THE DEVELOPMENT OF *AKANJE* IN RUSSIAN: NEW DATA

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ABSTRACT

The paper deals with the problem of historical development of unstressed vowel systems in Russian. A phonetic explanation for the development of all existing types is suggested on the basis of a hypothesis that assumes the priority of the non-dissimilative type**.** A new, probably most archaic, type of unstressed vowel system in Russian is shown to provide another argument in favour of the suggested explanation.

Keywords: unstressed vowel systems, phonetic changes, Russian.

§ 1. The term *ákanje* is used in Russian linguistics to denote the various types of neutralization of non-high unstressed vowels that in some positions resulted in an [a]-like sound.

There are many variants of *akanje* in Russian, which may be first of all divided into *akanje* itself (after non-palatalized consonants, further referred as **A**) and *jákanje* (after palatalized consonants, **Ja**). These two types may be further subdivided according to the results of neutralization in the pretonic syllable:

a) the so called "full" or "strong" *akanje* and *jakanje* (**A-1** and **Ja-1**) where the quality of pretonic vowel is constant within a given system[1] and does not depend on the phonetic environment;

b) the so called "dissimilative" *akanje* and *jakanje* (**A-2** and **Ja-2**) where the quality of the pretonic vowel depends on the quality of the stressed vowel: the higher a stressed vowel is, the more probable an unstressed vowel is to belong to the [a]-type; the lower a stressed vowel is, the more probable an unstressed vowel is to belong th the [ə]-type ([i]-type after palatalized consonants);

c) the so called "moderate" *jakanje* (**Ja-3**) where the quality of the pretonic vowel depends on the quality of the following consonant: [a] before non-palatalized, [i] before palatalized[2]. The main types of "dissimilative" *akanje* and *jakanje* are listed in Table 1.

Russian dialects vary in the number of vowel phonemes – from five /i-ɛ-a-ɔ-u/ in most of them including Standard Russian to six /i-e-ɛ-a-ɔ-u/ in a very few dialects to seven /i-e-ɛ-a-ɔ-o-u/ in some modern dialects and Old Russian. The type of "dissimilative" *akanje* and *jakanje* is determined by the maximal possible vowel system, not the actually attested one. Thus, there may be no distinction between the realizations of /ɛ/ and /e/, /ɔ/ and /o/ themselves in **Ja-2.2**, but the difference in the quality of the pretonic vowel still exists. As one can see, in types **Ja-2.5** and **Ja-2.6** there is an additional distinction between /ɔ/ after non-palatalized consonants and /o/ after palatalized consonants (/^{j}ɔ/)[3].

Ja-2.5, Ja-2.6 and **Ja-2.7** types may be further complicated by assimilation of the pretonic vowel to a stressed [a], which makes the so called "assimilative-dissimilative" *jakanje* (see Table 2).

Table 1. The main types of *akanje* and *jakanje*

	[a] is pronounced before stressed	[ə] is pronounced before stressed
A-1	i e ɛ a ɔ o u	—
A-2.1	i e ɛ ɔ o u	a
A-2.2	i e o u	ɛ a ɔ
A-2.3	i u	e ɛ a ɔ o
Ja-1	i e ɛ a ɔ o u	—
Ja-2.1	i e ɛ ɔ o u	a
Ja-2.2	i e o u	ɛ a ɔ
Ja-2.3	i u	e ɛ a ɔ o
Ja-2.4	i o u	e ɛ a ɔ
Ja-2.5	i ɔ o u	e ɛ a ^{j}ɔ
Ja-2.6	i e ɔ o u	ɛ a ^{j}ɔ
Ja-2.7	i ɔ o u	ɛ a ^{j}ɔ

Table 2. Types of "assimilative-dissimilative" *jakanje*

	Ja-2.5a	**Ja-2.6a**	**Ja-2.7a**
[a] before stressed	i ɔ o u a	i e ɔ o u a	i ɔ o u a
[ə] before stressed	e ɛ ^{j}ɔ	ɛ ^{j}ɔ	e ɛ

§ 2. The type of unstressed vowel system which is opposed to *akanje* in a broad sense is called *ókanje* and is further divided into *"full" okanje* (**O-1**) where the distinction of non-high vowels is retained throughout all the unstressed syllables and *"non-full" okanje* (**O-2**) where this distinction is restricted to the pretonic syllable. One of these types, **O-2.1**, is shown in Table 3.

