles:

- (1) a. Inflectional paradigms aspire to “avoid homophony”. The Russian nominative singular and genitive plural endings reflect a transderivational attempt to minimize homophony across inflectional endings.
- b. Inflectional paradigms require transderivational reference: one cannot compute the Russian genitive plural without knowing what the nominative singular ending is.
- c. Markedness-based neutralization may not hold: the genitive plural ending in Russian, unlike other oblique plurals, shows distinct gender inflection.

The goal of this paper is to show that, counter to appearances, the Russian genitive plural does not instantiate any of the principles in (1). In regards to (1-a), it would be opportunistic and in fact false to claim that homophony-avoidance plays a role in Russian inflection across the nominative & genitive cases. Feminine nouns show identical endings for nominative plural and genitive singular:

(2)	Nom. Sg	Nom.Pl	Gen.Sg	Gen.Pl	
	kniga	kn'ig'i	kn'ig'i	knig	book (fem)
	gazeta	gazety	gazety	gazet	newspaper (fem)
	dver'	dveri	dveri	dverej	beast (fem)

Identical ending across nominative plural and genitive singular occurs in addition for all neuter nouns with fixed stress.¹

(3)	Nom. Sg	Nom.Pl	Gen.Sg	Gen.Pl
	gosudárstvo	gosudárstva	gosudárstva	gosudárstv
	zdánije	zdánija	zdánija	zdánij

We thus do not consider (1)[a] in our discussion of the genitive plurals any further. The focus of this paper will be on (1)[b-c] as they relate to principles of inflection within the theory of Distributed Morphology.

This paper is concerned with two core principles of Distributed Morphology (DM): *markedness-based syncretism* and *locally-conditioned allomorphy*. These two principles are somewhat novel to DM, and distinguish it from other approaches to inflectional morphology. In the course of this paper, we examine the oblique plural forms of Russian nouns as a case study to examine both of these principles.

1.1. Markedness and Impoverishment lead to syncretism

Within DM, there is an important source of syncretism and of systematic absences of overt featural distinctions within a given category when they occur. This source is *feature-deletion prior to morphosyntactic realization*. Consider for example, the fact that first person pronouns never bear gender distinctions in many languages, exemplified here with Russian. Clearly the gender features are present within the syntax, in order to condition adjectival agreement in (4).

- (4) Ja budu rada
 1st-Nom. be-fut-1.sg glad-fem.sing.
 “I will be glad” (feminine)

¹Moreover, due to vowel reduction in the final unstressed vowel, the nominative singular is phonetically identical with the nominative plural and genitive singular as well!

Clearly the feature [+feminine] must be present on the subject pronoun in order to trigger feminine agreement on the adjective. However, it fails to show up on the agreeing auxiliary or on the pronoun itself. Notably both of these items are ones where the feature of 1st person (call it [+Author]) is present. Rather than it being an accident of Russian that all environments where [+Author] occurs are ones where there is no distinction made for the gender feature [\pm feminine], we may view this instead as the consequence of a systematic rule of feature deletion that applies to the output of syntax:

- (5) *Impoverishment Rule:*
Delete the feature [feminine] on all terminal nodes that bear the feature [+Author]

Since the adjective in (4) does not agree in person, it will be exempt from (5). However, we know that the feature [+feminine] must be present on the pronominal DP at some earlier point in the syntactic derivation in order to trigger agreement. The featural deletion rule in (5) thus yields syncretism: when a feature is deleted prior to morphological realization, there is no way that the morphology can show differentiation for that feature, and the effect is identical realization of syntactic terminals that were either [+feminine] or [-feminine].

The observation that syncretism arises because a particular feature (in this case, gender) systematically fails to be realized – i.e., is neutralized – in a certain “column/row of a paradigm” is not unique to DM. However, what is unique is the attempt to understand rules such as (5) within the context of morphological *markedness* (see Calabrese (this volume) for an application of markedness-based neutralization to Case syncretisms).

Thus, the rule in (5) can be viewed as a consequence of the inherent markedness of the feature [+Author] among the Person features. This aspect of markedness, leading to fewer subdistinctions within a marked category, is dubbed the *syncretizational* aspect of markedness by Greenberg (1966). For the purposes of this paper, we may view the following morphological environments as marked

- (6) Marked Environments, where Impoverishment is likely to occur:
- a. First Person
 - b. Plural Number
 - c. Feminine Gender
 - d. Oblique Cases (i.e. not Nominative or Accusative)
 - e. Non-Present Tense

In many instances, one of these features will be neutralized in the context of another. For example, consider Russian. In the Past Tense, person is neutralized: cf. *igrála* ‘she played, you (fem.) played, I (fem.) played’. On syntactic nodes with the first person feature [+author], gender is neutralized. In the feminine gender, dative and locative (two oblique Cases) are neutralized. Finally, our concern with this paper will be with the Plural, where gender is, we argue, neutralized. Plural adjectives in Russian show no gender distinctions. Plural forms of Locative, Dative, Instrumental, and as we ultimately argue, Genitive, show no gender distinctions. Only in a theory like DM, that has “impoverishment” rules deleting/neutralizing features, are syncretisms like this formally analyzable as more than accidental. This markedness-based approach to neutralization is unique to DM, and does not form a core part of the understanding of syncretisms in alternative approaches to morphology that do not have rules of “impoverishment” that delete/neutralize features.

Given these two sources of syncretism, one can state a fairly restrictive constraint on syncretism within inflectional paradigms:²

- (7) **The Least-Marked/Least-Specified Constraint on Syncretisms:**
Let A and B be distinct morphosyntactic categories with respect to a common superordinate category C (e.g. “number”), where the (set of) feature(s) F distinguishes B from A. If A and B are expressed by the same phonological piece α , then either (i) α is the default phonological affix for the superior-

²Noyer (2005) reaches a similar conclusion for cross-conjugation class syncretisms in Greek, with syncretism as the result of either (and only) default conjugation class insertion following impoverishment or elsewhere insertion.

dinate category or (ii) A is the morphosyntactically least marked category within the superordinate category.

- a. Case (i): A and B are both expressed by an “elsewhere” item: a phonological piece that realizes C but is underspecified and compatible with either A or B.

Emergence of the Least-Specified:

$/\alpha/ \leftrightarrow C$, where $C \subseteq A$ and $C \subseteq B$

- b. Case (ii): B undergoes *impoverishment* and becomes featurally identical to A during the syntax-to-phonology mapping.

Crucially, in understanding (7), the affix that is the Elsewhere item need not be identical to the affix realizing the least marked item. Though sometimes conflated, the two properties of *least marked within a given representational vocabulary* and *widest distribution within a paradigm* are logically independent. The former is a consequence of markedness as defined within a featural system, the latter is an accident of a sparse vocabulary in the language at hand.

From a learner’s perspective, the Elsewhere item will be deduced through its heterogeneous distribution within a paradigm³. The least-marked featural complex, on the other hand, is given by the representation, which is based on an explicit theory of markedness. The constraint in (7) is not an “axiom”, but a consequence of the more general formal restriction that postsyntactic morphological operations *simplify* the output of syntax: they can **delete, but not add** features.

It is this second source of syncretism, namely markedness-based feature-impoverishment, that will play a role when we turn to our examination of the genitive plural in Russian in the body of this paper.

- (8) **DM Hypothesis I:** Neutralization occurs in *marked* environments; that is, *there should not be* an inflectional paradigm which shows *more gender distinctions in the plural than in the singular, more gender distinctions in the first person than in the third person*, and so forth, as governed by a theory of markedness of featural categories.

1.2. Locally-Conditioned Allomorphy

One of the most striking things about the mental lexicon is not how many items we memorize, but the fact that we have to memorize so many different environments in which the same item will have different realizations. This is the well-known situation of allomorphy:

- (9) *Allomorphy:* When a set of features F on a single syntactic terminal has more than one distinct phonological realization

Let’s consider a relatively simple case of phonologically-conditioned allomorphy: the Nominative Case suffix in Korean.

- (10) Korean allomorphy: $[\text{Nom}] \leftrightarrow /-ka/$ when stem is V-final; $/-i/$ when stem is C-final

Within DM, allomorphic effects may only arise as a function of elements *within the current derivation*. Thus, by hypothesis, no effects can arise due to the phonology of “related words”.

