

## Why *Baba-Yaga*? Substratal phonetics and restoration of velars subject to the Progressive Palatalization in Russian/Belorussian and adjacent areas (appr. 600–900 CE)

### 1. The problem

Thanks to the penultimate movement of Mussorgsky's *Pictures at an Exhibition* (1874), one need not have grown up Russian to know about the witch going by the name of *Bába-Yagá*. What is less familiar, however, is the problem of Slavic historical phonology her name implies.

In the second component of the witch's name – the first component just means 'woman' – Russian stem-final *-g-* corresponds with the reflex of PSI *\*-dž-* found elsewhere in Slavic, e.g. Polish *jędza* 'witch'. Here PSI *\*-dž-* reflects early Slavic *\*g* as modified by what is known as the Progressive Palatalization, henceforth referred to as "Prog".

The problem here is the following: why does the Russian word appear to have escaped Prog? After all, Prog is a Common Slavic development well-attested in Russian in unquestionably authentic local vocabulary, e.g. *ovca* 'sheep', *jajco* 'egg', *zajac* 'hare', *ptica* 'bird', *scat* 'piss', *ves'* 'whole, all', reflecting – using traditional notation – pre-palatalization suff. *\*-ьka*, suff. *\*-ьko*, *\*zaękb*, *\*pętika*, *\*sьkati*, *\*vьxъ*. Hence, starting from PSI *\*ędža* (< pre-palatalization *\*ęga*) what one would expect on the basis of plausible sound laws is something like *\*\*jazja*, but what we find is *jaga*. This is the problem the present contribution is about.

*Baba-Yaga* is not unique. As a matter of fact, many words with stem-final velars subject to Prog occur with unmodified velars at least somewhere in Slavic. Although the geography of the two contrasting treatments is not the same in every type of case, unmodified velars massively concentrate in the Russian/Belorussian dialect area, henceforth "R/BR". Indeed, in R/BR palatalized velars appear to be absent from authentically native material except for three types of cases:

1. nouns with stems ending in the reflex of *\*k*;
2. the pronoun *ves'*, in which unmodified *-x-* also occurs, but only in the Novgorod/Pskov area.
3. the underived verb *scat'*.

In this contribution I would like to propose an explanation in terms of local differences having to do with the phonology of the consonant system and probably reflecting substratal differences.

## 2. The Progressive Palatalization of Slavic

Unfortunately the hypothesis that is advanced in this contribution presupposes a fairly complete understanding of the Progressive Palatalization. Since that subject is too complicated to be given its proper due in introductory handbooks, some space will have to be devoted to introducing it here.<sup>1</sup>

I would like to stress at the outset that there is no justification for the feeling that the Progressive Palatalization is a subject somehow too hot to touch. Given standard assumptions about how language changes, all essentials are beyond reasonable doubt. As I see it, the malaise surrounding Prog, rather than reflecting difficulties inherent in the problem itself, appears to be primarily of a communicative nature. Scholars have massively tended to ignore or misconstrue the results of earlier research and to disagree about points there are no good reasons to disagree about. Alongside the testosterone-driven nature of much debate in historical reconstruction, I suspect linguistic factors are partly to blame for this. Few Slavists can read both French and Polish, which happen to be the languages in which the most important literature on the subject is written.<sup>2</sup>

### 2.1. Transcription

In the period discussed here (very approximately 600–900 CE), the phonology of Slavic was rapidly changing and all the time giving rise to new local differences. This raises the practical problem of how to transcribe the examples to be given below, because, obviously, any attempt to precisely express all plausibly reconstructible local and temporal differences in them would tend to impede understanding and clutter up a text that is pretty complicated as it is.

1. See Vermeer (2002–03) for a more general overview of the subject.

2. French: Meillet (1900, 1902–05, 1934), Trubetzkoy (1922), Nitsch (1926), Belić (1928), Vaillant (1950), Martinet (1952); Polish: Lehr-Splawiński (1911), Milewski (1937), Jeżowa (1968). Cf. also Zubatý (1910), which is in some ways *the* most important single publication on the subject and happens to be in Czech. Work in Polish and Czech has received little attention outside the West Slavic lands. Of publications in French it is only Trubetzkoy's "Essai ..." (1922) and the two great handbooks (Meillet 1934, Vaillant 1950) that are referred to more than sporadically. As fate would have it, all three texts, indispensable as they are in many respects, go out of their way to hide the scholarly literature from view. For some discussion see Vermeer (2003).

Since, then, drastic normalization is inevitable anyhow, reconstructed examples will be presented as much as possible in the traditional transcription, i.e. one reflecting the state of the language attested in OCS, or rather normalized OCS, corresponding to the decades immediately preceding and following 900 CE, but with the most important dialectal characteristics of OCS removed. This presupposes in the reader the willingness to mentally transpose the examples into whatever shape they can be assumed to have had in the period under discussion.

The most important departure from this practice has to do with the reflexes of velars modified by the Progressive and Second Regressive Palatalization (henceforth “Reg2”). These will be transcribed as \*ć, \*dź, \*ś in examples presented as pre-dialectal Common Slavic. In examples presented as dialectal the transcription of these consonants will reflect the changes as discussed in the accompanying text. The other important departure concerns the nasal vowel reflected as \*ę in South Slavic and as \*ě elsewhere, which will be transcribed here as \*ĕ.

## 2.2. Conditions and chronology of Prog

What follows here is a brief account of Prog incorporating the tenable insights that have been reported in the literature:

1. A velar was palatalized if it was immediately preceded by \*i reflecting long \*ī (but not \*ei or umlauted \*ū), \*b reflecting short \*i (but not umlauted \*u) or \*ę reflecting \*j (but not earlier \*ĕ). However, velars preceded by these vowels remained unchanged if they were followed by a consonant or a back vowel. It is not completely clear which back vowels did or did not block Prog: \*y did so in any case and its then short counterpart \*ɨ is likely to have done so, \*o and \*a did not, while the effect of \*u and \*ɔ has so far proved impossible to determine because the evidence appears to be too limited to force a decision, or even suggest one. For the time being most scholars assume that \*u and \*ɔ did not block Prog. The lack of clarity about the scope of the blocking rule is the most important point where even a reasonable degree of certainty about the conditions for Prog has so far proved out of reach.<sup>3</sup>

3. For the difference between preceding \*ei and \*ī see Meillet (1934: 92), Milewski (1937: 9), Vaillant (1950: 53), Vermeer (2008: 545–548). On preceding umlauted \*ū and \*u see Meillet (1902–05: 336) and Belić (1921: 34). The assumption that preceding \*j had a different effect from \*ĕ is implicit already in Baudouin de Courtenay (1893: 15, 17n, 1894: 47). Yet, although the point has cropped up often in the literature (beginning with Lehr-Splawiński 1911: 146–147 and Trubetzkoy 1922: 227), it has never been adequately discussed, possibly because clinching examples of \*ĕ (as distinct from \*j) in the required position appear to be lacking. For the blocking effect of following back vowels see Zubatý (1910: 150–151), Lehr-Splawiński (1911: 143–144), and most later investigators. Trubetzkoy’s influential view that \*-ɨ did not block Prog (1922: 233) hinges crucially on a factual mistake and gives rise to undesirable complications (Belić 1922–23: 136, cf. also Vermeer 2008: 533–538). The blocking effect of following consonants is so obvious – see already Gebauer (1894: 314) – that it has never been adequately documented; for the time being we have to make do with Belić (1921: 25, cf. also Vermeer 2008: 511n). An important contributory reason why the formulation

2. Everywhere in Slavic, Prog and Reg2 have identical outcomes, except in the Novgorod-Pskov area, where Reg2 appears not to have taken place at all, as Andrej Zaliznjak established in the nineteen eighties (Zaliznjak 1982: 61–75 = 1986: 111–122, cf. 2004: 41–47).
3. In the course of time various kinds of evidence have been brought to bear to show that Prog and Reg2 did not coincide in time. Since none of that has survived critical scrutiny, there are at present no good reasons to separate Prog from Reg2. They should rather be regarded as two sides of a single bidirectional palatalization rule, which will be referred to here as “Reg2 & Prog”.<sup>4</sup>
4. As for chronology, Reg2 & Prog took effect at a stage that postdated the monophthongization of diphthongs, which gave rise to the conditions for Reg2, but predated three changes which rendered the environment for Prog opaque and probably operated closely together not very long after the monophthongization of diphthongs:
  - The merger of monophthongized *\*ei* with *\*ī*, because *\*ei* does not trigger Prog and *\*ī* does.
  - The lowering of *\*j* which caused it to merge with *\*e*, because Prog was not otherwise triggered by non-high front vowels.
  - The delabialization of early Slavic *\*u* and *\*ū* (attested *ъ* and *y* respectively), because Prog is not triggered by the reflexes of unlauded *\*ъ* and *\*y*.

