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Is there a Sound Change of "*e* > *o*" in Russian?*

1. Scholars dealing with Slavic diachronic phonology have been puzzled by a development which is traditionally designated as "*e* > *o*", since this sound change appears to lack unambiguous sound laws which would explain the conditions under which it originally occurred. This ambiguity has arisen due to numerous levelings, analogies and deviations. Over a lengthy period of time and across a larger area these have seemingly obscured the original state of affairs and thereby clouded the possibilities of correctly interpreting the mechanism of this sound change.

In the present paper, I will propose an approach which derives the mechanism of the development of "*e* > *o*" from a Late Proto-Slavic drift. This drift is typical of the Northern dialects, but not entirely unknown to all of Slavic, thus mirroring a Common Slavic tendency. A chronology such as this requires postulating a mechanism which leads to describing the sound change in question not as "*e* > *o*", but rather as *ă̆* > *ă* (> *o*). To explain this change, I will make use of the less popular notion of timbre.[1]

Furthermore, I will question this traditional, from the modern point of view the synchronically motivated "consonantal" interpretation of the conditions of the development and instead propose a diachronically justified "vocalic" inter-

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[1] The notion of timbre will be used in the sense of Martinet (1964: 119) and Mareš (1999: 74 ff.). Thus, timbre in this context, denotes a non-phonological correlation that affects the back vowels occurring after soft consonants. The notion of timbre would correspond, in somewhat obsolete terminology, to German *Klangfarbe*. How the notion of timbre relates to the problem of this paper will be explained in Sections 3.1 and 3.2.

pretation.[2] Nevertheless, for the sake of clarity, I shall mainly use the traditional notation, i.e. "*e* > *o*".

The outlines of developments presented in this paper should be conceived as rough approximations and generalizations within an abstract diasystem, for it is clear that more specific studies in historical dialectology are required to reveal the full mechanism and chronology of the development in question. In this paper, the description and explanation of the mechanism, conditions and possible causes will deviate from the "regular" interpretations to that extent that it would be impossible to discuss even the mainstream theories that relate to the subject, let alone more marginal views. However, certain earlier views must inevitably be considered to demonstrate that they actually do not adequately explain the conditions for the sound change.

2. When analyzing the conditions of the "*e* > *o*" development, many scholars have expressed their resignation when facing the variety of rules that have been proposed during the long history of this question to explain the conditions under which the change takes (or has taken) place.[3] And when scholars think they have discovered the magic rule (or a set of rules), they have been obliged to explain away the numerous exceptions and deviations.[4]

The territorial scope of the sound change of "*e* > *o*" is, however, quite clear: It only occurs in North Slavic (in all of East Slavic, in Lechitic and in Sorbian). But this seems to be the only common feature. In other words, major differences emerge within this area in the scope of the vowels affected, the conditions and, apparently, the chronology of the change. On the other hand, however, the territorial delimitation of the phenomenon suggests that it has a common source and, possibly, a similar mechanism.

Currently, there seems to be a relative consensus that the development of "*e* > *o*" should not be viewed as a single sound change, but as a sequence of sound changes whose results are similar but which belong to different chronological

[2] It should be noted that the consonantal interpretation of conditioning factors is correct to the extent that it may have actualized synchronically, i.e. the nature of the succeeding consonant is perceived as a conditioning factor since the historical constraints have lost their validity in the new phonotactic environment. This is probably one of the sources of analogy.

[3] As Le Feuvre (1993: 235) for example puts it (leaning on Wexler 1977: 111, Shevelov 1979: 143 and Andersen 1978: 12): "In fact, the only common point is a negative one: the change does not occur if [e] is before a soft consonant".

[4] Surprisingly, the offered explanations of "exceptional" forms very often happen to be correct, although the mechanism of sound change is incorrectly explained.

layers, and that they are differently conditioned. This observation represents, in my opinion, major progress in the reconstruction history of this Slavic development and it should be basically accepted.[5]

The oldest layer of the "*e* > *o*" development consists of the vowel succeeding the palatals *č*, *š* and *ž*. This development is common, to a varying degree of consequence, in all of North Slavic. In East Slavic, the same development also occurs after *c* and *šč*.