- (11) **DM Hypothesis II:** Allomorphy can only be conditioned by the phonology in the current derivation, **not** by the phonology of **other derivations**

In other words, the choice of which allomorph will realize Korean nominative case is not dependent on which allomorph realizes dative case for that stem.

Having outlined these two core principles of DM, we proceed to the empirical focus of the paper: the Russian Case system. The Russian Case system supports both hypotheses: (I) Gender and Class distinctions

³Here and elsewhere, “paradigm” refers to a group of featural complexes that share a superordinate feature (e.g. “Past”). The present framework, however, ascribes no psychological reality to the row-and-column arrangement that is graphically used to display distinctions within a featural space.

are neutralized in the *marked* environment: [+Oblique, +Pl], and (II) *allomorphy* is *locally determined* by the phonological form of the Stem. However, as we will go to some lengths in discussing, the genitive plural presents an apparent conundrum; as existing accounts of its realization either violate Hypothesis I (8) or II (11). In the next section, we turn to a basic outline of Russian inflection. In Section 3, we introduce the Genitive Plural conundrum. In Sections 4-5, we discuss the solution to the problem. Section 6 discusses the productivity of allomorphy in the Genitive Plural. Section 7 turns to an interesting complication with the so-called “paucal” numbers of Russian. Section 8 concludes.

2. The organization of Russian inflection

Before turning to the conundrum represented by genitive plural formation in Russian, it is necessary to provide some general background on the word formation system of the language and the productive rules that are involved in the organization of Russian inflected words. To do this, we begin with the verbal paradigm, relying on what has been the standard analysis since Jakobson 1948, reflected also in Levin 1978, and assumed to be uncontroversial in most works on Russian morphology. The crucial elements of Russian word formation are (i) THEME VOWELS and (ii) “Jakobson’s Rule”, a productive truncation rule that systematically applies in all relevant cases of word formation. We will see in the verbal paradigm how these rules apply, and then will turn to the apparently simpler Nominal paradigm, where Theme vowels appear to be absent, thus setting the table for the appearance of Genitive plural as a conundrum with regard to the markedness generalizations discussed above.

2.1. Verbal Paradigms

Russian verbal morphology works in a very systematic fashion. Every verb form consists of three basic parts: a ROOT (always ending in a consonant and usually CVC or CVCVC in form), a THEME constituent (which can be a vowel, a sequence of segments, or zero) and an INFLECTIONAL COMPLEX as determined by the particular usage at hand. The ROOT + THEME together make up the STEM. The INFLECTIONAL SUFFIXES (e.g. tense and agreement) are added directly to the STEM, subject to Jakobson’s Rule (see directly below). (12) provides a full list of the verbal THEMES available in the language⁴:

(12) Russian verbal THEMES (Levin 1978):⁵

-A-	e.g. pis+a ‘write’
-AJ-	e.g. pis+aj ‘piss’
-I-	e.g. govor+i ‘speak’
-E-	e.g. bol+e ‘hurt’
-EJ-	e.g. bol+ej ‘be sick’
-NU-	e.g. ver+nu ‘return’
-O-	e.g. kol+o ‘stab’
-OVA-	e.g. ris+ova ‘draw’
-∅-	e.g. stan+∅ ‘become’

Tense suffixes come in many forms, but an important generalization exists that helps to elucidate the patterns found: Present tense morphemes all begin with vowels, in both conjugations, whereas past tense and infinitival morphemes begin with consonants. Thus for every verb type, there will be instances where the morpheme begins with V and instances where it begins with C. This is of direct relevance to Jakobson’s Rule, which is provided below.

(13) Truncation Rules (Jakobson (1948); Halle (1994))

a. $V \rightarrow \emptyset / _ V$

⁴There are also three verbal suffixes (-AJ,-VAJ and -IVAJ) that can be added to the STEM in imperfective derivation to form a new, imperfective STEM. Jakobson’s Rule applies to these combinations as well, and the resulting new STEM always ends in -AJ, thus reducing these cases to instances of (1b). We will therefore not discuss these further here, although see Levin 1978 for discussion.

⁵There are two subclasses of -nu-: in one, the theme does not appear in the past tense.

- b. $C \rightarrow \emptyset / _ C$

Examples of resulting derivations are given below.⁶

- (14) p'is + A ('to write')
- a. p'is + A + u = p'išu [1sg] (**A truncates**)
+ot = p'išot [3sg] (**A truncates**)
+ut = p'išut [3pl] (**A truncates**)
 - b. p'is + A + t',l = p'isat' [infin.] / p'isal [past-masc.sg]
- (15) p'is + AJ ('to piss')
- a. p'is + AJ + u = p'isaju [1sg]
+ot = p'isajot [3sg]
+ut = p'isajut [3pl]
 - b. p'is + AJ + t',l = p'isat' [infin.] / p'isal [past-masc.sg] (**J truncates**)
- (16) govor + I ('to speak')
- a. govor + I + u = govor'u [1sg] (**I truncates**)
+it = govor'it [3sg] (**I truncates**)
+at = govor'at [3pl] (**I truncates**)
 - b. govor + I + t',l = govor'it' [infin.] / govor'il [past-masc.sg]
- (17) bol + E ('to hurt')
- a. bol + E + it = bol'it [3sg] (**E truncates**)
+at = bol'at [3pl] (**E truncates**)
 - b. bol + E + t',l = bol'et' [infin.] / bol'el [past-masc.sg]
- (18) bol + EJ ('to be sick')
- a. bol + EJ + u = bol'eju [1sg]
+ot = bol'ejot [3sg]
+ut = bol'ejut [3pl]
 - b. bol + EJ + t',l = bol'et' [infin.] / bol'el [past-masc.sg] (**J truncates**)

Notice that because of the effects of the truncation rule deleting the first of a sequence of consonants, the infinitives and past tenses of the verbs 'to write' and 'to piss' are the same, because the theme ending /-j/ in the latter deletes in contact with the /-t'/ ending of the infinitive or /-l/ ending of the past tense, rendering the forms identical. Similarly, the verbs 'to hurt' and 'to be sick' will also have the same infinitive and past tense forms. In both cases, however, the difference in theme is reflected in the present tense forms, where the full theme -AJ- or -EJ- is retained, whereas the themes -A- and -E- are truncated as the first V of a V+V sequence.

2.2. Nominal paradigms

Many readers will be familiar with *yers*, a class of short vowels that were found throughout earlier forms of Slavic and that dropped out historically, either disappearing entirely, or merging with full vowels. The historical rule of *yer drop* is maintained in the synchronic grammar of the language (see Lightner (1972)), by virtue of the *yer deletion* rule, which acts now as it did historically. Under yer deletion, yers will delete in "weak" positions, namely everywhere except when the following syllable itself contains a yer. A yer is

⁶A further consonant mutation takes place in the first conjugation when a theme vowel is deleted in the present tense, changing s → š in the case of 'to write'. This is a productive process which is irrelevant to the discussion at hand (but see Levin 1978).

“strong” if the following syllable contains a yer. Strong yers are retained, and in surfacing, they merge with another phoneme, by a rule of yer *realization*, which results in the mid vowel *e* or *o*.⁷

(19) **Yer realization rule** (operative throughout Russian):

$\text{ь, ы} \rightarrow \text{e, o}$ if the next σ contains a Ъ or Ы

(20) **Yer deletion rule** (operative throughout Russian):

$\text{ь, ы} \rightarrow \emptyset$ unless the next σ contains a Ъ or Ы

The relevance of yers for the discussion of Russian nominal paradigms arises when one of the case endings contains a yer, such as the nominative singular of many nouns. If there is a yer in the stem, it will be realized, as in (19). On the other hand, if the case ending does not contain a yer in the first syllable, the stem yer will not surface, due to (20). The effect of these two rules yields vowel-zero alternations for stems that contain a yer, such as the masculine noun л' (ь) в ‘lion’:

(21) a. $\text{л' (ь) в} + \text{ь (nominative singular)} \rightarrow \text{л' ev}$ (by (19) of first yer and (20) of second yer) $\text{л' (ь) в} + \text{а (genitive singular)} \rightarrow \text{л' va}$ (by (20) of first yer)

There are three genders in Russian (MASC, FEM, and NEUT) as well as three nominal classes, which we call I, II and III.⁸ Note that gender still needs to be specified for classes one and two under this system. It is important to distinguish Gender from Class in the analysis of Russian nominals, and this distinction is crucial for what follows. We take Class to determine a paradigm of endings, whereas Gender determines agreement. There is a fairly systematic correlation between the two, but the examples in (22) and (23) show that neither Class nor Gender can be eliminated in the description of the nominal system, because the correlation is not absolute.⁹

(22) FEM. ADJ:

a. prostaja kn'iga
simple-fem.sg book-fem.sg-CLASS I

b. prostaja dv'er'
simple-fem.sg door-fem.sg-CLASS III

(23) MASC. ADJ:

⁷In Halle and Nevins (2006) the ordering of vowel truncation and yer-rules receives a complete treatment; in brief, both a cyclic and post-cyclic version of yer-realization exist; the former is applied before Jakobson's rule (which is cyclic), and the latter is applied postcyclically, after all applications of Jakobson's rule.