### 2.3. Words subject to Prog

The number of distinct items credibly displaying *\*ć*, *\*dź*, *\*ś* attributable to Prog does not exceed twenty. In many cases part of Slavic presents unmodified *k*, *g*, or *x*. The examples are the following (canonical OCS unmarked):

1. Nominal suffix *\*-ića*, e.g. *тъмьница* ‘prison’ (< *тъмьнь* ‘dark’).
2. Nominal suffix *\*-ьца*, e.g. NApl *двѣрьце* ‘door, window’ (< *двѣрьь*, usually plural, ‘door, gate’).
3. Noun *\*ędža*, e.g. *ędža* ‘illness’. Unmodified *\*g*, as in *Bába-Jagá*, is the norm in R/BR and attested in Ukrainian alongside *-z-* reflecting *\*-dź-*.<sup>5</sup>

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given in the text is so widespread is that in addition to accounting best for the low-level facts it yields a palatalization rule that makes simple phonetic sense: velars were palatalized by preceding high front vowels (*\*i*, *\*ī*, *\*j*) unless a consonant or a high rounded vowel (*\*u*, *\*ū*) followed, with the role of mid rounded vowels (*\*o*, *\*ō* < *\*ou*) being undetermined.

4. For discussion of these problems see Vermeer (2000, 2006, 2008).

5. Whereas *\*ędža* means ‘witch’ in West and East Slavic, in South Slavic its meanings vary from ‘illness’ in OCS to ‘anger’ in Slovene by way of ‘horror’ in SCr.

4. Noun *\*lbdža*, e.g. *polbdza* ‘usefulness, benefit’. Unmodified *\*g* is the norm in R/BR (*pol’ga*), Ukrainian (e.g. *pil’ha*), and Lechitic (e.g. Polish *ulga* ‘relief, alleviation, mitigation, etc.’, and several similar compounds).<sup>6</sup>
5. Noun *\*stbdža*, e.g. *stbdza* ‘path, road’. Unmodified *\*g* (*stega*) has been reported for R/BR and very marginally for Polish (Pracki 1907: 264, cf. Zierhoffer 1959: 69).<sup>7</sup>
6. Noun *\*elbša* ‘alder tree’ as attested most convincingly in eastern Slovene dialects, and also in Croatian toponyms of the shape *Jelsa* (for the facts see in particular Šivic-Dular 1998: 165–166). Most of Slavic has unmodified *-x-* in this word, which unfortunately is not attested in OCS and offers additional complications.
7. Nominal suffix *\*-bčb*, e.g. *kupьcb* ‘tradesman’ (< *kupiti* ‘buy’).
8. Noun *\*mēsęcb*, e.g. *mēsęcb* ‘moon, month’. The modified velar is virtually Common Slavic.
9. Noun *\*zaęcb*, e.g. Dpl *zajęcemь* ‘hare’. Unmodified *-k-* is attested in geographically unconnected areas in all three branches of Slavic.
10. Noun *\*orbotędźb* as reflected in Old Polish *robociądz* ‘boy’, Old Czech *robotěz* ‘slave’. Old Russian has *robotjagь* ‘slave’ with unmodified *-g-*.
11. Noun *\*vbšb* denoting toxic plants requiring moist soils (e.g. cowbane), as attested in such forms as Ukr *ves*, dialectal Cz *veš*. Unmodified stem-final *\*-x-* is attested in R *věx*. This example was identified only recently (Minlos 2001, Minlos and Terent’ev 2002). Like *\*elbša* (6), it is not attested in OCS and offers various additional complications.
12. Nominal suffix *\*-bče*, e.g. *čędbce* ‘child’ (< *čędo* ‘child’).
13. Noun *\*lice*, e.g. *lice* ‘face’. The modified velar is virtually Common Slavic.
14. Noun *\*pъcbьbь*, e.g. *pъcbьbь* ‘pitch’. The modified velar is limited to a single OCS manuscript (Codex Suprasliensis). Otherwise unmodified *-k-* is pan-Slavic.
15. Adjective *\*nicb*, e.g. *nicb* ‘facing downward’.
16. Pronoun *\*vbšb*, e.g. *vbšb* ‘all’ and derivations from the same root (notably *\*vbšakb* ‘of all kinds’). Although the palatalized velar is nearly pan-Slavic, unmodified *-x-* is the norm in the medieval Novgorod dialect, e.g. NAsgn *vъxo* (birchbark Novgorod 893), Gsgf *vъxoě* (birchbark Novgorod 850), both twelfth century, and many similar examples (for which see Zaliznjak 2004: 46).
17. Pronoun *\*sičb*, e.g. *sicb* ‘such a one as this/here’, cf. also the derivation *sicevь* of the same meaning. Unmodified *-k-* is well-attested in SCr.

6. R *pol’za* ‘use’ is unlikely to be authentic because palatalized *\*g* would probably yield soft *z’* (cf. the soft *s’* of *vsja*), so that we would have *\*\*pol’zja* (cf. Šaxmatov 1913: 41). Note that the abstract meaning by itself provides a strong indication that the word is not inherited.

7. The stylistic value of R *stęzja* shows that the word does not belong to the inherited vocabulary.

18. Verbs with an aorist stem in *-a* (i.e. an inf in *-ati*), e.g. *klicati* ‘shout’, *-židzati* ‘kindle, ignite’. With one or two exceptions (notably *\*s̆ćati* ‘piss’), these verbs belong to productive patterns linking imperfectives to correlating perfective verbs. In OCS, modified velars are attested in the case of 17 verbal stems, in some of which they are clearly or arguably secondary (most glaringly preslpl *navycajem̆* ‘learn’), and in some of which unmodified velars are attested too (e.g. *-striga-* ‘cut, shear’ alongside *-striza-*). In West Slavic, the number of verbs with modified velars does not exceed seven, but even there some secondary spread of the phenomenon has taken place. In East Slavic, modified velars do not occur at all, e.g. R *klikat* ‘call’, *zažigat* ‘kindle, ignite’.<sup>8</sup>
19. Msc *o*-stem nouns in PSI *\*-ędź-* continuing the borrowed Germanic suffix *\*-ing-*, e.g. *к̆н̆ęдзѣ* ‘king, leader’. In the Slavic north, notably in R/BR, but also in Lechitic, the same suffix is common with unmodified *-g-*, e.g. *varjag* ‘Varangian’. Although it is conceivable that these examples may continue a local reflex along the same lines as *jaga*, it is also possible that they entered the language too late to participate in Prog.
20. A stem *\*gob̆dź-* ‘plenty, prosperity’, borrowed from Germanic and reflected in such derivations as *ugob̆dziti* ‘produce a plentiful harvest’. Outside OCS (Old Russian, Ukrainian, Czech) this example is only attested with the reflex of stem-final *-z-*, which is unusual.

This comes close to being a complete list of persuasive examples of Prog. In each case in which an unmodified velar is also attested this has been indicated.<sup>9</sup>

## 2.4. Restructuring of alternating paradigms caused by Prog

With a single exception (*\*p̆ćьль*, section 2.3, 14), the velar affected by Prog is root-final or even stem-final, hence an easy prey to analogical pressures. This is an important factor limiting the possibilities for fully understanding Prog, because one can rarely be sure that a modified – or unmodified – velar attested by a specific word form is phonetically regular or analogical.

A simple example is provided by verbs with an aorist stem in *-a* (section 2.3, 18), where the attested variation reflects the ease with which alternating aspectual pairs (*\*klikn̆oti* ~ *klicati*) can become non-alternating (> *\*klikn̆oti* ~

8. In Modern Standard Russian, derived imperfectives with Prog, though numerous, are always borrowings from Church Slavonic, e.g. *otricar* ‘deny’, *vosklicar* ‘exclaim’, *rasterzat* ‘tear to pieces’ (cf., e.g., Bernštejn 1961: 210).