A special instance which is said to affect East Slavic only, relates to the initial *je*-sequence. When *je*- is stressed, in many cases, it yields *o*-. However, it is probable, as convincingly shown by Andersen, that not only is it apparent that a sound change such as this does not exist but also that the entire phenomenon relates to a considerably deeper time depth than usually assumed.[6] For this reason, the "sound change of *je*- > *o*-" will not be considered in this study.

Today, it is generally acknowledged that a similar development which is encountered in Lechitic, Russian and Belarusian after paired palatalized consonants is actually later than the development after the unpaired palatals *č*, *š* and *ž*. Usually this is justified by the circumstance that it affects Ukrainian to a relatively limited extent (as numerous levelings considerably obscure the original state of affairs in Sorbian the development within it will therefore not be considered here).

Although the developments in Lechitic and Northern East Slavic display typological similarities, the vowels affected by the change are not entirely identical. For instance in Polish, the *e* originating from ь does not change to *o* as it does in Russian and Belarusian. Instead, in Polish, a similar sound change affects *ě*, which under certain conditions changes to *a*. This development is alien to East Slavic but it can also be observed in Bulgarian-Macedonian.[7]

The Russian and Belarusian development of "*e* > *o*", which takes place after paired palatalized consonants, can be classified into types and subtypes[8] as follows:

[5] Such a chronological division can be found, for example, in Carlton (1991: 172 ff.) and Wexler (1977: 111 f.).

[6] See also Andersen (1996: 10 ff.; for a criticism of "traditional" views, see especially 157 ff.).

[7] A certain parallelism between Polish and Bulgarian-Macedonian can also be observed in the development of the nasal vowels (see Nuorluoto 1993; 2003 with further references).

[8] There are, of course, a number of "mixed" types in which the listed types and subtypes are used interchangeably, or in which one type simply predominates, depending on the individual choice (see Carlton 1991: 173–174). Sociolinguistic factors governing the choice cannot be

(i) The standard type occurs in examples such as *s'estrá* : *s'óstry*.[9] This type could be further divided into an *ikan'e*-subtype: *s'istrá* : *s'óstry*. Today, this type is the most widespread and it represents, together with its *ikan'e*-subtype (pronunciation), the state of affairs in the Russian literary standard. Originally, this type was probably less widespread and it should be considered typical of the Suzdal' and Moscow dialects historically.

(ii) The *ekan'e*-type is found in cases where no "*e* > *o*" development is observed: *s'estrá* : *s'éstry* (or, in certain dialects, *sestrá* : *séstry*). Today, this type is predominantly encountered in the south and southeast (Carlton 1991: 174–175) but a delimitation that would point to a more clearly specified continuum cannot be drawn.

(iii) The *jakan'e*-type retains *a* in the unstressed position: *s'astrá* : *s'óstry*.[10] This type is mainly encountered in the *akan'e* region (DARJa I: maps 3 and 8), and it is likewise represented in the Belarusian standard language.

(iv) The *jokan'e*-type *s'ostrá* : *s'óstry* generalizes *o* in all possible positions regardless of stress. This type occurs predominantly in the north (northwest and northeast, see DARJa I: map 4).

Below, in Section 3.2, all the types will be discussed in more detail. As is evident on the basis of the dialectological data available, no clear geographical distribution of the above types can be given (cf., e.g., DARJa I: map 4). The original distribution was likely less random but today it remains completely irretrievable.

3. As expected, owing to the seemingly complicated conditions of the development of "*e* > *o*", a number of explanations have been proposed which offer different sound laws that would create regularity and explain irregularities. Most of the mainstream views are based on the assumption that it really was the vowel *e* that underwent a change to *o*. In addition, most of the earlier explanations have

considered here, and "pure" types will serve as representations of originally consequent forms in the given areas.

[9] Kiparsky (1963: 112) argues, however, that the word *sestrá*, which is used here as an example, earlier had a word-final stress throughout the paradigm. Even if this were so, there are a number of other words that display a mobile stress, and *sestrá* can therefore still be used as an example. The possible leveling that may have affected these examples is irrelevant in this context.