⁸These classes are based on Levin 1978, who labels the classes as “non-neuter”, “non-feminine”, and “feminine”.

⁹We note the existence of examples such as *devuška* ‘girl’, which is Class I and female, and *djadja* ‘uncle’, which is Class I and male. While both inflect identically in terms of their own case-number endings (determined by declension class), only the latter triggers masculine verbal agreement on a verb. Such examples demonstrate the need for adopting a distinction between declension class and gender, and necessitate revisions to analyses such as Rice (2005) which only discuss conflict in terms of semantic gender and biological reality. As Harris (1991) has pointed out, declension class is an additional source of conflicting demands on morphological form. Finally we note that DP-internal concord and verbal agreement may differ, in that the latter may reflect biological gender while the former cannot. Thus, a female president's arrival may be reported as (i) but never as (ii)

(i) Novyj prezident priexala
New-masc. president-masc. arrived-**fem**
“The new (female) president arrived”

(ii) *Novaja prezident priexala
New-**fem**. president-masc. arrived-**fem**

See Rappaport (2006) for a syntactic analysis of these facts.

- a. *prostoj* *stol*
 simple-masc.sg table-masc.sg-CLASS II
- b. *prostoj* *starosta*
 simple-masc.sg leader-masc.sg-CLASS I

(22) & (23) show that adjectival agreement within a nominal depends on Gender and not Class. Thus Class I nouns can be feminine, as in (22-a), or masculine, as in (23-b). Conversely, Class III nouns are feminine, thus sharing agreement patterns with most (but not all) Class I nouns (compare identical agreement patterns in (22-a-b)). The overall possibilities are summarized in the two tables below:

- (24) Class/Gender relations on Left; Gender/Class correlations on Right:¹⁰

Class	Gender	Gender	Class
I	MASC or FEM	FEM	I or III
II	MASC or NEUT (M = IIa, N, = IIb)	MASC	I or II
III	FEM	NEUT	II

The situation with nominal paradigms appears to be simpler than that of verbal paradigms only because nominals appear to contain no THEME. Thus nominal forms consist only of a ROOT (always C-final, as in verbal roots) and an ENDING, which are always V-initial. Thus we do not expect Jakobson's Rule to apply in these cases, which therefore show simple concatenation¹¹. Examples are given in (25).

- (25)

(Trad.) Stem	Gender	Class	Nom. Sg	Dat Sg	Gen Sg	Instr Sg	Dat Pl
<i>kn'ig-</i> <i>book</i>	F	CLASS I	<i>kn'iga</i>	<i>kn'ig'e</i>	<i>kn'ig'i</i>	<i>kn'igoj</i>	<i>kn'igam</i>
<i>stol-</i> <i>table</i>	M	CLASS IIA	<i>stol</i>	<i>stolu</i>	<i>stola</i>	<i>stolom</i>	<i>stolam</i>
<i>zv'er'-</i> <i>beast</i>	M	CLASS IIA	<i>zv'er'</i>	<i>zv'er'u</i>	<i>zv'er'a</i>	<i>zv'er'om</i>	<i>zv'er'am</i>
<i>nož-</i> <i>knife</i>	M	CLASS IIA	<i>nož</i>	<i>nožu</i>	<i>noža</i>	<i>nožom</i>	<i>nožam</i>
<i>ok(ǝ)n-</i> <i>window</i>	N	CLASS IIB	<i>okno</i>	<i>oknu</i>	<i>okna</i>	<i>oknom</i>	<i>oknam</i>
<i>dv'er'-</i> <i>door</i>	F	CLASS III	<i>dv'er'</i>	<i>dv'er'i</i>	<i>dv'er'i</i>	<i>dv'er'ju</i>	<i>dv'er'am</i>

- (26) Traditional Classification of Endings:

	Nom. Sg.	Dat. Sg.	Gen. Sg.
Class I	-a	-e	-i
Class II	-∅	-u	-a
Class IIb	-o	-u	-a
Class III	-∅	-i	-i

In the traditional analysis of Nominals, the ROOT and the STEM are identical (as shown in the left column of (25)). Simple concatenation then produces the inflected forms found throughout the chart. Notice that the Class IIA and Class III Nominative singular endings are the only ∅ endings in the paradigms. (The chart also shows that Classes II-a and II-b form a unified paradigm in all cases other than the Nominative (and Accusative, not shown here), hence their treatment as sub-classes.)

We turn to a generalization about syncretism in the nominal paradigm. Notice that (26) also provides the Gender and Class information for each of these examples. Only one plural ending is provided in the chart of nominal paradigms in (25), but the generalization about syncretism we can draw from it applies to the other oblique plurals as well (Instrumental and Prepositional), namely that all Class and Gender information is neutralized in the plural. This is generally known: "It is a general property of Russian that gender is

¹⁰Class III is often said to include one masculine noun *put'* 'path' – however, as its instrumental ending is that of Class II, it appears to be in the process of reanalysis.

¹¹The consonantal truncation rule applies to any C+C combination except for the Instrumental singular of Class III nouns, where a ROOT ending in a soft consonant (/dv'er'-/, door) meets the only nominal ending beginning with a consonant, /-ju/. No truncation results in such cases. In order to allow for such cases, we have limited the C truncation rule to instances where C2 is not a glide.

never distinguished morphologically in the plural” (Bobaljik 2002: 11)) although the generalization should presumably make reference to Class rather than (or in addition to) Gender. The appropriate generalization is given in (27).

(27) Russian Syncretism Generalizations:

- a. *Markedness*: Gender and Class distinctions are neutralized in oblique plural forms
- b. *Locally-Determined Allomorphy*: All case-endings can be determined by the concatenation of STEM+AFFIX, with allomorphy determined by regular phonologically-conditioned rules. No reference to output forms or other derivations is required.

Examples of the other oblique plurals are given in (29) ¹²¹³

(28)	DAT	dv'er'am	kn'igam	stolam	oknam	(all /am/)
	PREP	dv'er'ax	kn'igax	stolax	oknax	(all /ax/)
	INST	dv'er'am'i	kn'igam'i	stolam'i	oknam'i	(all /am'i/)

It is worth noting at this point that adjectival paradigms are generally similar to nominal paradigms, and can be analyzed using similar grammatical mechanisms for allomorphy and syncretisms (Matushansky and Halle, 2006). If this is the case, we would expect (27) to hold for adjectival paradigms as well, and it does, in fact in slightly stronger form, not being sensitive to the oblique vs. non-oblique distinction. This is shown in (29):

(29) Class distinction is also neutralized in plural adjectives:

NOM.PL	↔	-yje (prostye okna, kn'ig'i, dv'er'i, doma, starosty)
PREP/GEN.PL	↔	-yx
DAT.PL	↔	-ym
INST.PL	↔	-ym'i

In the next section we will see that the forms of the genitive plural in Russian appear to contradict both generalizations given in (27), the problem that is the central concern of this article. The analysis we propose will allow a form of (27) to be maintained, as is desirable.

3. The Genitive Plural conundrum

At first glance, the genitive Plural paradigm in Russian indicates that the neither the markedness nor the locally-derived halves of the syncretism generalization given in (27) hold. This is shown in (30), where there are three different endings for the genitive plural, which appear to be based on the gender and class of the noun.