9. For lists of positives attested in OCS see Van Wijk (1931: 67–68) and Diels (1932: 133–134). For Prog in verbs see particularly Jeżowa (1968: 52–181). For an inventory of doublets see Grickat-Virk (1951–52: 100–108), but a systematic search for instances of unmodified velars might bring to light hitherto unexpected facts. For some further discussion of the material, with references, see Vermeer (2008: 508–518, 545–548). Two words that have occasionally been adduced as examples of Prog do not belong on the list. In the case of the alleged adjective *\*trid̆zь* ‘three-year-old’, the available evidence actually points to *\*trizь*. OCS *dr̆ęselь* ‘sad’, rather than reflecting PSI *\*dr̆ęselь*, as has sometimes been assumed, is more likely a recent analogical formation without relevance to Prog. (On these words see further Vermeer 2008: 511, with references.)

*klikati*) on the basis of such examples as *zatyknŏti* ~ *zatykati* ‘shut’. And vice versa, as in OCS *navycati* ‘learn’ or SCr *odsijecati* ‘chop off’, with \*y and \*ě preceding the modified velar, although those vowels do not trigger Prog.<sup>10</sup> As a consequence of this, it has so far proved impossible to exactly specify the set of verbs originally displaying the effects of Prog.

Similar shifts have taken place *within* paradigms too. As we saw in section 2.2, velars followed by certain back vowels did not undergo Prog. Any credible formulation of the rule implies that Prog gave rise to alternating paradigms, e.g. Nsg \**edža* (with palatalized velar) vs. Apl \**egy* (with retained velar, on the assumption that -y blocked Prog, as is the general consensus). Since such alternating paradigms are nowhere attested in living material, not even in the earliest texts, it is obvious that they have everywhere been regularized. It is not always realized that the restructuring of the capricious paradigms generated by Prog is an important chapter of the morphological history of Common Slavic.<sup>11</sup>

Before looking at some of the details it makes sense to recall that for Slavic the second half of the first millennium was not exactly a time of linguistic business as usual. Not only phonology was changing all the time, but so was the inflectional system. If one wants to get some realistic idea of what nominal inflection was like at the time Reg2 & Prog took place, it does not do simply to project the situation as attested in OCS back to the sixth century CE, merely adjusting the phonological shapes of the endings. More was going on than that.<sup>12</sup>

This is expressed in the following diagram in two ways:

- a) by the assumption that the original *o*-stem Nsg ending \*-*o/-e* (< \*-*os*) had not yet been replaced with \*-*o/-b*;
- b) by the absence of reconstructed instrumental singular endings because it is difficult to tell when the inherited endings were replaced with the ones that are attested and which have an analogical origin.<sup>13</sup>

The diagram juxtaposes the *ā*-stem and *o*-stem paradigms as reconstructed for the stage immediately after Reg2 & Prog had taken place with the shapes attested in OCS. Note the way the uncertainty about the scope of the blocking rule (section 2.2) is expressed in the diagram.

10. See, e.g., Sobolevskij (1889: 32), Meillet (1902–05: 48), Zubatý (1910: 153–155), Belić (1921: 37–39).

11. For tentative reconstructions of nominal paradigms as generated by Prog see, e.g., Zubatý (1910: 151), Mareš (1956: 467 = 1965: 40), Vermeer (2008: 527).

12. See in this context Johannes Reinhart’s overview of archaic features that dropped out of the tradition after the earliest OCS texts (Reinhart 2002). It shows how fast the language was evolving at the time and gives some idea of the abundance of features that may just have *failed* to make our earliest texts.

13. Consistency would have required leaving the Gsg and Npl of the *ā*-stem paradigm open as well. The fact that I have not done so reflects the conviction that the analogical substitutions that gave rise to the attested endings, which were motivated by the loss of crucial distinctions following the elimination of word-final \*-*s*-, were particularly rapid.

	after Prog	=	restructured	after Prog	>	restructured
Nsg	<i>оѵѣа</i>	=	<i>оѵѣа</i>	<i>отѣе</i> < * <i>отѣко</i>	>	<i>отѣѣ</i>
Gsg	<i>оѵѣку</i>	>	<i>оѵѣѣ</i>	<i>отѣа</i>	=	<i>отѣа</i>
Dsg	<i>оѵѣѣ</i>	>	<i>оѵѣѣ</i>	<i>отѣѣ/ку</i>	=/>	<i>отѣѣ</i>
Asg	<i>оѵѣѣ/кѣ</i>	=/>	<i>оѵѣѣ</i>	<i>отѣѣ</i>	>	<i>отѣѣ</i>
Vsg	<i>оѵѣе</i>	=	<i>оѵѣе</i>	<i>отѣе</i>	=	<i>отѣе</i>
Isg	?	?	<i>оѵѣеѣ</i>	?	?	<i>отѣеѣ</i>
Lsg	<i>оѵѣѣ</i>	>	<i>оѵѣѣ</i>	<i>отѣѣ</i>	>	<i>отѣѣ</i>
Npl	<i>оѵѣку</i>	>	<i>оѵѣѣ</i>	<i>отѣѣ</i>	=	<i>отѣѣ</i>
Gpl	<i>оѵѣѣ</i>	>	<i>оѵѣѣ</i>	<i>отѣѣ</i>	>	<i>отѣѣ</i>
Dpl	<i>оѵѣаѣ</i>	=	<i>оѵѣаѣ</i>	<i>отѣеѣ</i>	=	<i>отѣеѣ</i>
Apl	<i>оѵѣку</i>	>	<i>оѵѣѣ</i>	<i>отѣку</i>	>	<i>отѣѣ</i>
Ipl	<i>оѵѣаѣ</i>	=	<i>оѵѣаѣ</i>	<i>отѣку</i>	>	<i>отѣѣ</i>
Lpl	<i>оѵѣаѣ</i>	=	<i>оѵѣаѣ</i>	<i>отѣѣѣ</i>	>	<i>отѣѣѣ</i>
NAVdu	<i>оѵѣѣ</i>	>	<i>оѵѣѣ</i>	<i>отѣа</i>	=	<i>отѣа</i>
GLdu	<i>оѵѣѣ/ку</i>	=/>	<i>оѵѣѣ</i>	<i>отѣѣ/ку</i>	=/>	<i>отѣѣ</i>
Dldu	<i>оѵѣаѣ</i>	=	<i>оѵѣаѣ</i>	<i>отѣеѣ</i>	=	<i>отѣеѣ</i>

The elimination of the inherited msc *o*-stem Nsg \*-*o*/*e*, which has nothing to do with Prog and may conceivably have been earlier, hence irrelevant, is taken into account here to avoid taking undue advantage of the possibility that the Nsg had an unmodified velar in stem-final position (\*\**отѣѣ*, originally limited to the Asg), a point that is important for what follows. Otherwise the differences between the two stages imply the following changes:

1. The inherited alternation of unmodified and palatalized velars was eliminated by generalizing the latter.
2. Case forms in which stem-final palatalized consonants were introduced in this way adopted the endings of the soft sub-paradigm (most commonly known as the *jo*- or *jā*-stem inflection). In some cases this was automatic, as is likely in the case of Asg/Gpl \**отѣѣ* or Ipl \**отѣѣ*, in others it was not, notably in those case forms in which soft -*ѣ* was opposed to hard -*ѣ*.
3. In endings beginning with or consisting of -*ѣ*, which were always preceded by palatalized velars, this vowel was replaced with -*ѣ* in conformity with the soft sub-paradigm.<sup>14</sup>

What this shows is that the paradigms found in OCS and most of Slavic are the outcome of drastic restructuring involving not only the stem-final consonant, but also the system of endings.

14. On this ticklish issue Meillet (1900) and Zubatý (1910: 153) are still unsurpassed.

## 2.5. The possibility of analogical extension of the unmodified velar

Although generalization of palatals may seem obvious given their prominence in the paradigms involved, two points suggest that the odds in their favour were less overwhelming than they look at first sight.

First, unmodified velars occupied some pivotal positions, notably the Gsg, NApl, Gpl in the case of the *ā*-stems, and the Asg (> NAsg), Gpl, Apl in that of the msc *o*-stems.