[10] Even if *jakan'e* (and *akan'e*) is considered to be an innovation in unstressed syllables, represented by forms such as *s'astrá*, *s'ʌstrá* or *s'əstrá* (see Kiparsky 1963: 112), no substantial changes to this division are necessary.

also viewed all the possible representations of this development as a single sound change which would have been triggered by the softness of the preceding soft consonants. The confusion and resignation of scholars when they subsequently confront the realm of rules and amendments to the rules is not surprising since both of the above assumptions are erroneous, as I aim to demonstrate below.

The first major progress that seemed to shed some light on the mechanism of this sound change, was the observation that the sound change clearly displays at least two chronological layers, each having their own (but still by necessity ambiguous) conditions (see above).[11]

Yet another major observation was necessary to reveal the nature of this phenomenon. Unfortunately, this second major observation, promoted predominantly by Mareš,[12] was most probably not completely understood by scholars trying to solve the problem since it has remained largely unnoticed. As a result, the second observation is rarely referred to in the scholarly literature. This is rather odd because modern scholarship predominantly accepts that there were two low short vowels in Late Proto-Slavic: /ă̆/ and /ă/ (instead of /e/ and /o/ in the earlier tradition), i.e. the Late Proto-Slavic vowel system would have been, at least dialectally (i.e. in the north), "rectangular" – instead of "triangular", as postulated earlier.[13] Mareš himself also failed to extend his theory to cover other phenomena than those occurring in Late Proto-Slavic (Mareš's *Frühslavisch*). Had Mareš's idea of the role which the correlation in timbre had played in this development been fully understood, it would have been clear that the early, Late Proto-Slavic dialectal development of "*e* > *o*" after *č*, *š* and *ž* was originally u n c o n d i t i o n e d. The only problems to be solved thereafter would have been (i) to explain why there still are instances in which the above development apparently has some conditioning factors, and (ii) to clarify the various conditions that affected the somewhat l a t e r development of "*e* > *o*" in the areas in which it is encountered.

[11] A classification of layers can be found, e.g., in Carlton (1991: 172–173) and Wexler (1977: 111–112).

[12] Extensively explained in Mareš's publications since the 1950s (e.g., Mareš 1956; 1999). Thus, Mareš could be viewed as the exclusive promoter of the second major observation.

[13] Stieber (1973: 25) has also observed that the labialization of *ă* > *o* is a secondary phenomenon that succeeds the development which is discussed here. However, his notation suggests that he has not realized the basic mechanism since he posits a "dispalatalization" of front vowels which he, according to the tradition, designates with *e* and the like. Stieber's merit is, nevertheless, that he has understood the time depth of the development.

3.1 The most commonly offered explanatory model is based on the assumption that the vowel /e/ in a palatal environment was rounded to [ö] which, in turn, would have been backed to /o/.[14] An explanation such as lacks phonetic plausibility. Furthermore, such a development is not attested in any reasonable manner and, since there probably was no vowel /o/ at the time of the change, one could ask whether a tendency to obtain it could be based on a development such as this. However, a labialized front *ö* could have emerged secondarily at a later time. If so, it would have been a positional non-phonological variant of *o* after soft consonants as is attested in certain Russian borrowings in Finnic.[15]

The most striking handicap of the explanation that views the development of "*e* > *o*" as a relatively late (12–13 century)[16] and straightforward development (with a phase with *ö* or without it) is borne out from the very circumstance that *ě* does not yield *o* in the dialects in which *ě* most certainly had merged by that time with *e*. This is a very significant point because, in Lechitic, *ě* also participates in a similar development – as originally do the nasal vowels, too. In Russian, there are yet some commonly acknowledged analogies such as *gnëzda*.[17]

The fact remains that two prerequisites for the development of "*e* > *o*" seem to emerge: (i) The preceding consonant must be palatal or soft and (ii) *ă̆* is a low vowel, i.e. a part of a "rectangular" vowel system. If one of these requirements is not met, the phenomenon does not occur. This means that in the Slavic languages and dialects, which do not have the development of "*e* > *o*", but in which

[14] A more sophisticated version of this interpretation, proposed apparently originally by Gerovský (1959) and advocated later, for example by Wexler (1977: 111), Andersen (1978) and Le Feuvre (1993), is based on the observation that the elimination of the Proto-Slavic vocalic correlation in quantity, as well as the the introduction of the dynamic stress in Russian, yielded a new correlation in quantity in which the stressed vowels were long. Thus, the new stressed vowels were susceptible to diphthongization which would, after a soft consonant, have resulted in the development of *e* > *eo* > *o*. However, this scenario fails to explain why a stressed *ě* does not participate in this sound change.