¹²Syncretism has also been handled using a system of binary features (Müller 2003) rather than through markedness neutralization conditions of the kind given in (27). Müller argues, for example, that Classes I and III share the Gen Sg ending /-i/ because I and III both consist of a more primitive feature /-α/. However, the features proposed do not really have independent semantic or morphological justification, and this system has no way to handle the genitive plural facts discussed below. We do not therefore address feature systems for syncretism further in this article. Interested readers are referred to Müller (2003).

¹³There are a few exceptions to the instrumental plural ending -am'i, such as *lošad'mi* 'horses (inst. pl.)'. We assume these allomorphs are listed.

(30)

(Trad.) Stem	Gender	Class	Nom. Sg	Gen Pl	“Ending”
kn’ig <i>book</i>	F	CLASS I	kn’iga	kn’ig	-∅
stol <i>table</i>	M	CLASS IIA	stol	stolov	-ov
zv’er’ <i>beast</i>	M	CLASS IIA	zv’er’	zver’ej	-ej
nož <i>knife</i>	M	CLASS IIA	nož	nožej	-ej
ok(ъ)n <i>window</i>	N	CLASS IIB	okno	okon	-∅
dv’er’ <i>door</i>	F	CLASS III	dv’er’	dv’er’ej	-ej
noč’ <i>night</i>	F	CLASS III	noč’	noč’ej	-ej

In (30), there appear to be three distinct Gen Pl endings in the language: $/-\emptyset/$, $/-ov/$, and $/-ej/$. There are some initially tempting Gender-based generalizations that one can make, such as the fact that neuter nouns always take the zero ending¹⁴. However, it is also clear that neither Class nor Gender information alone is sufficient to predict the distribution of the genitive plural endings. For example, we may observe that Class I shares the $/-\emptyset/$ ending with Class II-b. We may also observe that while Class III shares the $/-ej/$ ending with some nouns of Class II-a, there are other members of Class II-a that are unique in having the $/-ov/$ ending. Thus, a completely transparent mapping of these three endings to a unique corresponding gender/class category does not hold, as it does for other inflectional endings that are held to really depend on gender/class features, such as the singular endings of (25).

There are two classes of approaches to characterizing the conditions on selection of these three endings. The first class of approaches requires abandoning the otherwise well-motivated neutralization hypothesis of (27). The second class of approaches requires abandoning the otherwise restrictive condition on locally-determined allomorphy introduced in Section 1.3. After presenting and discussing existing analyses that abandon each of these hypotheses, we turn to our own proposal, which is able to maintain both.

3.1. Models that Abandon the Gender Neutralization Hypothesis

Halle 1994 proposes a system whereby the apparent allomorphy shown by the genitive plural endings is in fact a complex form of phonologically determined allomorphy. In Halle’s system, there is a single, uniform ending for the genitive plural which is a back yer $/-ъ/$.

Halle’s derivation of the genitive plural is shown in (31) for the noun *guba* ‘lip’. The theme vowel *-a-* deletes in pre-vocalic position (due to Jakobson’s rule), as yer is, by hypothesis, a vowel. In the next rule application, the yer itself deletes as the result of (20).

(31) Genitive Plural: $\text{gub} + \text{a} + \text{ъ} \rightarrow \text{gub} + \text{ъ} \rightarrow \text{gub}$ ‘lip’ (gen. pl.)

Halle derives the varying surface forms of the genitive plural *phonologically*, through a complex series of insertion and deletion rules, as follows. The ordinary state of affairs is as in (31), where the stem *guba* becomes *gub* through addition of the Pl-Gen yer, which yields the surface appearance of a zero ending.

However, Halle’s most important addition to this account is a morphologically-conditioned rule of Glide Insertion, in order to derive the instances where the Gen Pl ending does not end up as $/-\emptyset/$. The conditions on glide insertion are provided in (32)

(32) Glide Insertion contexts from Halle 1994:

- A glide is inserted *after all Class III stems*.
- *After class II stems* the glide is generally inserted after masculine, but *not after neuter stems*. There are however exceptions in both directions.
- *After class I stems* the glide is inserted after stems ending in clusters consisting of a consonant followed by a soft liquid $/r, l/$ or by $/č, š, ž/$.

¹⁴There are some exceptions, such as *pol’e* nom. sg, *pol’ej* gen.pl, ‘field’, and *oblako* nom.sg, *oblakov* gen.pl ‘cloud’.

In other words, glide insertion serves to place a glide (which is a consonant) in between the final stem vowel and the Gen-Pl yer, thus blocking the context for Jakobson's rule of vowel deletion. In Halle's words, "[When glide insertion occurs], the Theme vowel surfaces as either /o/ or /e/ [according to readjustment rules]. The theme vowel surfaces because of the insertion of the glide after the theme". A sample derivation under Halle's account is illustrated below.

- (33) a. $um+o+\tau \rightarrow um+o+j+\tau \rightarrow um+o+v+\tau \rightarrow umov$ 'reason'
b. $car'+e+\tau \rightarrow car'+e+j+\tau \rightarrow car'ej$ 'tsar'

First, a glide /j/ is inserted after the theme vowel (assumed to be present in Halle's account). This glide may be changed to /v/ in certain circumstances. Then, the Gen-Pl ending yer is added. Finally, it is deleted by the rule of yer-deletion. Clearly, the most important work is being done by the rule of glide insertion.

The account is thus able to derive the three endings identified above for the Gen Pl, not as a set of allomorphs, but as the result of a single ending (yer), that is supplemented by two highly specific additional morphologically conditioned rules (Glide Insertion and the j~v alternation). However it requires strong violation of the (otherwise) exceptionless generalization of markedness stated in (27) above. In particular, as can be seen in (32), Halle's Glide Insertion Rule requires reference to *both* Class and Gender information. (Note that this would be the *only* ending in Russian that required referring to *both* class *and* gender). In particular, a Glide is inserted in all classes except Classes I and II-b (a non-natural class of declension Classes). Thus, Glide Insertion occurs in exactly those instances where the eventual result is not a /-∅/ allomorph. Furthermore, the two Classes that trigger Glide Insertion, in addition to being themselves an unnatural class, happen to be the two Classes where the Nom sg ending is not /-∅/. In short, Halle's account not only requires reference to class and gender information in order to determine the realization of an oblique plural, but it does so in a way that seems to be missing a generalization about the phonological form of the stems prior to genitive plural formation. This latter observation forms the basis of a different kind of account, to which we return below. The next class of approaches to be examined uphold the Markedness constraint (27), although they do so at the expense of violating the restriction on allomorphic conditioning identified in (7).

3.2. Models that violate Locally-Determined Allomorphy

Another approach to explaining the distribution of genitive plural endings relies on a transderivational condition, as found in Jakobson (1957) and later, Levin (1978). Intuitively, this condition is simple: nouns whose Nominative singular form ends in a vowel have a ∅ ending in the genitive plural; whereas those with a zero ending in the Nominative singular select either /-ej/ or /-ov/, a sub-distribution that can be handled in purely phonological terms. This approach is summarized in (34)-(35).

- (34) *Transderivational analysis*: The phonological form of the Genitive Plural is predictable based on the phonological form of Nominative Singular (somehow available):

(35)

Structural Description	Structural Change	Example	Gender	Class
NOM.SG ends in V	Suffix ∅	kn'iga → knig, zdani ^j o → zdani ^j	M, F, N	I, IIb
NOM.SG ends in C' or palatal fric.	Suffix /-ej/	zv'er' → zv'er'ej	M, F	IIa, III
NOM.SG ends in C or /j/	Suffix /-ov/	stol → stolov	M, F	IIa, III

The primary problem with the approach outlined in (34)-(35), of course, is its direct reference to the Nominative singular form in deriving the genitive Plural form, which violates DM Hypothesis 2, given in (11), repeated below:

- (36) **DM Hypothesis II**: Allomorphy can only be conditioned by the phonology in the current derivation, **not** by the phonology of **other derivations**

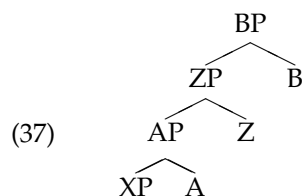
Abandonment of (36) results in a theory with very little restrictiveness, and predicts the existence of languages in which, say, the dative singular is determined by examining the form of the accusative plural and performing some operations on the output of that other derivation. Therefore, we seek a solution to the genitive plural conundrum that violates neither of the leading DM hypotheses, and which allows us to maintain the markedness hierarchy proposed earlier, and presented for Russian in (27). Before turning to our proposal, however, a brief discussion of the possible privileged status of the nominative singular is in order. Some readers, for example, may object that the reference to the nominative singular countenanced in (35) does not represent a wholesale abandonment of (36), because the nominative singular has a privileged status within the inflectional paradigm. The idea would be that the genitive plural can reference the nominative singular because there is some unique relation between these two. We examine the status of the nominative singular in the next subsection.