Second, in quite a few case forms, palatals were followed by endings beginning in (or consisting of) *-ě* and *-i* reflecting *\*oi*. In that position velars did not occur. It follows that those palatals were compatible with the presence of velars elsewhere in the paradigm, as in such familiar examples as Asg *\*vьlkъ* ‘wolf’, Gsg *\*vьlka*, but Lsg *\*vьlčě*, Npl *\*vьlčí*, Lpl *vьlčěxъ*, or Nsg *\*rъka* ‘hand’, Gsg *\*rъky*, but DLsg and NAVdu *\*rъčě*. If case forms in which the paradigms of *\*vьlkъ* and *\*rъka* have palatalized velars – by either Reg2 or the First Regressive Palatalization – are left out, our paradigms look as follows:

	singular	plural	dual	singular	plural	dual
N	<i>ovьca</i>	<i>ovьky</i>	–	<i>otьce</i>	–	<i>otьca</i>
G	<i>ovьky</i>	<i>ovьkъ</i>	<i>ovьć/ku</i>	<i>otьca</i>	<i>otьkъ</i>	<i>otьć/ku</i>
D	–	<i>ovьcamъ</i>	<i>ovьcama</i>	<i>otьć/ku</i>	<i>otьcemъ</i>	<i>otьcema</i>
A	<i>ovьć/kъ</i>	<i>ovьky</i>	= N	<i>otьkъ</i>	<i>otьky</i>	= N
V	<i>ovьce</i>	= N	= N	–	= N	= N
I	?	<i>ovьcami</i>	= D	?	<i>otьky</i>	= D
L	–	<i>ovьcaxъ</i>	= G	–	–	= G

This suggests that there was a non-negligible chance for the unmodified velars to be analogically extended to all case forms in which they were phonotactically admissible, and that given slightly different initial conditions things might well have developed differently.

Scholars realized long ago – beginning, I think, with Zubatý (1910: 152) – that there are no absolutely clinching reasons preventing one from assuming that examples of the type P *jędza* and OCS *vьsъ* generalized the palatal, and those of the type R *jaga* and Novg *vьxo* the unmodified velar. However, this insight is not enough to answer two important questions implicit in the material:

1. Why is it that restoration of the unmodified velar is well attested in all cases of stem-final *-g-* and *-x-*, but sporadic (outside verbs) in that of stem-final *-k-*?
2. What is it about R/BR that restoration of unmodified velar appears to center there?

## 2.6. Earlier explanations of the doublets

The existence of doublets of the type *jędza* vs. *jaga* has been known for a long time and explanations of several types have been proposed to account for them.

Some investigators have assumed that Prog operated irregularly or affected only part of Common Slavic. Shevelov, for instance, assumes that Prog took place as a regular phonological change in part of the Slavic linguistic territory only, after which lexical diffusion effaced the boundary between the two areas, or, to quote Shevelov's own words: "Thus it is obvious that the third palatalization [i.e. Prog, WV.] was not exactly a CS development. It was a vital process somewhere in SW, possibly spreading from there only partly as a phonetic change to the areas which were closer to the "epicenter" while to other, more remote areas it never spread as a live process but as the importation of single words affected by the third palatalization" (Shevelov 1964: 346).

Although Shevelov's scenario might easily have occurred, the trouble about it is that it does not explain why \*g and \*x are treated differently from \*k.

Others have tried to account for individual examples in terms of derivational analogy, hoping that the grand picture would take care of itself. Let us look at some examples.

In some cases, plausible explanations lie readily to hand. The noun \**bdža* (4), for instance, is related to the adjective \**bgb* or \**bgbkb* 'light'. As long as the semantic connection with the adjective is maintained (as it is, say, in words with meanings like 'relief', e.g. Polish *ulga* or dialectal Russian *pol'ga*), analogical reintroduction of the unmodified velar would seem to be a natural change (cf. also Meillet 1934: 92).

Other cases present more difficulties. The unmodified velar of R *stega* has been explained as a recent back formation drawn from diminutives like R *stěžka* (Zierhoffer 1959: 17, Lunt 1981: 31–32). However, although such a change certainly looks plausible in itself, parallels are suspiciously few and marginal. I am not aware of a single example in the inherited Slavic lexicon of Russian. Of course, *fljaga* 'flask' (drawn from *fljažka*) is old and well established, but it is patently non-native. All other examples I have seen so far look like incidental formations produced for humorous effect, like R *mnogotiraga*, drawn from *mnogotirazhka* 'factory newspaper, house organ', which I have come across in work by the well-known St. Petersburg author Mixail Veller (b. 1948).<sup>15</sup>

Some nouns, for instance *jaga* or *věx*, are even harder to explain along similar lines.

It needs no arguing that explanations in terms of the history of individual items are quite appropriate wherever they account best for the primary evidence. In the case of stem-final *-k-* they are in accordance with the incoherent geography of the primary evidence, for instance:

15. See <<http://www.peoples.ru/art/literature/prose/detectiv/veller/history.html>> or <<http://www.ijc.ru/cen40.html>> (both checked in March 2013).

- The pronoun *\*sićb* (section 2.3, 17) correlates with *\*takb* ‘such, such a’ and several similar words (*\*kakb*, *\*jakh*, *\*vbśakb*), all of which have stem-final *-k-*, which can easily be reintroduced into *\*sićb*. This appears actually to have happened in SCr, where continuations of *\*sikb* are well attested, dialectally to this day.
- Instead of regular *-bca* (section 2.3, 2), suffixal *\*-bka* occurs, beginning as early as the OCS Codex Suprasliensis (Asg *klěťkq/klěťkq* ‘small room, hut’). This is generally explained by assuming that the alternant of the suffix containing unmodified *-k-* was analogically transferred from words in which it was phonetically regular to words in which the alternant with *\*-ć-* was historically appropriate. Most – perhaps all – cases of unexpected *-k-* instead of *\*-ć-* in nouns permit explanations along similar lines.<sup>16</sup>

In the case of *-g-* and *-x-*, however, the trouble about efforts to account for the evidence in terms of individual items is that it leaves part of the material unexplained (*jaga*, *věx*) and fails to account for the geographical pattern.

### 3. Early Russian/Belorussian phonology and the generalization of unmodified *-g-* and *-x-*

According to the view to be presented here, the reason why R/BR displays unmodified *-g-* and *-x-* in nominal paradigms has phonological roots. Therefore we need to take a closer look at the consonant system, beginning with the stage at which Reg2 & Prog took place.

#### 3.1. The phonological consequences of Reg2 & Prog: a series of new consonants

Uncontroversially, by Reg2 & Prog the three velar obstruents *\*k*, *\*g*, and *\*x* spawned a novel series of palatal consonants distinct from preexisting *\*č*, *\*ž*, and *\*š*, which had arisen earlier by the First Regressive Palatalization of velars (henceforth “Reg1”).

It is traditional to assume that the new consonants originated in the usual humble fashion as palatalized allophones of *\*k*, *\*g*, and *\*x* in certain palatal contexts, more specifically: before front vowels that had recently appeared as reflexes of monophthongized *\*oi* (Reg2), and in the context that triggered Prog.

Moving on to the next phase of their career, the palatalized allophones became contrastive phonemes as a consequence of the changes that rendered the environment for Prog opaque (see section 2.2(4)) and which caused the velar obstruents *\*k*, *\*g*, *\*x* and their former palatalized allophones to be contrastively opposed to each other before *\*a* and probably also before *\*u* and/or *\*o*, e.g. Gsg *\*-nika* (< *\*-neikā*) vs. Nsgf *\*nića* (< *\*nikā*) or Gsg/NApl *\*bga* ‘yoke’ (< *\*jugā*) vs. Nsg *stbdža* (< *\*stigā*).

16. For an example see Kreja (1996).

During the stage immediately following Reg2 & Prog, velars did not occur before front vowels in inherited material. If OCS is anything to go by, the gap was eventually filled by loans.

The attested continuations of the reflex of *\*k* as modified by Reg2 & Prog leave no doubt that it was – or at some Common Slavic stage became – a [tʃ]-like affricate. Similarly the reflexes of palatalized *\*g* – principally *dz*, *ž*, and *z* – show pretty conclusively that it was the voiced counterpart of *\*ć*, i.e. [dʒ]-like, as indeed one would expect on general grounds. It is clear from this that at some stage palatalized *\*k* and *\*g* changed into affricates in all of Slavic. The question whether this happened before or after the palatalized consonants became contrastive segments – or perhaps simultaneously – is immaterial from the point of view of the present contribution.

As for palatalized *\*x*, it is nearly always found merged with reflexes of either *\*š* (< *\*x* by Reg1) or *\*s*, hence it is likely to have been a [ʃ]-like fricative situated phonetically midway between the two.

### 3.2. Two structural redundancies: the initial element of *\*dž* and the palatality of *\*ć* and *\*dž*

Nowhere in Slavic have the new palatalized obstruents been retained as such. This suggests that they were vulnerable. A closer look at the system as it was just after the new consonants had arisen brings to light several factors calling for structural adjustments, two of which are important from the point of view of the present contribution.