[15] Cf. Fi *tökötti* (< R *d'okot'*). It should be noted that the Slavic borrowings in Finnic offer little evidence for the development of "*e* > *o*". To my knowledge, there are no old borrowings in which this phenomenon would be attested. Kalima (1956: 28) only lists Finnic equivalents of R *d'okot'*, *sëmga*, *beséda* < *besěda* and possibly *tesló*. Karelian *beśoda* indicates that this is a later borrowing which displays the North Russian *ě* > *o* development. The Finnic *ö* can also be explained in other examples by the front timbre after soft dentals – as is testified, for example, in the considerably later Fi *tyrmä* < R *tjurma*.

[16] See, e.g., Kiparsky (1963: 107).

[17] See Kiparsky (1963: 112). Few such examples occur in the Russian literary standard, whereas their occurrence is said to be more frequent in the Northern dialects (Kiparsky 1963: 112; DARJa I: map 6).

consonants are soft in front of *e*, one has to posit the rising of $\breve{a} > e$[18] in which case, one of the basic requirements is not met for the existence of a correlation in timbre.

The point of departure in this paper is that the development in question represents a neutralization of the correlation in timbre towards unmarkedness, i.e. $\breve{a} > a$, which is also Mareš's basic idea. This explanation promptly applies to the Late Proto-Slavic dialectal development after *č*, *š* and *ž*. Since these palatals are unpaired in regard to the correlation in softness (*měkkostní korelace*), despite their phonetical softness, they were perceived as being phonologically hard and the vowel $\breve{a}$ following them lost its front timbre, i.e. was backed – as was its long counterpart in all of Slavic after these consonants. This backing is seen as a consequence of the First Palatalization of velars. Thus, the development after *ž*, *š* and *č* in North Slavic was, with all likehood, originally an unconditioned intrasyllabic sound change and it did not, in the area in which it is encountered, differ typologically from the Common Slavic development of the long low vowel $\bar{\breve{a}} > \bar{a}$ after the very same consonants.

An objection could arise over the claim that the above sound change after *č*, *š* and *ž* yet appears to have some conditioning factors which partially overlap with the conditioning factors that govern the development after paired palatalized (soft) consonants. E.g., the Old Polish *żona* : *żenie* (loc.sg.) is often referred to as an argument in support of the antiquity of the alternation, since the Modern Polish non-alternation looks like a leveling *żona* : *żonie* (loc.sg.). Stress in Russian and Belarusian seems to determine whether the change takes place or not. Yet in view of the fact that the Old Russian vernacular documents contain many instances of the grapheme <o> and, apparently, without any observable conditioning factors, it could be concluded that the later conditioning has been analogically imposed by the later development in which "*e* > *o*" takes place after paired soft consonants (see Gorškova 1968: 92 ff.; Le Feuvre 1963). This could also well apply to Old Polish in which case the Modern Polish form would be a back-formation. This is one of the key issues that would deserve to be further scrutinized in a more detailed study.

If the above scenario is accepted, it makes little sense to try to date this development by tracking the instances of the grapheme <o> in textual material. Rather, it would be best to induce traces of the change (or the change in pro-

[18] A situation such as this can be postulated for the Slavic dialects in the area south of the Carpathian Mountains (see Nuorluoto 2003). The long vowel $\bar{a}$, instead, remained low in Bulgarian and Macedonian which partly have the development of $\bar{\breve{a}} > \bar{a}$ as in Lechitic.

gress) by questioning the traditional interpretation of the orthography of, above all, medieval vernacular Cyrillic texts such as birchbark letters.[19] The occurrence of the grapheme <o> implies namely the ultimate result of the development but it has little value when describing the mechanism and chronology of the change, a process that must have started considerably earlier. Thus, since the existence of a labialized *o* (or, in Russian, a narrow *ô*, see Zaliznjak 1985: 160–161) is not likely at the time when the change started operating, the labialization and rising of the stressed *ă* > o is rather redundant.