3.3. Does the Nom Sg have a privileged status?

When two morphologically-related forms A and B show shared phonological behavior in the sense that the phonological form of B is somehow determined by A, there are two grammatical sources that may be posited for this shared behavior.

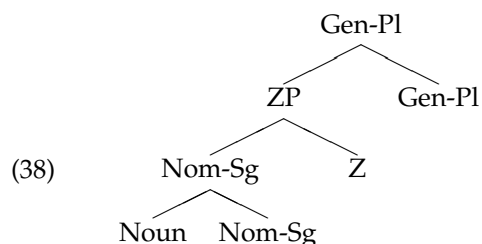
3.3.1 Pre-derivational relations between forms

The first mechanism is that there is a pre-derivational source for the shared behavior; in other words, a *subsumption* relation between the morphosyntactic features (MSF) of A and B, so that $MSF(A) \subset MSF(B)$. Usually, when $MSF(A) \subset MSF(B)$, then A itself is represented as a “subtree” of B, where Z represents possible intermediate derivational material.



Examples of a morphosyntactic subtree/subsumption effect on phonological form include standard cyclicity effects as discussed in Chomsky and Halle (1968), such as the fact that *cycle* [sajk.l̩] may retain its syllabic liquid even in the gerundive form *cycling* [sajk.l̩.iŋ], even though there is no phonological reason for the [l̩] to remain syllabic when a vowel-initial suffix is added. In this case, we may think of “A” as the verb *cycle* and “B” as the additional structure added by the gerundive suffix. The phonological “overapplication” of the nuclear syllabification of a liquid consonant is thus viewed as the result of the derivational history of B.

This mechanism might seem initially plausible as a means of understanding why the derivation of the genitive plural would have access to the nominative singular, an “earlier” stage of its derivation, by hypothesis:



In this case, however, it is implausible to imagine a subtree-based derivational relationship between Nominative Singular and Genitive Plural that does not include as an intermediate stage the forms of *Nominative Plural* or *Genitive Singular*. That is to say, what could “Z” in (38) possibly consist of, such that it would

take Nominative to Genitive and Singular to Plural, without passing through the intermediate derivational stages of Nom-Pl and Gen-Sg? Nonetheless, as has been discussed above, Nom-Pl and Gen-Sg show no such apparent phonological dependence on the nominative singular to account for their form (and moreover, as pointed out in the introduction, for all feminine nouns, the nom-pl and gen-sg are identical to *each other* to the exclusion of both the nom-sg and gen-pl). A subsumption-based mechanism, therefore, regardless of its merits elsewhere in the grammar of natural languages, is not sufficient to explain the genitive plural conundrum.

3.3.2 Trans-derivational relations between forms

A second grammatical mechanism that is employed to explain asymmetric phonological dependence between forms is transderivational in nature, and usually is instantiated in Optimality-Theoretic terms by Output-Output Correspondence. According to Kager (1999), Output-Output Correspondence relations, in which the derivation of a form B depends on the derivation of another form A, are limited to cases in which A and B differ by only one morphosyntactic feature, in other words, where $|\text{MSF}(A) - \text{MSF}(B)| = 1$. This restriction makes strong predictions about where Output-Output Correspondence is possible. Taken literally, the putative phonological dependence of the Genitive Plural on the Nominative Singular thus cannot be the result of Output-Output Correspondence, since it is implausible, again, that the Nominative Singular could differ from the Genitive Plural by a single morphosyntactic feature. An intermediate route of transderivational correspondence through either the Nominative Plural or the Genitive Singular would also predict phonological dependence of these forms on the Nominative Singular, counter to fact.

We thus conclude that morphosyntactically-based accounts of phonological dependence, either through pre-derivational or transderivational sources, are at present appropriately restrictive and constrained in grammatical theory, and hence we will not attempt to modify these accounts in the hopes of solving the Russian genitive plural conundrum. Rather, we will seek an account in which it is not the nominative singular at all on which the genitive plural depends. We now turn to our proposal.

4. The Proposal

Having determined that Nominative singular does not have a privileged status in Russian that would lead us to expect phonological effects on the Genitive Plural to the exclusion of all other case-number combinations, we turn now to our own proposal for the proper analysis of Genitive Plural formation in Russian.

Our proposal is quite simple. First, we preserve the intuition of Halle's account in positing a yer (ɯ) genitive plural form in some (but not all!) instances of genitive plural realization. This yer is crucial in the derivation – since it is a vowel, it provides the environment for the *phonological* truncation of a preceding vowel, dubbed Jakobson's rule above. Thus, as we will see, Halle's (1994) intuition that yers are at play in this derivation is thus maintained in the proposal, but without any reference made to Class or Gender information in deriving Genitive plurals. Second, with Levin 1978, we share the intuition that the phonological form of the input to the derivation is relevant, rather than any reference at all to the inflectional features of gender and class. In fact, gender and class features still may undergo impoverishment in the environment of Oblique Plural, with no effect on the mechanism we will require to derive the distribution of allomorphs.

The core of the proposal is this: *what appears to be the Nominative singular form of Russian nouns is actually the STEM*. More precisely, in all cases the Nominative singular is phonologically identical to the STEM (though not morphologically identical, as the STEM, i.e. ROOT + THEME contains no case or number features). Since the phonological form of the Nominative Singular is the stem, a version of (35) can be used in producing the Genitive Plural forms without reference to the Nominative singular form directly. The core of this possibility rests on the proposal that like verbs and adjectives, Russian nouns also contain THEME vowels. This claim runs counter to structuralist and generative analyses of certain noun classes, where what we claim are theme vowels have been identified as Nominative singular endings. This claim is presented in (39):

(39) *Theme vowels in nouns:* Just as in verbs, all Russian nouns require a theme vowel: A, O, or \emptyset

In particular, Class I nouns are exactly defined by being those nouns that have an /-A-/ theme (rather than those with no Theme and an /-a/ ending in the Nominative singular. Thus what was previously analyzed as /knig-/ + /-a/, with /-a/ as a case-number allomorph for Class I nouns, is a misanalysis. The proper analysis should be /knig + A / + / \emptyset /, where the case-number ending for nominative singular is a zero morpheme. Similarly, Class II-b nouns have an /-O-/ THEME and a \emptyset ending, rather than a \emptyset THEME and an /-O-/ ending. All other nouns (Class II-a and III) will have \emptyset - THEMES, and either \emptyset or u endings. While theme vowel content must refer to the inherent gender and class features of the noun, plural case endings do not refer to inherent gender or class. This analysis allows us to maintain a version of (35), which contained the right intuition, in our view, but the wrong implementation. Now, the distribution of Genitive Plural endings will depend on the form of the Stem (that is, on the phonological nature of the THEME) and the Genitive Plural ending emerges with no reference necessary to Class or gender information per se, nor to any other output forms in the nominal paradigm, thus preserving both of the major DM hypotheses presented in Section 1.

(40) Purely phonologically-determined allomorphy in Genitive Plural; upholds (7)

Environment	GEN.PL Allomorph
STEM ends in V	Suffix /-ɤ/ (YER)
STEM ends in C' or palatal fric.	Suffix /-ej/
STEM ends [elsewhere]	Suffix /-ov/

In the first instance (Classes I and II-b), a STEM ending in a vowel will take a yer ending. Phonology-as-usual will apply, and deliver an output that is identical to the bare noun ROOT itself – without the theme vowel formative. This occurs as follows. By suffixation of a yer, the environment for Jakobson's truncation rule is met (V meets V), and the first V is therefore truncated. We have therefore reduced the morphological truncation apparently found in Genitive plurals to the independently motivated phonological truncation rule in the language, attested throughout the verbal system, as shown above. In such instances, the Genitive Plural emerges as a form identical to the ROOT, the THEME having been truncated by Jakobson's rule, and the yer dropped by the standard yer dropping rule.