The first has to do with the initial element of *\*dž*, which was redundant, hence expendable, because the system contained no *\*\*ž*, so that loss of the stop did not threaten the independence of the unit. It is not strange that nearly everywhere in Slavic it had been eliminated by the time of the earliest records.

A second redundancy had to do with the position of the new consonants in the system.

The new series existed alongside the older palatal series, which owed its rise to Reg1 (*\*č*, *\*ž*, *\*š*).<sup>17</sup> Although both series were palatal, they were contrastively opposed to one another, as is shown eloquently by the fact that their attested reflexes are nearly everywhere different. Nevertheless it is reasonable to expect that in origin they were perceptually similar, say more or less along the lines of modern Serbo-Croatian /č/ and /č̌/, which, as is well known, tend to

17. It goes without saying that there are also the reflexes of *\*tj* and *\*dj* to be considered in this context. Although there is no absolute consensus about the best way to reconstruct the development of these sequences, many investigators – possibly a majority – accept Fortunatov's assumption (1888: 568) that they were geminates for a considerable time, primarily because that provides a suitable starting-point for the peculiar reflexes found in the Bulgarian/Macedonian dialect area (see, e.g., Šaxmatov 1896: 698, 1915: 37–38, Lehr-Splawiński 1921–22: 29n., Ramovš 1924: 257–261, Trubetzkoy 1930: 389, Vaillant 1950: 62–63, 66–67, Shevelov 1964: 215, Kortlandt 1982: 184–186). The vowel lengthening rule known as “Van Wijk's law” suggests that the geminates were simplified only after the uncoupling of the old length contrast, hence significantly later than Reg2 & Prog (see on this notably Kortlandt 1982: 186).

merge at the slightest provocation. Accordingly, they *might* easily have fallen together in a single palatal series. Normally, however, what has happened is that the entire \*ć series has lost its palatality, resulting in \*ś merging with preexisting \*s and, in addition, \*dź merging with \*z in those areas where its initial element was eliminated.

There are several exceptions to this, best known among them the familiar merger of \*ś with \*š found in all of West Slavic (and apparently also in some adjacent areas of East Slavic), and the merger of \*ć with \*č found in some varieties of Russian and which is usually referred to as *cokan'ie*.

If one examines what the consonant system was like just after the new series had arisen, it turns out that the palatality of \*ć and \*dź was redundant because the system lacked non-palatal \*\*c and \*\*dz. Accordingly \*ć and \*dź eventually lost their palatality in most Slavic dialects, dragging \*ś, the palatality of which happened not to be redundant (because it served to distinguish \*ś from preexisting \*s), with them.

In what follows, the loss of the first element of \*dź will be referred to as the Spirantization of \*dź or “Spir”, and the loss of palatality of the \*ć series as the Depalatalization of the \*ć series or “Depal”.

### 3.3. The relationship between Spir and Depal

The Spirantization of \*dź and the Depalatalization of the \*ć series are not completely independent of one another.

Wherever Depal precedes Spir, the former deprives the latter of its structural motivation because it causes \*dź to yield \*dz and find itself opposed to \*z by the mere presence of the initial element \*d, which now is no longer expendable.

Conversely, wherever Spir precedes Depal one would expect it to diminish *its* internal motivation somewhat because it causes \*dź to yield \*ź and to be opposed to z merely by the presence of the palatal feature, which now is no longer redundant. However, this by no means eliminates the structural reason favouring Depal because in the case of \*ć, which is likely to have been by far the most frequent member of the series, palatality is still redundant, hence prone to be neglected and lost, risking to drag \*dź and \*ś with it.<sup>18</sup>

These insights can be used to explain the geographical distribution of the reflexes of \*dź. As is well known, the initial component of \*dź has been retained in two dialect areas, both peripheral. Those are Lechitic in the northwest, and the margins of the Bulgarian-Macedonian area in the extreme south, as attested most clearly and authoritatively in part of the OCS tradition. This suggests that Depal had been carried out in those areas before Spir arrived there. And once systems had undergone Depal, Spir was no longer internally motivated and didn't take place.

18. This is an example of what seems to be a common type of occurrence, by which a change that is well-motivated and innocuous in the case of one member of a series leads to the loss of the phonological independence of other members.

Note that it is unlikely that it was merely the marginal position of Lechitic and the Bulgarian-Macedonian periphery that caused them to develop differently from the remainder of Slavic, because during the period involved, both dialect areas were carrying through one Common Slavic innovation after the other, showing the presence of social and sociolinguistic factors favouring joint linguistic developments. Therefore it is preferable to have a specific mechanism explaining why the initial element of *\*dź* remained in place in those areas.<sup>19</sup>

In the remainder of Slavic, Spir was earlier than Depal, to the extent that the latter took place at all. Accordingly, the view of early East Slavic phonology developed in this contribution starts from a *\*ć* series consisting of *\*ć*, *\*ź*, and *\*ś*, with *\*ź* (< *\*dź*) now no longer being the voiced counterpart of *\*ć*, but that of *\*ś*.<sup>20</sup>

### 3.4. Consonant-vowel sequences beginning with members of the *\*ć* series

Before looking at further changes the system underwent in R/BR, it is important to have some idea of the consonant-vowel sequences in which members of the *\*ć* series occurred.

As a consequence of Reg2 and in positions combining the contexts for Reg2 and Prog, sequences existed consisting of a member of the *\*ć* series and one of the front vowels *\*i* or *\*ě* reflecting earlier *\*oi*, e.g. Npl *\*učenići*, *\*otbći*, imp2sg *\*rbći*, DLsg/NVAdu *\*rǫćě*, Lpl *\*otbćěxъ*, imp2pl *\*rbćěte*. Recall that those vowels were never preceded by velars (section 3.1).

In native material, all other existing consonant-vowel sequences beginning with a member of the *\*ć* series owed their existence to Prog. They were:

1. Sequences with the front vowel *\*e* reflecting earlier *\*o* automatically unlauded after palatal consonants, e.g. Dpl *\*otbćemъ* ‘father’, Vsg *\*děviće* ‘maiden’ (dim.), reflecting pre-Prog *\*otbkomъ*, *\*děviko*.
2. Sequences with *\*a*, e.g. Gsg/NVAdu *\*otbća*, Nsg *\*děvića*.
3. Sequences with *\*u* and/or *\*ǫ*, unless those vowels blocked Prog (see section 2.2), e.g. Dsg/GLdu *\*otbću*, Asg *\*děvićǫ*.

Quite a few vowels did not occur at all after members of the *\*ć* series:

- *\*b* or *\*ǧ* because no phonetic source giving rise to them existed; later these vowels came to occur after members of the *\*ć* series as a consequence of the morphological restructuring of the Prog paradigms discussed in section 2.4, when such forms as Asg *\*otbćbъ*, Apl *\*otbćǧъ*, Gpl *\*děvićbъ*, Gsg/NApl *\*děvićǧъ* were substituted for the phonologically regular forms *\*otbkbъ*, *\*otbky*, *\*děvikbъ*, *\*děviky*;

19. For the type of reasoning see Trubetzkoy (1930: 389).

20. Note that in those West Slavic areas where Spir took place (Sorbian, Czech, Slovak), the reflex of *\*ź* < *\*dź* has not merged with *\*ź*. This shows that at the stage that saw the West Slavic merger of *\*ś* with *\*š* taking place, Spir had not yet hit the area. This important insight is not often expressed explicitly, but it is at least as old as Šaxmatov (1915: 40), probably older.

- \**ɔ*, \**o*, or \**y* because those vowels did not occur after palatal consonants and were automatically replaced with \**ɔ*, \**e*, and \**i* (see Meillet 1900: 9 and many later investigators);
- \**u* and/or \**ɔ* in case those vowels – or one of them – blocked Prog.

### 3.5. The rise of allophonic palatalization in the Russian/Belorussian area

As is almost too well known to even bear mentioning, the attested Slavic dialects of R/BR have what is known as a palatalization correlation, or had so for some time.

By common consent, such systems reflect an earlier situation in which consonants were non-contrastively (allophonically) palatalized by following front vowels, after which palatalization became contrastive as a consequence of changes in the vowel system that are basically well understood, for instance loss of nasality in \**ɛ*, merger and loss of the weak jers, and retraction of \**e* (> *o*) in certain palatal environments in most areas.<sup>21</sup>

What is important from the point of view of the present contribution is only the first stage of this important development, in other words: the rise of a rule non-contrastively palatalizing any consonant followed by a front vowel.