The point is then to explain why a stressed short *ă̆* was backed to a short *ă* after palatalized consonants (participating in the *měkkostní korelace*) before a syllable with a back vowel (or, in synchronic and traditional diachronic terms, before a hard consonant). The later labialization of *ă* > *o* in this connection would thus simply represent the standard development of any one stressed *ă*.

As for the overall mechanism, it can be concluded that an inherited Slavic drift also affected the development after the Proto-Slavic period – at least in the northern dialects. This drift was also operational in the area in which the consonants were palatalized in front of *ă̆* (Shevelov's overall palatalization, see 1964: 488 ff.).

3.2 Although the above theory well explains the mechanism of the sound change of "*e* > *o*", it does not explain the conditions under which the correlation in timbre was eliminated on behalf of unmarkedness in the cases in which the sound change at hand took place after paired palatalized consonants (markedness must be viewed as the inherent "default" option). As was noted earlier, the conditions vary to a certain extent across the area in which this phenomenon occurs, and not all the vowels that are affected by it are the same. These circumstances seem to confirm the inference that we are dealing with two chronologically different processes. In this section, I shall only discuss the development in Russian-Belarusian.

It is important to note here that the so-called strong *jers* which were full participants in the sound change at hand, had by that time merged phonologically with the reflex of the Proto-Slavic /ă/. Certain vernacular texts, notably birch-

[19] The deductive method operates with, as it is believed, unambiguous evidence such as texts. However, with a certain degree of induction the evidence offered by, for example medieval texts becomes salient. This is because it cannot be expected that the vacillating orthography of Cyrillic texts could render every change in progress. This applies to the sound change at hand but it also has a parallel in tracking early the traces of *akan'e* by looking for instances with the grapheme <a>.

bark letters, have orthographic peculiarities that support such a view.[20] As a consequence, *ă* possessed two phonetic variants: one front and one back, depending on the palatalizing or non-palatalizing effect of the original vowel. This development can therefore be described as follows: Late Proto-Slavic *ă̆*, *ă*, *ĭ*, *ŭ* > /ă/ = [ă̆] ~ [ă]. At that time a correlation in quantity must have existed at least in the pair *ă* : *ā* – to ensure a plausible explanation for the later divergent development of the short and the long counterpart.

The dating of the "*e* > *o*" development, which is based on predominantly non-vernacular text material, naturally requires a "consonantal" interpretation, i.e., that the change "*e* > *o*" only took place in front of hard consonants. This was because the existence of certain vowels (notably the so-called weak *jers*) was putatively not possible at the time of the change. A "vocalic" interpretation, in turn, requires, that the vowels still existed in their Proto-Slavic "Lautungen" at the time when the prerequisites for the change were created (see Holzer 2003). It is therefore possible to track the phenomenon to its roots considerably earlier than the standard explanation suggests.

If the North Proto-Slavic drift to maintain the front timbre after the paired palatalized consonants without conditioning factors had been default, it would be expedient to see a neutralization of timbre in intrasyllabic terms towards markedness. The ultimate result of this would be a phonetic development of C'ă̆ > C'e. This was not the case apparently and it is obvious that instead, an intrasyllabic drift was replaced by intersyllabic conditioning.[21]

Additionally, new accentual circumstances had arisen under which the difference between stressed and unstressed syllables had been converted to a system of "new" quantities at the cost of the old correlation in quantity. In the new distribution, it was the stressed syllable that was most susceptible to the neutralization of the correlation in timbre, either towards unmarkedness or markedness.[22]

[20] Zaliznjak, in several studies, (e.g., 1986: 100 ff.; 1993: 241 ff.; 2002; 2004: 23 ff.) explains such peculiarities away by interpreting them as purely graphical effects. In a study currently in preparation, I shall offer a phonological explanation for the interchangeability of the graphemes <o> and <ъ> in the birchbark material.