In all other instances, namely those where the Stem ends in a C, purely phonological factors determine which allomorph surfaces. Recall that this phonological subregularity existed in Levin's account already, but required reference to the Nominative singular to determine whether it was active or not. Now, the choice can be motivated on purely phonological grounds within the local derivation, as desired. (Derivations will be given below).

Before showing full derivations, however, it is important to point out the effect of this reanalysis on the rest of the declension system. Under this approach, nouns with \emptyset Nominative singular endings wear their THEME vowels on their sleeves, as it were, but in the Nominative singular only. In all other instances, the required (and phonologically contentful) case+number ending begins with a vowel, causing truncation of the THEME vowel, and deriving the exact set of forms expected, as they would come out in the system that does not claim THEME vowels for nouns. Thus the reanalysis does not cause any further complications elsewhere in the declension system.

We turn to derivations of nouns of various classes, in the Genitive Plural, Nominative Singular, Dative Singular and Dative Plural forms. The Dative Plural is included to show that the markedness reduction claimed for oblique plurals in (27) remains fully intact in this system.

(41) Nominative Singular Revisited:

[ROOT]	THEME]	CASE+NUM	SURFACE
kn'ig	+ A	+ ∅	kn'iga
stol	+ ∅	+ ɓ	stol (YER deletes)
zv'er'	+ ∅	+ ɓ	zv'er' (YER deletes)
ot(ɓ)c	+ ∅	+ ɓ	otec (first YER undergoes realization, second YER deletes)
ok(ɓ) n	+ O	+ ∅	okno (root YER deletes)
dv'er'	+ ∅	+ ∅	dv'er'

(42) Genitive Singular Derivations:

[ROOT]	THEME]	CASE+NUM	SURFACE
kn'ig	+ A	+ i	kn'igi (THEME truncates)
stol	+ ∅	+ a	stola
zv'er'	+ ∅	+ a	zv'er'a
ot(ɓ)c	+ ∅	+ a	otca (root YER deletes)
ok(ɓ) n	+ O	+ a	okna (THEME truncates, root YER deletes)
dv'er'	+ ∅	+ i	dv'er'i

(43) Genitive Plural Derivations:

[ROOT]	THEME]	CASE+NUM	SURFACE
kn'ig	+ A	+ ɓ	kn'ig (THEME truncates, then YER deletes)
stol	+ ∅	+ ov	stolov
zv'er'	+ ∅	+ ej	zv'er'ej
ot(ɓ)c	+ ∅	+ ov	(root YER deletes)
ok(ɓ) n	+ O	+ ɓ	okon (THEME truncates, root YER is realized, then second YER deletes)
dv'er'	+ ∅	+ ej	dv'er'ej

Exemplifying further derivations for completeness:

(44) Dative Endings

/-e/ ↔ Class I, singular
 /-u/ ↔ Class II, singular
 /-i/ ↔ Class III, singular
 /-am/ ↔ plural

(45) Dative Singular Derivations:

[ROOT]	THEME]	CASE+NUM	SURFACE
kn'ig	+ A	+ e	kn'ig'e (A truncates)
stol	+ ∅	+ u	stolu
zv'er'	+ ∅	+ u	zv'er'u
nož	+ ∅	+ u	nožu
ok(ɓ) n	+ O	+ u	oknu (O truncates, root YER deletes)
dv'er'	+ ∅	+ i	dv'er'i

(46) Dative Plural Derivations:

[ROOT]	THEME]	CASE+NUM	SURFACE
kn'ig	+ A	+ am	kn'igam (A truncates)
stol	+ ∅	+ am	stolam
zv'er'	+ ∅	+ am	zv'er'am
nož	+ ∅	+ am	nožam
ok(ɓ) n	+ O	+ am	oknam (O truncates)
dv'er'	+ ∅	+ am	dv'er'am

The first advantage of this account is that it unifies the derivational morphology of the nominal system with

what is already known about the verbal system. In particular, all basic categories (N,V,A) are required to have THEMES. The status of the nominal system alone as not having any THEMES in certain analyses is an anomaly that our system allows us to overcome. Second, Class type can now be determined directly from the THEME, with one instance being split between two classes. This is shown in (47):

(47) Nominal Class type as determined by THEME type (our account):

THEME	CLASS
-A-	I
-∅-	II-a or III
-O-	II-b

In those stems with a ∅ THEME, Class can be further determined by the phonological shape of the end of the stem (which in such cases is of course the end of the root). In particular, only soft stems and sibilants can be Class III, whereas all others must be Class II-a.¹⁵

This is consistent with what is generally accepted about the language's derivational morphology – THEME type determines Class membership to a high degree of certainty. Thus in the verbal system, verbs with THEMES /-I-/ and /-E-/ are 2nd conjugation, those with /-AJ-/, /-EJ-/, /-OVA-/, /-NU-/. /-O-/, are 1st conjugation, and only those with /-A-/ can be either, with a subregularity about the preceding consonant being the determining factor. In short, Class type being related to THEME becomes as transparent in the nominal system as it is in the verbal system under our reanalysis.

To conclude this section, we will once more reiterate the point that under the proposal here, the derivation of the genitive plural is determined entirely *locally* – without reference to the output of other case output forms, and entirely without reference to the morphosyntactic features of class and gender, which can be impoverished, in accordance with (27), in the presence of oblique-plural morphosyntax, prior to any selection of the allomorphic exponents of the genitive-plural.

5. Productivity and the Wug test

There are several kinds of genitive plurals that appear to be exceptions to the conditions on allomorphic distribution in (40). A representative sample is presented below, where a ★ represents an output that is unexpected under our account thus far.

(48)

STEM	NOM.PL	GEN.PL (<i>Expected</i>)	GEN.PL (Actual)	
dýn'a	dýn'i	dýn'	dýn'	<i>melon (f.)</i>
pl'ečó	pl'éči	pl'eč	pl'eč	<i>shoulder (n.)</i>
pól'o	pol'á	pol'	★pol'éj	<i>field (n.)</i>
mór'o	mor'á	mor'	★mor'éj	<i>sea (n.)</i>
óblako	oblaká	oblak	★oblakóv	<i>cloud (n.)</i>
soldát	soldáty	soldátov	★soldát	<i>soldier (n.)</i>

The first two forms show the effects of Jakobson's rule when V meets V as expected in our system. However, the final four forms are exceptions. In the first two of the exceptional cases, the expected forms *pol'* and *mor'* are not found. Instead we find the exceptional forms *mor'éj* and *pol'éj*. This is unexpected in any of the accounts discussed thus far. (We return to the final two cases below). For cases such as these, it has been claimed in Pertsova (2004) that the relevant factor in the determination of the actual Genitive plural form

¹⁵No rules of correspondence will be able to predict that a minimal pair such as *dver'* ('door') and *zver'* ('beast') will differ in class, the former being Class III and the latter Class II-a. This will be true in any theory. (Note that *zver'* is Class III in Belorussian.) Thus, any root ending in a soft consonant containing a zero THEME will be undetermined as to whether it is Class III or Class II-a. This information will have to be specified lexically in most cases. Crucially, however, only our system will be able to explain on a purely phonological basis what genitive plural to expect for all cases; in this case, since both have a ∅ THEME, the end of the root will predict the /-ej/ form, which is in fact attested (*dverej*, *zverej*). Thus even this lexically underdetermined case lends strength to our analysis.

in Russian involves stress. Pertsova's account claims that it is the existence of *end stress* throughout the plural paradigms of these nouns that leads us to the attested form. That is, she claims that nouns must not have the (apparent) \emptyset Gen Pl. ending if all other forms in the plural paradigm are end stressed: "Nouns of the I and IIb declensions will have a zero ending in genitive plural if they have stress on the ending in the (oblique) plural" (Pertsova (2004)). (Note that there are nouns with mixed plural patterns in terms of stress, which on this account would allow the zero-ending.)

However, Pertsova's claim is clearly too strong, as shown by the following forms (from Levin 1978).