As allophonic palatalization before front vowels took root in R/BR, one expects that speakers started to experience difficulties telling apart palatalized /š/-/ž/ and plain /s/-/z/ preceding front vowels because in that position plain /s/ and /z/ were realized increasingly with palatalization. Examples of pairs of sequences that now threatened to fall together:

- \*šě ~ \*sě, e.g. \*šědъ ‘grey-haired’, GLpl \*všěxъ ‘all’, DLsg \*strěšě ‘roof’, vs. \*sējati ‘sow’, Lpl \*pšěxъ ‘dog’, DLsg \*kosě ‘scythe’;
- \*žě ~ \*zě, e.g. DLsg \*stžě ‘path’, \*nožě ‘foot’, Lpl rožěxъ ‘horn’, vs. DLsg \*kozě ‘goat’, Lpl \*vozěxъ ‘cart’;
- \*še ~ \*se, e.g. NAsgneu \*vše ‘all’ vs. aor2/3dg \*nese ‘carry’;
- \*že ~ \*ze, e.g. Dpl \*robotžemъ ‘slave’, vs. preslpl \*vezemъ ‘convey’;
- \*ši ~ \*si, e.g. Nplmsc \*vši ‘all’ vs. Npl \*pši ‘dog’;
- \*ži ~ \*zi, e.g. Npl \*robotžī ‘slave’, imp2sg \*pomoži ‘help’ vs. Npl \*vęzi ‘elm-tree’, imp2sg vezi ‘convey’.

Given the circumstances, it is reasonable to expect that as time went on the contrast became difficult to maintain and that eventually the two pairs merged before front vowels, with the product of the – local – merger being realized redundantly palatal: [ṣ̌]/[ẓ̌].<sup>22</sup>

The merger had dramatic consequences for the status and functional load of /š/ and /ž/.

To begin with, it was now only in the sequences \*ša and \*ža that they were still contrastively opposed to \*s and \*z, and probably also in the sequences \*šɔ, \*šu, \*žɔ, and \*žu.

21. See Van Wijk (1937–1938) and many similar publications.

22. Similarly, one expects that \*n, \*l, and \*r merged with \*ṇ, \*ḷ, and \*ṛ before front vowels at this stage.

Even more importantly, sequences beginning with \*ś or \*ź were limited to words that had undergone Prog. Such words cannot have been numerous, comprising as they did a mere handful of nouns, the pronoun \*vbśb, and a few verbs in *-ati*. Although exact numbers cannot be given, /ś/ is unlikely to have occurred in more than four or five lexemes and /ź/ at most in about a dozen. Both consonants always alternated with /x/ and /g/. The sequence \*źa was limited to:

1. the Nsg, the oblique cases of the plural, and the DIdu of \*ęźa, \*-lbźa, and \*stbźa;
2. the Gsg and NVAdu (and possibly the Isg), of a small number of msc nouns (Gsg \*orbotęźa) including possible members of the type \*kbnędźb (say Gsg \*kbnęźa);
3. a few verbs with an aorist stem in *-a-*, e.g. \*pomizati ‘wink’.

The sequence \*śa must have been constantly on everybody’s lips in the pronominal Nsgf and NApln \*vbśa, and no doubt in the derivation \*vbśakb, but otherwise of very limited occurrence; the only examples I can think of are the Nsg and various other forms of \*elbśa, the Gsg and NAVdu of the phytonym \*vbśb (\*vbśa), and the rare verbs in *-ati* with a stem in \*-x-, e.g. aor2/3sg \*pśsa ‘pound’.<sup>23</sup>

Unless *u* and/or *o* blocked Prog there is also the following to reckon with:

- \*źo was limited to the Asg of the *ā*-stem nouns (\*stbźo) and possibly one or two verbal forms if they happened to offer the right context (perhaps pres 1sg \*striźo, 3pl \*striźotb);
- \*źu occurred in the Dsg and the GLdu of a small number of nouns (\*orbotęźu, \*stbźu);
- \*śo must have been common in the pronominal Asgf \*vbśo, but otherwise rare, e.g. Asg \*elbśo, pres1sg \*pśo, 3pl \*pśotb;
- in the case of \*śu I would be hard put to mention examples apart from GLdu \*elbśu and Dsg and GLdu \*vbśu (the phytonym), forms unlikely to crop up very often in ordinary speech.

### 3.6. Nominal paradigms in etymological *-g-* and *-x-*

This is the right moment to take a closer look at the structure of nominal paradigms in which stem-final *-g-* or *-x-* alternated with the reflexes of Reg2 & Prog. There were two of those, one in nouns in which Reg2 had taken place, another in nouns that in addition displayed the effects of Prog. The phonological shape shown here is the one that obtained after the distinction between /ś/-/ź/ and /s/-/z/ had been eliminated before front vowels. The archiphonemes are written as *s* and *z*, not only in order to differentiate them visually from those cases where the palatal character of [ś] and [ź] is contrastive, but also because that way is phonologically more realistic.

23. In \*pśsati all of Slavic eventually generalized stem-final *-x-*, no doubt to avoid the awkwardness caused by the phonetic closeness to the verb meaning ‘write, paint’ (\*pśsati). See also Vermeer (2008: 559).

	msc Prog		msc Reg2		fem Prog		fem Reg2
Nsg	<i>robotęze</i>	≠	<i>rogo</i>		<i>stbža</i>	≠	<i>noga</i>
Gsg	<i>robotęža</i>	≠	<i>roga</i>		<i>stbgy</i>	=	<i>nogy</i>
Dsg	<i>robotęž/gu</i>	≠?	<i>rogu</i>		<i>stbzě</i>	=	<i>nozě</i>
Asg	<i>robotęgь</i>	=	<i>rogь</i>		<i>stbž/go</i>	≠?	<i>nogo</i>
Vsg	<i>robotęže</i>	=	<i>rože</i>		<i>stbze</i>	≠	<i>nogo</i>
Isg	?	?	?		?	?	?
Lsg	<i>robotęžě</i>	=	<i>rozě</i>		<i>stbzě</i>	=	<i>nozě</i>
Npl	<i>robotęzi</i>	=	<i>rozi</i>		<i>stbgy</i>	=	<i>nogy</i>
Gpl	<i>robotęgь</i>	=	<i>rogь</i>		<i>stbgь</i>	=	<i>nogь</i>
Dpl	<i>robotęzemь</i>	≠	<i>rogomь</i>		<i>stbžamь</i>	≠	<i>nogamь</i>
Apl	<i>robotęgy</i>	=	<i>rogy</i>		<i>stbgy</i>	=	<i>nogy</i>
Ipl	<i>robotęgy</i>	=	<i>rogy</i>		<i>stbžami</i>	≠	<i>nogami</i>
Lpl	<i>robotęžěxь</i>	=	<i>rozěxь</i>		<i>stbžaxь</i>	≠	<i>nogaxь</i>
NAVdu	<i>robotęža</i>	≠	<i>roga</i>		<i>stbzě</i>	=	<i>nozě</i>
GLdu	<i>robotęž/gu</i>	≠?	<i>rogu</i>		<i>stbž/gu</i>	≠	<i>nogu</i>
Dldu	<i>robotęzema</i>	≠	<i>rogoma</i>		<i>stbžama</i>	≠	<i>nogama</i>

The important point to keep in mind here is the following. After the contrast between /š/-/ž/ and /s/-/z/ had been lost before front vowels, the system of alternations inherited by the Prog paradigms (*\*robotęze* ~ *\*stbža*) differed from the one found in more central dialects of Slavic in a way that rendered generalization of the modified velar a less obvious change than it was elsewhere. For generalization of the modified velars to take place, speakers had to identify positionally palatalized [ž] and [š] with contrastively palatalized /ž/ and /š/. In other words, they had to realize that the modified consonant in such forms as Lsg *robotęžě* or DLsg *stbzě* was underlyingly identical with \*ž. This cannot have been easy because examples were rare and all other instances of [ž] and [š] were just positional allophones of /z/ and /s/. For that reason, speakers were bound at some point to miss the connection with \*š/ž and jump for \*s/z. Though understandable from their point of view, indeed inevitable, this effectively destroyed the morphophonological unity of the palatalized velars.