[21] Apparently, the tendency in intrasyllabic Proto-Slavic phonotactics was to maintain front timbre after the palatals *l'*, *ń* and *ŕ*, which could also be labelled as paired, at least in absolute auslaut, since forms such as *pol'o* did not develop.

[22] The interesting attempt of Le Feuvre (1993) to deduce the conditioning factors of the "*e* > *o*" development from different degrees of length, which would depend on the position of the syllable in regard to stress, must unfortunately be ignored in the present study since it would require a lengthy discussion.

Apparently, unstressed vowels were likely to experience changes, such as the rising of *ă̆* > *e* (and, further, in some dialects the reduction > *i*, referred to as *ikan'e*). This would explain the development in unstressed syllables in all the types listed below.

The chronology applying to all the types mentioned below can only be postulated in relative terms: It was the palatalizing effect of *ă̆* (whatever its mechanism and absolute chronology may have been) that triggered the emergence of the correlation in timbre, since it had the effect that /ă̆/ and /ă/ merged to a single phoneme, designated here as /ă/.[23]

Thus, the regional developments listed above in Section 2 can be reconstructed as follows:

(i) In the standard type *s'estrá* : *s'óstry* (including *s'istrá* : *s'óstry*), the stressed vowel only appears to be affected by the development at hand. In other words it is likely that each unstressed *ă̆* was raised to *e* before it started palatalizing consonants in front of it. Thus, the unstressed *e* was not affected by any developments typical of the other types. Rather, the unstressed *e* was able to experience further reductions, as is evident on the basis of the *ikan'e* subtype. Accordingly, stressed syllables remained the only environment in which the correlation in timbre was preserved. For this reason, only this type of syllable was susceptible to restructuring. For this "reduction type", the development of unstressed *ă̆* could be described as CăCV > CeCV > C'eCVØ(-) ~ C'eCV (> C'iCV ~ C'iCØ), and the one of stressed *ă̆* as CăCV[$^{\text{-front}}$] > C'ăCV[$^{\text{-front}}$] > C'ăCV[$^{\text{-front}}$] > C'oCV ~ C'oCØ.

(ii) Although the so-called *e*-type (*sestrá* : *séstry* or *s'estrá* : *s'éstry*) does not display a clearly definable geographical distribution, its greatest concentration in the south and southeast seems to link it to Ukrainian and the Carpathian region. It is therefore logical to conclude that this type represents a continuum to the south which may also point to the direction of settlement. If so, the non-palatalizing type *sestrá* : *séstry* should be viewed as primary in which case the type *s'estrá* : *s'estry* would have absorbed the softness of consonants secondarily due to the pan-Russian tendency and literary standard.

(iii) The "jakan'e-type" with a preserved *a* in unstressed syllables represents merely a basic and r e g u l a r d e v e l o p m e n t in the dialects with *polnoe*

[23] To be sure, the denotation of the underlying phoneme is arbitrary. I prefer to refer to it with the symbol used for the unmarked /ă/.

akan'e. This development could be exemplified as follows: unstressed *s'ăstrá* > *s'ăstrá* > *s'astrá* and stressed *s'ăstry* > *s'ăstry* > *s'óstry* (cf. completely regularly *s'estr'é*, loc.sg. in this type, indicating the elimination of the correlation in timbre towards markedness in front of a syllable with a front vowel, i.e. the "default" development in the unstressed position).

(iv) The development described under (iii) already reveals how the "jokan'e-type" *s'ostrá* : *s'óstry* should be explained: The type in question merely represents a regular okan'e counterpart of the above regular *akan'e* type. Furthermore, this is natural in view of its geographical distribution. Thus, the development can simply be described as follows: *s'ăstrá* > *s'ăstrá* > *s'ostrá* (i.e. any unstressed *ă* being labialized) and, when stressed, *s'ăstry* > *s'ăstry* > *s'óstry*. The fact that in the corresponding northern dialects *ě* is also susceptible to undergo the change may point to an analogous development of unstressed "*e* > *o*" (i.e. *s'óstry*). However, the possibility of such an analogy should be rejected since the analogy of *ě* > *o* has clearly occurred at a later date, as is testified, e.g., by the more recent Karelian *beśoda* < R *beséda* (< OR *besěda*).[24] Due to the increased frequency of /o/, imposed by *okan'e* and *jokan'e* in the northern dialects, an *e* of any origin was likely to undergo the analogous change to *o*. In short, the possibility that a stress retraction to the first syllable due to a Finno-Ugric influence would have triggered the change of "*e* > *o*" should, thus, be rejected.[25]