(49)

NOM.SG	NOM.PL	DAT.PL	GEN.PL		(Gen. Pl ending)
vod'ít'el'	vod'ít'el'i	vod'ítel'jam	vod'ítel'ej	'driver (m.)'	-ej
dom	domá	domám	domóv	'house' (m.)'	-ov
zdán'ije	zdánija	zdán'ijam	zdán'ij+ \emptyset	'building (n.)'	- \emptyset
stat'(ǐ)já	stat'(ǐ)jí	stat'(ǐ)jám	stat'éj+ \emptyset	'article (f.)'	- \emptyset
kočer(ǔ)gá	kočerg'í	kočer(ǔ)gám	kočer'óg+ \emptyset	'poker' (f.)'	- \emptyset
kn'az(ǔ)ná	kn'az(ǔ)ní	kn'az(ǔ)nám	kn'azón+ \emptyset	'princess' (f.)'	- \emptyset
kol'éjá	kol'éjí	kol'éjám	kol'éj+ \emptyset	'gauge' (f.)'	- \emptyset
chertá	chertí	chertám	chert	'feature'	- \emptyset

Notice that the final five forms in (49) all show end stress throughout the plural paradigm, and yet they have the apparently \emptyset form (derived from the yer deletion rule plus truncation of the theme vowel) resulting in a stem vowel being stressed in the genitive plural form *only* (a direct counterexample to Pertsova's claim)¹⁶ Thus the words for 'article', 'poker', 'princess', 'gauge', and 'feature' are end stressed throughout the plural but the Gen Pl still shows truncation of the theme vowel and thus stress on an earlier syllable. Clearly Pertsova would have to consider those forms the exceptions, rather than the forms in (49).

It appears that frequency favors our account: the forms in (49) are extremely rare, and therefore are far less likely to be exceptions in the synchronic language, as opposed to those in (48), which are extremely common and thus will tend to freeze exceptional formation. However in an attempt to determine which of the two sets of forms are productive, we created a "wug" test, whose details are given below:

(50) Wug test: "This is a Wug-NOM.SG. I like wugs-ACC.PL. I live with wugs-INSTR.PL. I have a lot of _ GEN.PL". Conducted with parallel Cyrillic and English transcription, with stress indicated, but not gender.

Seventeen native speaking respondents were given the forms in the following chart, with the Nom Sg, Acc Sg and Instr Pl they heard. They were asked to provide the Gen Pl. The results are given in (51). "Ineffable" means that the speaker thought there was no possible output.¹⁷

(51) Experimental Results with Novel Word formation

¹⁶The words for 'article', 'poker' and 'princess' end up with stress falling on the surfacing strong yer in the Genitive Plural (this vowel remains, according to the productive Yer Realization rule given above, due to the presence of the Genitive Plural yer (which itself deletes)). It could be argued that these forms do not counterexemplify Pertsova's claims, since the stress could be said not to fall on the stem, in a system whereby such vowels surface by a rule of epenthesis, rather than as realization as an underlying vowel present in the stem. (See Levin 1978 for an attempt to derive all vowel / zero alternations as phonologically determined). However, there are clear minimal pairs indicating that vowel / zero alternations cannot be determined purely phonologically. Thus the Class I noun *laska* has two meanings, 'caress' and 'weasel' and two different genitive plural forms: *lask* for the former meaning and *lások* for the latter. Clearly, no purely phonological rule can account for this distinction. Therefore, it must be lexically determined, and the lexical determination involves a different stem, the former without a yer, and the latter with one, which then surfaces as expected in the Gen. plural form. (There are also unexpected palatalization effects that can also not be predicted by a purely phonological epenthesis rule, but which are derived from the presence of an underlying yer). Therefore the vowels that surface in forms like *lások* as well as those in (48) above, are stem vowels, and their ability to take stress in the Gen Pl form alone stands as a counterexample to Pertsova's claim.

¹⁷A famous short story called *Kocherga* by Zoshchenko narrates an argument between office clerks putting in a requisition for five fireplace poker. The numeral 'five' in Russian requires the genitive plural, which would be stem-stressed only in the genitive plural (cf. *kočer'óg* above). Despondent that they cannot unanimously agree on what the correct form they should write is (in other words, they suffered from 'group ineffability'), the clerks employ a circumlocution to avoid the genitive plural.

NOM.SG	ACC.SG	INSTR.PL (predicted)	GEN.PL Experimental Result	percent	other productions
grapá k'ingá p'it'á tr'aló čúrko	grapý k'ingí p'it'í tr'ála čurká	grapám'í k'ingám'í p'it'am'í tr'álam'í čurkám'í	grap k'ing p'it' tr'al čurok	80% 93% 67% 65% 47%	2 grapov, 1 grap'ev (2 ineffable) 1 k'in'og (yer!) (1 ineffable) 5 p'it'ej, 1 p'it'ev (1 ineffable) 4 tr'álov, 2 tr'álej 7 čurkóv, 1 čúrkov (2 ineffable)
Total (Postaccenting)			70% 74%		

Of relevance to the discussion of stress at hand are the first two forms and the last form (all of which are end stressed in the plural). In all those cases, Pertsova's account predicts that the yer+deletion form (leading to an \emptyset ending) should *not* be preferred. However in the first two forms, this choice is the overwhelming favorite (80% and 93%). Only the 5th form does not strongly prefer the (apparently) zero ending, but neither is the other alternative preferred (47%). Thus the overall results of the Wug test indicate that stress is not the crucial factor. The forms shown in (48) then remain as lexical exceptions to an otherwise productive rule that neither needs to make reference to stress, nor to other forms in the paradigm, as Pertsova's account requires.

6. A possible counterexample to gender-impooverishment: Paucals

There is one environment in Russian which displays properties that might render it a potential counterexample to the claim that all gender information is neutralized in non-singular contexts, namely the behavior of adjectival forms in expressions with the numbers 2,3,4. (Let us refer to the numerals that induce these genitive singular endings as the *paucal* numbers). To see the potential problem paucal constructions raise for our markedness claim, consider first the examples in (52):

- (52) tr'i stola tr'i kn'ig'i tr'i dv'er'i tr'i okna tr'i zv'er'a
three tables three books three doors three windows three beasts

In (52) we see the endings that appear on nominals following paucals¹⁸. The endings on the nominals appear identical to the normal genitive singular endings. When the head noun is modified by an adjective, however, as in (53)-(54), a gender (and number) difference emerges (for many speakers), namely the adjective in question appears in the *Genitive Plural* for masculine and neuter head nouns and in the *Nominative Plural* for feminines:

- (53) tr'i prostyx stud'enta
three simple-**gen.pl** student-masc.gen.sg. (TENTATIVE GLOSS!)
- (54) tr'i prostyje kn'ig'i
three simple-**nom.pl** book-fem.gen.sg.

In (53), then, we have a Genitive plural adjective with a Genitive singular masculine noun, whereas in (54) we have a Nominative plural adjective with a Genitive singular feminine noun.¹⁹ Such a state of affairs is completely unknown in the Russian agreement and concord system, where concord is regular

¹⁸In fact, this behavior is limited to direct case contexts, that is contexts where the entire phrase is in a Nominative or Accusative position. In oblique contexts, such as that required by a preposition taking say Dative case, both the numeral and the nominal following it appear in the Dat plural. In those cases, adjectives modifying the nominal will also be Dative plural, and as usual there will be no gender distinctions on either the nouns or adjectives involved, thus rendering these examples consistent with the markedness generalization and irrelevant for present purposes.

¹⁹A reviewer points out that some speakers allow *prostyj* (i.e., the alleged genitive plural) in (54), whereas the opposite (i.e. usage of *prostye* in (53)) is unattested, suggesting that Borrás and Christian (1971) are correct in observing that the genitive plural form of adjectives may be spreading for all genders. Such a development does not undermine the paucal analysis in the text, and moreover supports the general trend of gender neutralization in non-singular contexts.

within a DP: adjectives always agree with their head noun for number, and for gender *in the singular only* (our markedness generalization). Here, however, in paucal constructions, we have a case where there is a number mismatch (a singular head noun with a plural adjective) and the *case* of the plural adjective is sensitive to the *gender* of the head noun. This last point is also the potential problem for our markedness generalization – how can there be a gender distinction in a plural context? Granted, it is marked through the use of a distinct case form (Genitive for masculine and Nominative for feminine), but it still amounts to a counter-example to our claim that in plural contexts gender is neutralized.