Given the presence of factors working against generalization of the modified velars, the most obvious way of regularizing the Prog paradigms was by making them conform to the Reg2 paradigms, which were similar already in that they, too, had stem-final -g- and -x- alternating with [ž] and [š], i.e. *s* and *z*, before endings beginning in a front vowel, moreover, largely the same endings in both paradigms.<sup>24</sup>

Reg2 paradigms were in two ways simpler than Prog paradigms:

24. As we have seen, nouns with stem-final -g- or -x- and Prog paradigms were few and far between. And although, quite obviously, nouns with stem-final -g- or -x- and non-Prog paradigms cannot have been particularly numerous either, they were more numerous and comprised such presumably common words as *\*rogь* 'horn', *\*snęgь* 'snow', *\*bergь* 'riverbank, hill', *\*porgь* 'threshold', *\*porxь* 'dust', *\*straxь* 'fear', *\*męxь* 'pelt, fur, sack, etc.', *\*noga* 'leg, foot', *\*sluga* 'servant', *\*muxa* 'fly', *\*stręxa* 'roof', not to speak of such adjectives as *\*mьnogь* 'much' and *\*suxь* 'dry'.

1. They did not have a small number of case forms with stem-final *-ž-* or *-š-* appearing seemingly out of the blue.
2. They did not have endings capriciously beginning in *-e-* corresponding to *-o-* in the hard inflectional subtype. As it happened, the number of such endings was tiny, which is bound to have made their position even more precarious: in the msc *o*-stem paradigm they were the Nsg – if it still existed – and the Dpl, in the *ā*-stem paradigm only the Vsg.

It follows that by restructuring the Prog paradigms on the example of the Reg2 model the language stood to eliminate a whole range of anomalies. Two changes were needed for it to happen:

- analogically replacing *-ž-/š-* with *-g-/x-*;
  - eliminating forms with *-ze-* or *-se-* corresponding to *-go-* or *-xo-*.
- And that is what I assume happened. The stem-final *-g-* of *jaga* and similar words owes its existence to the restructuring of Prog paradigms that took place everywhere in Slavic, but that led to generalization of the unmodified velar in R/BR in the case of nouns in stem-final *-g-* and *-x-* because local phonology rendered generalization of the modified consonant less obvious than it was elsewhere.

The reflex of *\*ć* differed fundamentally from that of *\*dž* and *\*š* in that it remained uniquely determinable even after the rise of positional palatalization by following front vowels. Assuming, for argument's sake, that palatalization in examples like DLsg *\*ovbće* was now automatic, the absence of non-palatal *\*\*ć* resulted in speakers still being in a position to identify the stem-final consonant with that in, say, Nsg *\*ovbca* (where it was not automatic) in a way they were not in the case of DLsg *\*stbže* and *\*stbža*. Since, therefore, in the case of stem-final *-ć-*, conditions were no different from what they were elsewhere in Slavic, one expects that further developments were the same, too. Hence it is not surprising that generalization of *\*ć* in Prog paradigms is found in R/BR in the same way as elsewhere.

### 3.7. The pronoun 'all'

The case of the pronoun 'all', though superficially similar to that of the nouns, was different in fundamental respects. Its paradigm was as follows (I leave the dual out, but include the Isg, about which there are no reasons to be diffident in the case of a pronoun):

	msc	msc+neut	neut	all genders	fem
Nsg	<i>vʙse</i>		<i>vʙse</i>		<i>vʙśa</i>
Gsg		<i>vʙsego</i>			<i>vʙsejǰ</i>
Dsg		<i>vʙsemu</i>			<i>vʙsei</i>
Asg	<i>vʙxʙ</i>		<i>vʙse</i>		<i>vʙś/xʁ</i>
lsg		<i>vʙsěmʙ</i>			<i>vʙsejʁ</i>
Lsg		<i>vʙsemʙ</i>			<i>vʙsei</i>
Npl	<i>vʙsi</i>		<i>vʙśa</i>		<i>vʙxy</i>
Gpl				<i>vʙsěxʙ</i>	
Dpl				<i>vʙsěmʙ</i>	
Apl	<i>vʙxy</i>		<i>vʙśa</i>		<i>vʙxy</i>
lpl				<i>vʙsěmi</i>	
Lpl				<i>vʙsěxʙ</i>	

This paradigm differed in important ways from the nominal paradigms discussed in the previous section:

1. Differently from the nouns, there was no closely parallel Reg2 paradigm to which the pronoun could readily adapt, the way *\*robotęze* and *\*stbźa* could adapt to *\*rogo* and *\*noga*, simply because there were no other pronouns with stems in *-x-* (or *-g-*).
2. Case forms with stem-final *-ś-* were few because only three pronominal endings began in *-a* (Nsg fem, NApl neu, NAdu msc), one in *-ʁ* (Asg fem) and none in *-u*. Case forms with unmodified *-x-* were few too, but pivotal and likely to have been frequent (Asg msc and Apl msc, NApl fem). Case forms with *-s-* were however predominant, and may have served as the starting-point for extension of *-s-* to forms with *-x-*.
3. Case forms with soft *-e-* (corresponding to hard *-o-*), while exceptional in the nouns, were very numerous, concentrating in the singular.

Given the structure of the paradigm, generalization of stem-final *-s-* to forms that originally had *-x-* seems natural, probably beginning in the singular, where the only case form with *-x-* is the Asg (or NAsg) msc, and perhaps the Asg fem. In the case of the former we are not in a position to tell whether the speakers jumped for underlying *-s-* and added the soft ending *-ʙ* because so many singular forms already had soft endings, or selected *-ś-*, after which *-ʙ* was automatic > *-sʙ*. Anyhow, from that stage onwards elimination of *-x-* in the msc Apl and NApl fem, with substitution of the soft ending *\*-ǰ*, was natural. As for the Asg fem ending, if a substitution needed to be carried out at all, it is obvious the speakers took stem-final *-ś-* from the Nsg fem.

## 4. Notes on the wider context

The reconstruction that was presented in the preceding section raises some problems having to do with neighbouring dialects and languages.

### 4.1. Lechitic versus Russian-Belorussian

As is well known, Lechitic is like R/BR in reflecting a system in which at some stage consonants were palatalized by following front vowels. Assuming that P *jędza* and Old Polish *stdza* (< \**stʲdźa*) are representative of local developments, one wonders why the Prog paradigms did not evolve there in the way they did in R/BR.

A closer look at the consonant system brings to light two important differences. Since \**dź* never lost its initial occlusive element in Lechitic (see section 3.3), it remained uniquely identifiable, just like \**ć*, even if early palatalization of consonants by following front vowels was carried through the way it was in R/BR, as is likely. And since Lechitic is West Slavic, it participated in the early merger of \**ś* with \**š* (see section 3.2). As a consequence, the structure of the Lechitic paradigms was different in such a way that there was no basis for the developments that led to the generalization of stem-final *-g-* and *-x-* in R/BR.

A striking detail found in all of Lechitic is the presence of an unmodified velar in the local continuations of \**-ldźa* (e.g. *ulga*). It is likely that this reflects the well-known fact that unsuffixed \**lbgb* ‘light’ survived in Lechitic much longer than elsewhere in Slavic – it still survives dialectally – and was available as a model for analogical reintroduction of unmodified *-g-* that was more transparent than suffixed \**lbgbkb* (see further section 2.6).

### 4.2. A hypothesis as to the underlying cause of the rise of allophonic palatality

It is a familiar fact that in Lithuanian, consonants are obligatorily palatalized when followed by front vowels. If that was the case also in the Baltic dialects that were submerged by Slavic in the present-day Belorussian area, chances are that subphonemic palatalization of consonants followed by front vowels was a feature of Slavic as spoken by first generation ex-Baltic speakers there and that that is the ultimate source of the palatalization correlation that developed later in most of East Slavic.<sup>25</sup>

There are several indications pointing to linguistic contact between Slavs and northern non-Slavs as early as the period that saw Reg2 & Prog taking place, notably:

25. Although I have not come across this idea in the literature I have seen, it is so obvious that I assume that it is not new and that I simply have not looked in the right places.