Table 3. The **O-2.1** type of "non-full" *okanje*

Realization of non-high vowels in pretonic syllable	e	ɛ	a
before non-palatalized consonants	[ɔ]	[ɔ]	[a]
before palatalized consonants	[ɛ]	[ɛ]	[a]

§ 3. The historical development of *akanje* and *jakanje* is one of the most complicated problems of Russian phonetics. There have been a great number of attempts to solve it, and the most widely recognized theory remains that suggested by A. A. Shakhmatov in [1]. Its main points may be briefly summarised as follows:

Akanje and *jakanje* arise in Old Russian after the loss of "jers" (extra short neutral vowels); the initial type of *akanje* and *jakanje* was the so called **A/Ja-2.2** type showing the distinction between mid-low /ɛ/, /ɔ/ and mid-high /e/, /o/.

In the Old Russian phonetic system of this period the Common Slavic distinctions of vowel length were preserved on the phonetic level, while being lost in the phonological system – so low, high and mid-high vowels were phonetically long, mid-low vowels were phonetically short.

After the loss of "jers" /ɔ/ under rising accent lengthens to /o:/ only in stressed syllables, then the low vowel in all syllables and unstressed /e:/ are shortened. Furthermore, tonal stress is replaced by dynamic; this causes the shortening of unstressed vowels: long vowels become short (and the distinction between them is still preserved), short vowels become extra short (and neutralize in [ə]-type vowel).

The loss of phonetic length distinction in stressed syllables (shortening of high and mid-high vowels) and compensatory lengthening **ə → a** of the extra short pretonic vowels before shortened stressed high and mid-high vowels make **A-2.2** and **Ja-2.2** types, all the others (including "strong" **A-1** and **Ja-1** and *ikanje*) are supposed to be simply violations of the initial type due to processes of analogy.

§ 4. The questionable points of Shakhmatov's hypothesis are somewhat obvious:

The postulated preservation of Common Slavic durational distinctions (lost in the phonological system) for several centuries does not appear probable.

The assumption of an early shortening of every **a:** and of **e:** in unstressed syllables as well as lengthening of **o** (originated from the short **ɔ**) in stressed syllables is founded on nothing but the need to explain this particular way of the development of *akanje.*

The initial vowel system postulated by Shakhmatov does not seem to be probable from a phonetic point of view. According to one of the phonetical universals, intrinsic vowel duration increases in direct proportion to the degree of openness.

It is not completely clear why the dynamic stress causes the shortening of stressed vowels.

Shakhmatov's hypothesis explains the development of only one *akanje* and *jakanje* type – the dissimilative **A/Ja-2.2** model; other types are supposed to be the result of the further development or "damage and destruction" of the "archaic" *akanje* and *jakanje*. Indeed, "strong" *akanje* and *jakanje* (**A/Ja-1**) may be seen as a result of the generalization of [a] before all stressed vowels, but trying to explain the data of other *akanje* and *jakanje* models along the lines of Shakhmatov's hypothesis faces very serious problems:

1) types **2.4** – **2.7** have no phonetic explanation;

2) models **2.1** and **2.3** are claimed to be the consequence of the loss of the opposition between mid-high and mid-low vowel phonemes, but the time of this loss cannot be determined properly:

a) if it happened before the formation of *akanje* and *jakanje*, the **2.3** type could develop exactly as **2.2** in five-phoneme (/i-ɛ-a-ɔ-u/) dialects, but in order to explain the development of the **2.1** type one has to postulate the loss of **o:** and **ɔ**, **e:** and **ɛ** distinctions, which would yield a system never attested in Russian dialects /i-e-a-o-u/ system), or a lengthening of mid-low vowels accompanied by a shortening of the low vowel in these particular dialects (**ɔ ɛ a: → ɔ: ɛ: a**) – both being equally unlikely;

b) if it happened after the formation of **2.2**, one cannot explain the fact that the **2.2** type is very often found in five-phoneme dialects with no /o:/ – /ɔ/ and /e:/ – /ɛ/ distinction; **2.1** and **2.3** types – in seven-phonemee dialects with the mid-low – mid-high distinction;