Of course the traditional analysis of paucals as genitive singular encounters more serious problems than just violating a markedness constraint. In particular if correct, it violates a basic morphosyntactic law of Russian concerning subject-verb agreement, as follows. When paucal constructions are in subject position, there can be plural agreement marked on the verb. This is shown in (55) and (56):

- (55) tr'i stud'enta byl'i na koncerte
 three students-masc.gen.sg. were-pl in the-concert
 "Three students were in the concert"
- (56) tr'i kn'ig'i byl'i na stole
 three books-fem.gen.sg. were-pl on the-table
 "Three books were on the table"

If the head nouns are genitive singular, as in the traditional glosses above, the question arises as to what accounts for the plural agreement in (55) and (56). Two possibilities come to mind: the agreement is with the head noun, or it is agreement with the head of the quantified expression itself, that is with the paucal numeral. In the first case, the claim is that the genitive singular head noun (*studenta* in (55)) determines plural agreement. Immediately there is the feature mismatch in number (a singular nominal with a plural verb). Secondly, there is the problem that verbal agreement in Russian is systematically restricted to Nominative subjects. To our knowledge, other than in controversial quantified expressions such as those under discussion, there are no cases of verbal agreement with non-nominative subjects. Indeed, in the well-known Nominative/Genitive alternations with negation (Babby (1980); Brown (1999); Borschev and Partee (2002)), agreement systematically appears with the Nominative and is impossible with the genitive.

- (57) morož ne čuvstvovalsja
 icecream.masc-Nom neg melt-3masc.sg.
- (58) moroža ne čuvstvovalos'
 icecream.masc-Gen neg melt-3.neut.sg (default)

Nominative case and verbal agreement are isomorphic. To allow plural agreement to be triggered by a Genitive singular head noun would thus run counter to one of the language's strongest exceptionless morphosyntactic generalizations. A more plausible argument is that the verb agrees with the paucal numeral itself and not the head noun. The paucals could be claimed to have plural features and when the construction is a subject, to be in the nominative case. Indeed, in our solution, outlined directly below, the spirit of this account is maintained, namely the idea that paucal number is compatible with plural verbal morphology. However, the claim that there is direct agreement between the paucal and the verb runs into problems of its own. First there is the adjectival behavior of the paucals themselves. One piece of evidence to this effect is given in (59) vs. (60), where we see the form of the paucal itself showing gender agreement with the head noun:

- (59) dve knigi
 two-fem books-fem
- (60) dva stola
 two-masc tables-masc

If *knigi* determines gender agreement on the numeral *dve* in ((59)), then it appears *knigi* is the head of the phrase and the numeral is a modifier that undergoes concord with it. Other evidence that *knigi* is in fact the head of the phrase comes from the adjectival concord we already saw in (53) and (54).

Thus we reach an apparent paradox the head noun of the phrase is clearly *knigi* and not *dve*, and yet it is only *dve* that might have the right case and number features to trigger verbal agreement with the verb. The solution to this apparent paradox lies in the claim that the head noun is Genitive singular. We claim, instead, that the endings we see in these constructions are *number morphology* and not case morphology (see Rakhlin (2003) for a similar proposal):

- (61) *Paucal Morphology Proposal*: The apparent Genitive singular morphology in paucal constructions is actually (nominative) paucal morphology, a number category distinct from singular and plural.

If (61) is true, we would expect there to be instances where nominative-paucal morphology is distinct from genitive-singular morphology. Such examples are found with some Class I nouns, as shown in (62):

- (62) b'ez šága
without step-gen.sg
- (63) tr'i šagá/*šága
three step-pauc/*step-gen.sg

In (62) we see a normal genitive singular ending for this noun. In (63) we see the paucal ending. The two are distinct for stress (as occurs often in the language; Russian has a distinctive stress system) and *not interchangeable*. This is totally unexpected on the traditional analysis. Thus the proper analyses of examples such as (53) and (54) are given in (64) and (65):

- (64) dva prostyx stud'enta byl'i na koncerte
two-masc simple-masc.pauc student-masc.nom.pauc were-pauc in the concert
"Two simple students were in the concert"
- (65) dve prostyje kn'ig'i byl'i na stole
two-fem simple-fem.pauc books-fem.nom.pauc were-pl on the-table
"Two simple books were on the table"

This analysis solves the agreement problems noted above. The head nouns in (64) and (65) are in the Nominative case. They have paucal features, required in the context of the numerical adjectives 2/3/4. We argue that paucals shared with plurals the morphosyntactic feature [–singular]), but differ in the presence of a feature [–augmented] (cf. Harbour (2006)):

- (66) Singular: [+singular]
Paucal: [–singular, –augmented]
Plural: [–singular]

There is concord for both number and case between adjectives and the head nouns. On verbs, paucal and plural verbal features are syncretic. This is of course fully consistent with the historical loss of the paucal morphologically, and with a markedness-based impoverishment rule deleting the feature [–augmented] on verbs. However, the feature [paucal] does appear to be syntactically active prior to its impoverishment on verbal agreement. The numeral *dva/dve* agrees with the head noun for gender (masculine in (65) and Feminine in (66)). Adjectives also agree for gender in the paucal – but use *apparent* case forms to show it. So the adjectives in (66) are paucal in number, with gender agreement. All forms within the DP are Nominative. This allows for subject-verb agreement. The paucal number solution accounts for all the facts at hand without undermining the general picture of subject-verb agreement in Russian. The full paradigm of paucals in the languages, impoverished though it is morphologically, is given in (67). Note that plural is distinguished from paucal *only in the direct case*, which is an independent instance of the markedness generalization: the distinction for the feature [Paucal] is neutralized everywhere outside of the unmarked

Nominative and Accusative cases.

(67) Number Endings in the Nominative:

NOUNS-Nom	Sing	Paucal	Plural
Class I	∅	-i	-i
Class IIa	∅	-a	-i
Class IIb	∅	-a	-a
Class III	∅	-i	-i
ADJECTIVES-Nom	Sing	Paucal	Plural
Fem	-aja	-yje	-yje
Neut	-oje	-yx	-yje
Masc	-yj	-yx	-yje

A final piece of evidence in favor of our approach to paucals comes from Serbo-Croatian, where there still is gender marking in plural contexts. Consider (68):

- (68) Studenti su bili tamò
 student-masc.nom.pl aux-3.pl. were-pl.masc. there
 "Students were there"
- (69) Devojke su bile tamò
 girls.nom.pl aux-3.pl. were-pl.fem. there
 "Three girls were there"

Nominative paucal agreement for masculine nouns is distinct from nominative plural; compare (68) with (70). Nominative paucal agreement and nominative plural are identical for feminine nouns (69) vs. (71).

- (70) Tri studenta su bila tamò
 three student-masc.nom.pauc aux-3.pl. were-pauc.masc. there
 "Three students were there"
- (71) Tri devojke su bile tamò
 three girls.nom.pauc aux-3.pl. were-pauc.fem. there
 "Three girls were there"

In (70) we see distinct verbal agreement for nominative paucal. Note that if paucal is analyzed as the result of special genitive case, the same problem arises with Russian: why should a genitive subject trigger verbal agreement? Moreover, the verbal agreement in (70) cannot be reduced to "default" agreement with a non-nominative subject, as a clear gender distinction exists between (70) and (71). The proposal that nominative paucal is an instance of nominative case, thereby able to trigger verbal agreement, and paucal number, which is syncretic with plural in feminine but distinct in masculine, is able to explain the Serbo-Croatian pattern under natural assumptions about subject-verb agreement. As the Serbo-Croatian participle still shows gender agreement in paucal and plural contexts, and the only verbal agreement possible in (70) is /-a/, that is the paucal masculine form.

7. Conclusion

To the extent that the form of the Russian genitive plural appears to be an instance of transderivational derivation or gender-sensitivity in the oblique plural, it is an impostor. Closer scrutiny reveals that no transderivational account of the distribution of genitive plural allomorphs is required once a decomposition of nouns into root and theme vowel is adopted, and that this distribution may be stated purely phonologically and thus without reference to gender. The basic tenets of markedness-based neutralization of gender distinctions may be upheld within a model of locally-determined allomorphy.

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