1. It is generally accepted that the hydronym *Luga* continues the first element of the Finnic compound *Laukaanjoki* (Mikkola 1906: 10, accepted by Kalima 1915: 59 and most later investigators). This would seem to imply that the diphthong \**ou* had not yet been monophthongized at the time the name passed into Slavic.
2. As we saw earlier, the variety of Slavic spoken in the Novgorod-Pskov area originally stood out from all other Slavic dialects in not displaying the effects of Reg2 (section 2.2(2)). This suggests that the monophthongization of diphthongs took place there after the palatalization rather than before, as elsewhere, so that modified velars occur only in words in which Prog took place.<sup>26</sup>
3. Latvian-Slavic and Finnic-Slavic loans indicate contact in the period post-dating the monophthongization of diphthongs, but preceding the raising of monophthongized \**ei* and \**ou* to *i* and *u*.<sup>27</sup>

It would seem to follow that one is entitled to operate with the possibility of Baltic-Slavic and Finnic-Slavic substratum effects beginning at the latest around the stage at which Reg2 & Prog and the monophthongization of diphthongs took place. However, chances are that there was a lengthy period of ongoing assimilation during which new first-generation ex-Baltic speakers of Slavic appeared, and made their influence felt, all the time.

If palatalization of consonants followed by front vowels did originate in Baltic, it obviously moved beyond its area of origin. Given the way Slavic was interconnected during most of the second half of the first millennium, and carrying out joint innovations accordingly, that is more or less what one would expect. Nevertheless it may not be accidental that the presence of systems with a genuine palatalization correlation coincides fairly closely with the presence of Baltic speakers in the past.

#### 4.3. The extreme north: Novgorod-Pskov

As was noted above (section 2.2(2)), the variety of Slavic that arose in the Novgorod-Pskov area originally did not display the effects of Reg2. This had important consequences for the position of the members of the \**č* series in the dialect:

26. See Vermeer (1986: 508, 2000: 17–22). All other explanations I am aware of assume that the palatalization process itself took a different course in Novgorod/Pskov from the one found elsewhere (e.g. Kryś'ko 1994: 32, Andersen 1998: 590–593). In view of the early date of both Reg2 & Prog and the monophthongization of diphthongs, and in view of the numerous innovations Novgorod/Pskov subsequently shared with its neighbours, I prefer an explanation by which the specific position of Novgorod/Pskov is fully accounted for in terms of Common Slavic processes.

27. For discussion and references see Vermeer (2008: 550–553).

1. They never occurred in word-initial position.
2. Borrowings apart, they were limited to words in which Prog had taken place, where they always alternated with velars.
3. Alternations involving them were the only cases of alternation involving the final stem consonants of nouns, with the sole exception of the msc Vsg of nouns with stems in velar consonants, where velars alternated with the outcome of Reg1.<sup>28</sup>

It follows that in Novgorod/Pskov Slavic the Prog paradigms, in addition to being complex and seemingly capricious, were utterly anomalous from the point of view of the system as a whole. Hence one expects that the need to eliminate them was even more pressing than elsewhere and made itself felt right from day one. The only question was: what to generalize?

Long ago I proposed the hypothesis that the marginal position of *\*dž* and *\*ś* tipped the scales in favour of general restoration of the unmodified velar (Vermeer 1986). Although I think it is the best explanation available at present, I would like to refine it here by the suggestion that Spir took place first: *\*dž* > *\*ž* (see section 3.3). After that had happened, *\*ś* and *\*ž* constituted a pair of palatalized sibilants squeezed in uncomfortably between *\*s/z* and *\*š/ž*. The most obvious way to avoid having to produce these sounds was by substituting unmodified velars for *\*ś* and *\*ž* in the mere dozen of items in which they occurred and in which part of the case forms already displayed unmodified *-x-* or *-g-* in stem-final position.

On the other hand, since *\*ć* was less vulnerable phonologically because it was not contrastively opposed to non-palatal *\*\*c*, in addition to being much more frequent, it was generalized in the ordinary pan-Slavic fashion, only to merge with *\*č* before Depal had taken effect, producing *cokan'e* (section 3.2). If any examples of *\*ś* and *\*ž* survived at this stage, which may have been the case in borrowings, one expects that they merged with *\*š* and *\*ž*.<sup>29</sup>

#### 4.4. A suggestion on Old Novgorod Dsg *kъnjazu*

Andrej Zaliznjak has drawn attention to the existence of at least five 12th-century examples of Dsg *kъnjazu*, with *-u*, instead of regular *kъnjazju* (Zaliznjak 2004: 46–47). What is odd here is that parallel examples with similar departures from orthographic normalcy (say Gsg *\*\*kъnjaza* or Dpl *\*\*kъnjazomъ*) appear to be extremely rare, to the extent that they occur at all.

28. Note that we are not in a position to tell for how long the original msc *o*-stem Vsg *\*-e*, and with it the accompanying alternation involving stem-final velars, survived. In the Novgorod-Pskov dialect as historically attested, the Vsg is identical to the Nsg in this inflection. Examples with retained velars are attested at least from the final years of the eleventh century onwards. The textbook example is *arxistratiže* 'general, commander' (Karnëeva 1916: 126, with a footnote by Durnovo giving further examples), which is all the more telling for being a Church Slavonic borrowing.

29. See further Vermeer (1986), corrected and updated in Vermeer (2000: 18–20).

I would like to offer the suggestion that these examples are in fact natural in varieties of Russian that eliminated *\*ž* reflecting *\*dž*. Whereas subsequently /z'a/ was reintroduced from *\*zε*, and /z'o/ from *\*ze*, etcetera, there was no way for *\*\*/z'u/* (i.e. soft /z'/ followed by /u/) to arise in a similar way because there was no source. For that reason what one expects is the existence at some stage of speakers of northern Russian who were able to say Gsg *кѣнѣзѣ* (/кѣн'аз'а/) and Dpl *кѣнѣзѣ* (/кѣн'аз'омь/), but were forced to substitute *кѣнѣзу* for *\*кѣнѣзю* because they lacked the sequence *\*\*/z'u/*.

It is much less likely that speakers unable to say *\*кѣнѣзю* existed more to the south because there a voiceless counterpart of /z'u/ occurred in the frequent pronominal form Asg *\*вѣсју* (/вѣс'u/ or /вѣс'u/), for which see section 3.7.

#### 4.5. Novgorod/Pskov and mainstream Russian/Belorussian

There is no question but that Novgorod/Pskov started out as a remarkably aberrant Slavic dialect. Not only did it somehow manage to evade Reg2, but it also failed to generalize the msc *o*-stem Asg to the Nsg, developing the unique Nsg ending *-e* instead. But contact with the rest of the Slavic world was always maintained, as is shown by joint innovations too numerous and basic to list. Since mainstream R/BR provided Novgorod/Pskov's only link with outside Slavdom, this implies the existence of close linguistic contacts between carriers of the two dialects. It follows that one can rarely be sure that a feature found in both dialect areas is autochthonous rather than imported from the neighbouring area.

To give an example, it is likely that the Prog paradigms were regularized in Novgorod/Pskov almost immediately after they had arisen because they were unlike anything else in the system (section 4.3). In dialects that had carried out Reg2 they were decidedly less anomalous. It follows that generalization of the unmodified velars in the nominal declensions in R/BR, though understandable as an internal development (see section 3.6), may well have been encouraged by contact with northern speakers in whose language the change had been carried out already. In the case of the pronoun *\*вѣсѣ/вѣсѣ*, on the other hand, the northern solution was less attractive to southern speakers because generalization of the unmodified velar was not a very obvious change given the facts of their dialect (section 3.7).

Along similar lines, generalization of unmodified velars in verbs, which is a natural innovation in just about any system (section 2.4), may well have started in Novgorod/Pskov as it was eliminating all instances of alternating *\*ž* and *\*ś*, after which elimination of the alternation in the case of *\*č* was trivial.

## 5. Conclusions

In the present contribution, I have argued for the following chronology for R/BR (except Pskov/Novgorod):

1. Reg2 & Prog give rise to \*ć, \*dź, \*ś (section 3.1).
2. Spir: the initial element of \*dź, being redundant, is lost (> \*ź) (sections 3.2–3).
3. At some fairly early stage (possibly even before Reg2 & Prog), the variety of Slavic spoken in the Russian-Belorussian area adopts a rule by which any consonant is automatically palatalized before front vowels (section 3.5). Chances are that the rule originated in the Baltic substratum that was in the process of being submerged by Slavic (section 4.2).
4. As a consequence, \*s and \*z merge with \*ś and \*ź before front vowels (section 3.5).
5. In the case of \*ś and \*ź, the merger of \*s and \*z with \*ś and \*ź before front vowels renders generalization of the modified velar in nominal paradigms a less obvious way of regularizing the Prog paradigms than it was elsewhere; accordingly they adapted to the Reg2 paradigms instead (section 3.6).

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