The concept explaining the development of "moderate" *jakanje* (**Ja-3**) in accordance with Shakhmatov's hypothesis was suggested in [2, 3, 4] by Y. Budde, N. Durnovo and V. Sidorov. They claim that the **Ja-3** type may be considered to be the result of interaction between the initial **Ja-2.2** type and **O-2.1** "*non-full okanje*" type. According to Budde and Sidorov, in the process of this interaction the speakers of **O-2.1** dialect acquire the

main principle of *akanje* – the constraint against unstressed [ɔ] – and replace every pretonic [ɔ] with [a]; then unstressed [a] before palatalized consonants is replaced by [ɛ] as a result of analogy. This concept also has some questionable points: 1) it does not suggest a phonetic explanation of the [a] → [ɛ] → [i] change before palatalized consonants; 2) the dialects of the **Ja-3** type are widely spread but have just few small zones of contact with **O-2.1** dialects; 3) in the **O-2.1** dialects the realization of **e** as [ɔ] is restricted to few lexical items; 4) the modern processes of **O** to **A/Ja** shift lead to *ikanje*, not to **Ja-3** type; 5) in the "archaic" *jakanje* (**Ja-2.2**) in several positions (before stressed [ɔ]) [i] (not [a]) is pronounced before non-palatalized consonants; 6) finally, the replacement of *okanje* by *akanje* is not simply [ɔ] → [a] replacement.

§ 5. We suggest another concept of the historical development of *akanje* and *jakanje*, the main points of which are as follows:

- the initial type of *akanje* and *jakanje* was non-dissimilative (**A-1** and **Ja-1**);
- the dissimilation of stressed and pretonic vowels in dissimilative models is based on the differences in intrinsic vowel duration, not the distinctions preserved since the Common Slavic period [cf. 5];
- the development of various types of *akanje* and *jakanje* is the result of a specific realization of some tonal sentence accents in most Russian dialects.

Thus, from this point of view, the distribution of vowel length in a system preceding the development of *akanje* and *jakanje* was, in a sense, opposite to that suggested by Shakhmatov: [a] was the longest vowel, mid-low [ɛ] and [ɔ] were shorter (in modern Russian – about 90 % of the duration of [a]), mid-high [e] and [o] yet shorter and [i], [y], [u] – the shortest (in modern Russian – about 75 % of the duration of [a]).

Then, after the loss of "jers"[4] tonal stress had been replaced by **quantitative** (still characteristic to all Russian dialects with *akanje*); this caused the lengthening of stressed vowels and compensatory shortening of unstressed ones (except the shortest high vowels **i**, **y**, **u**). This makes the most archaic type of *akanje* – **non-dissimilative** – still attested in many varieties of Russian (especially those in which *okanje* has recently been replaced by *akanje*, and some modern varieties of Standard Russian spoken in the South and the East).

The next important stage of *akanje* is the development of an intonational system with phrase accents after the replacement of tonal stress by the quantitative variety and the reuse of tone for sentence purposes. It is worth notng that **O-1** type dialects with no prosodic nucleus – unlike **A** type ones – typically have no more or less complex sentence prosody with the tonal distinctions restricted to word level.

The realization of several sentence accents on two consecutive syllables leads to the development of the **prosodic nucleus** (pretonic syllable + stressed syllable) in every phonological word, and the formation of a rhythmic structure with the opposition of pretonic syllable to other unstressed ones. The prosodic nucleus is formed not only in dialects with *akanje* but also in some of those with *okanje* (**O-2**); this shows that the development of prosodic nucleus was not the result of dissimilative *akanje* development.

The formation of the prosodic nucleus leads to the lengthening of extra short pretonic [ə] to the longest possible [a] in all phonetic environments (in **A-1** and **Ja-1** types), or only before vowels which are counted as "short" (**A-2**, **Ja-2** and **Ja-3**). In the second case, the length of the prosodic nucleus becomes relatively constant.

The borderline between those vowels counted as "short" and those counted as "long" is drawn in different places by different dialects (high vowels are always regarded to be short, low vowel are always long). Since stressed vowels after palatalized consonants are up to 15 % longer than vowels after non-palatalized ones [6: 135], some dialects incorporated this distinction into the dissimilative system (**Ja-2.5 – Ja-2.7**) while the others generalize it at the expense of intrinsic vowel duration (**Ja-3**)[5]. Finally, types **Ja-2.5a – Ja-2.7a** are the result of qualitative assimilation combined with the quantitative dissimilative principle.