As to the elimination of the correlation in timbre (whether in stressed or in unstressed position), this correlation can be connected to the emergence of a mid-high front vowel *e* (= *ă* > *e*) in positions in which this was possible. If the vowel *ă* was susceptible to rising, it was inherently susceptible to doing so in every position, representing a sort of "default" development. But it did not and, for this reason, we actually only owe an explanation for the non-inherent change of *ă* > *ă*.

If the front open *ă* basically was able to remain as such in a stressed position but it nevertheless was raised in syllables preceding a front vowel and backed in syllables with a back vowel, the conditioning factor for eliminating front timbre must apparently be sought for the succeeding back vowel to have such an im-

[24] Cf. Kalima (1956: 28) and remark 15.
[25] Cf. Jakobson (1971 [1926]: 623).

pact. Depending on the chronology posited, such back vowels could be *ū*, *ā*, *ă* or *y*, *ъ* and the neutral *a*, respectively.

4. If we accept intersyllabic conditions (notably disyllabic) for the mechanism of sound change such as vowel harmony, as suggested, e.g., by Shevelov (1979: 159),[26] we have to accept the circumstance that a structurally and, above all, phonotactically different language may influence the structure of another language in a contact situation. For vowel harmony, Russian and Belarusian[27] could only have been influenced by a Finno-Ugric substratum language. The above hint, that it is the back vowel syllable that influences the preceding syllable, relatively clearly points to some types of vowel harmony encountered in Finno-Ugric. To my knowledge, the structural impact of Finno-Ugric on Russian has not yet been considered to a greater extent.[28]

As far I can see, there are no obstacles to positing vocalic constraints on the phonotactic rules that govern the change of "*e* > *o*" in Russian. First, the inherent mechanism as it was reified in Late Proto-Slavic, notably its northern dialects, was intrasyllabic and not, for instance, disyllabic. The disyllabic mechanism emerged in those dialects that developed an overall palatalization of consonants before front vowels. Moreover, there are no chronological reasons, as was concluded above, to reject an early change which makes it probable that syllables were still open at the time the change emerged. This increases the probability that vocalic constraints on the change existed.

One could object that the change of "*e* > *o*" also took place in absolute auslaut, which would represent a major objection to the possibility of disyllabic conditioning. However, instances with -*o*, except for the cases after *č*, *š* and *ž*, which originally had no conditioning (as was demonstrated above), the scope of the occurrence of word-final -*o* is extremely limited, and it occurs mainly in certain derivational types. Instead, the instances of the forms such as *pol'o* (a paired

[26] I have also referred to a possibility such as this in an earlier study – without, yet, going into details (Nuorluoto 2004).

[27] At least to a certain extent, Belarusian developments may have been influenced by the Russian developments.

[28] Although it is probable that the Slavs migrating towards the north encountered en route Baltic peoples, and that these contacts may have had some sort of linguistic impact on Slavic, it is difficult to pinpoint any specifically Baltic phonotactic constraints in, say, Russian. For the history of Baltic-Slavic relations and the distribution of some isoglosses, see Andersen (1996: passim).

palatalized consonant!), which occur in Russian dialects, should be considered analogical generalizations of hard endings.

For a structural influence to be able to have an impact on the phonotactic make-up of a language in a contact situation, heavy cultural exchange between the two languages is required (cf. Thomason & Kaufman 1988: 74–76). In the contact between Finno-Ugrians and Slavs, the Finno-Ugrians must have had a considerable language shift to Slavic, preceded possibly by bilingualism. This is actually the only model that offers a plausible explanation both for the disappearance of Finno-Ugric peoples and languages in vast areas of Russia as well as for the rapid expansion of Slavic.

One should in this context understand that vowel harmony involves a phonotactic constraint that governs the occurrence of front and back vowels within a word. Thus, maximal vowel harmony would mean that a word would only contain either front or back vowels. Nevertheless, as several types of vowel harmony are represented in Finno-Ugric, it is hard to determine which stage included which constraints, on the one hand, and what type of vowel harmony was encountered by the migrating Slavs. Furthermore, did these migrating Slavs encounter a single type of vowel harmony or several types of it?[29]

Two problems should be considered: first, the question which vowels in the potential Finno-Ugric substratum language(s) participated in vowel harmony; second, how does the Russian sound change relate to the fact that the Finno-Ugric vowel harmony tends to be progressive, i.e. the vowels are adapted to vowel harmony to the right of the word, whereas in Russian, the opposite appears to be true. Or could perhaps the Russian sound change shed some light on this inherently Finno-Ugric problem?

Since the possible vowel harmony could only cause the vowel /a/ with front timbre, i.e. [ä], to be backed, the question about the type of vowel harmony in Finno-Ugric is less relevant here. This is to say that the underlying Finno-Ugric vowel harmony contained certain front vowels which were possibly neutral, as is the case, for instance, in Finnish.[30]

As to the direction of the vowel harmony in Finno-Ugric, it is natural to assume that the stressed (initial) syllable governs the direction of vowel har-

[29] For an overview, see Rapola (1966: 393 f.), Sammallahti (1988: passim), Comrie (1988) and Korhonen (1988).

[30] In Finnish, *e* and *i* are neutral, and they can thus be combined with front or back vowels.

mony.[31] However, as has been suggested more recently, vowel harmony was able to operate in both directions (see Rapola 1966: 394 f.; Korhonen 1988). It is not entirely excluded that the regressive nature of the change of "*e* > *o*" was imposed by Slavic morphological constraints, e.g., the drift to preserve certain morphological categories intact. In Russian or its proto-dialects, the change affected a sequence of two adjacent syllables – one stressed and the other unstressed. This means that the substratum Finno-Ugric would not have differed from what is known, e.g., on the basis of Finnish in which only one syllable is clearly stressed (stress timed).[32]

The interpretation, based on vowel harmony, of the conditions under which the correlation in timbre in Russian was eliminated towards unmarkedness, could thus be described as follows: The back vowels *ŭ*, *ū* and *ă*, *ā* in posttonic syllables neutralize the correlation in timbre of the preceding stressed syllable towards unmarkedness, i.e. the back allophone of /a/. For example, [ä] is phonetically backed to [a]. This rule requires a chronology with retained open syllables in Slavic.

5. The developments described above could be summarized with the observation that no development such as "*e* > *o*" has actually taken place. This conclusion can be inferred from a reinterpretation of the conditioning factors that either did not exist (as was the case with the early developments) or which could well be deduced from constraints that were imposed by language contact. So the development which should be described as *ă̆* > *ă* reflects a Proto-Slavic drift which is relatively better represented in North Slavic than in the other parts of the language area. This circumstance can be explained with the retention of a "rectangular" vowel system possessing two short low vowels, one front and one back: *ă̆* and *ă*.

When consonants became palatalized before front vowels in North Slavic, the phonological distinction between *ă̆* and *ă* was lost and this development gave rise to the now non-phonological distinction in timbre. In other words, /ă/ was represented by two allophones [ă] and [ă̆], depending on whether the preceding consonant was hard or soft.

[31] Xelimskij (2000) offers a very acute hypothesis that the vowel harmony of Slavic loans in Hungarian is governed by the position of stress in Slavic.

[32] In this context, one should also consider Shevelov's (1979: 159) observation about disyllabic sequences in Slavic. Cf. also Le Feuvre's (1993: 236) sceptical attitude about Shevelov's view.

In the further development, the correlation in timbre was eliminated in two directions, *e* and *ă*, under conditions which may have been caused by phonotactic constraints imposed by the substratum phonological systems. For Russian, only Finno-Ugric languages with their vowel harmony could be considered as candidates for such a substratum.

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