We believe that the main advantages of the suggested hypothesis are as follows:

- there are phonetic explanations for the development of all *akanje* and *jakanje* types;
- there are no phonetic changes postulated which are grounded by nothing except the need to explain the development of *akanje*.

§ 6. Recenly we have started a new project *Russian Dialectal Phonetics, a Multimedia Interactive Resource* (NWO-RFFI project 047.011.2005.017), the aim of which is to create an electronic course of modern Russian dialectal

phonetics suitable for both teaching and research purposes.

As it has been shown above, **A-2** types reflect compensatory dissimilation within the prosodic nucleus on the basis of vowel length parameter: the longer (more open) the stressed vowel, the shorter (more reduced) the pretonic one. Later on this phonetic dependence was imprinted in the phonological system of most dialects with **A-2** and now before the vowels functioning as long short [ə], and before functionally short vowels long [a] is found. While processing **A/Ja-2** data for the project we found that the qualitative and quantitative differences between long and short pretonic vowels [a] and [ə] in all so far known dialects with "dissimilative" **A/Ja-2** type is striking, and there is an abrupt change from one vowel to another when the line of phonologization (delimiting vowels with different functional length) is crossed. The tables 4 and 5 below contain, as an example, the data on duration and quality of vowels within prosodic nucleus depending on the quality of the stressed vowel in a dialect, where **A-2.1** type is accompanied by **Ja-2.3** one [7: text no. 39].

Table 4. Pretonic vowel duration and quality as a function of stressed vowels' degree of openness (after non-palatalized consonants, **A-2.1)**

parameters \ stressed vowel	i u	e ɛ ɔ o	a
duration of pretonic vowel, % from duration of stressed vowel	110	103	57
F_1 of pretonic vowel (Hz)	859	844	564

Table 5. Pretonic vowel duration and quality as a function of stressed vowels' degree of openness (after palatalized consonants, **Ja-2.3)**

parameters \ stressed vowel	i u	e ɛ ɔ o	a
duration of pretonic vowel, % from duration of stressed vowel	150	84	69
F_1 of pretonic vowel (Hz)	726	369	373

On the contrary, a few texts (e.g. [7: text no. 8]) previously supposed to show **A-2.3** type of *akanje* display a completely different situation: qualitative and quantitative differences of pretonic vowels depending on the stressed vowel are small, gradual and irrelevant (Table 6).

Table 6. Pretonic vowel duration and quality as a function of stressed vowels' degree of openness (after non-palatalized consonants, previously supposed to be **A-2.3)**

parameters \ stressed vowel	i u	e o	ɛ ɔ	a
duration of pretonic vowel, % of stressed vowel	79	70	63	54
F_1 of pretonic vowel (Hz)	656	615	621	650

It can be suggested that this dialect shows the most archaic type of "dissimilative" *akanje* with vague coarticulatory dependence of the pretonic vowel on the length of stressed vowel, which has not yet been fixed in the phonological system. This type can be called **protodissimilative**. The existence of such a type may be regarded as another argument in favour of suggested explanation of the development of *akanje*.

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[1] After non-palatalized consonants it varies from a full [a] in Moscow variant of Standard Russian to [ɐ] or even [ə] in its Southern and Eastern varieties.

[2] One more type of the neutralization of non-high vowels after palatalized consonants is called *ikanje* (**I**) – the neutralization in an [i] sound, which does not depend on phonetic environment. Thus, for example, Standard Russian is characterized by "strong" *akanje* (**A-1**) and *ikanje*.

[3] Which is the result of an ɛ → ɔ phonetic change between palatalized and non-palatalized consonants.

[4] It is important to notice that not all "jers" were lost – those which were before lost "jers" were lengthened to full mid-low vowels **ɛ** and **ɔ**.

[5] **Ja-3** type may be otherwise treated as a result of coarticulation in force in **Ja-1** model: any vowel in the position after and before palatalized consonant has a long [i]-like transition; thus [$C^{j}{}_{i}a_{i}C^{j}$] → [$C^{j}iC^{j}$].