Studies of vowel reduction in Russian
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1. Vowel Reduction: Introduction

Vowel reduction is a widespread phenomenon in the Russian language. It displays

a great variety of patterns in CSR (Contemporary Standard Russian) and in other Russian

dialects. In order to analyze the different ways vowel reduction is implemented in these

dialects, it is first important to understand the nature of the concept of reduction. And

thus, we can ask, what exactly is vowel reduction and when does it occur? First of all,

vowel reduction is a phonological process produces allophony in unstressed vowels. In

Russian, this process manifests itself in different ways according to particular prosodic

environments.

Vowel reduction consists of a reduction of three different acoustic properties.

Firstly, the acoustic energy is reduced: unstressed vowels are pronounced with a

decreased amplitude on the part of the speaker. Secondly, there is a reduction of the

duration. Sometimes it even seems as if native speakers are 'skipping' some vowels,

especially in a vowel chain (a sequence of vowels in the same word), where unstressed

vowels may be deleted in some Russian dialects because of vowel reduction. Thirdly, the

number of phonemic distinctions between unstressed vowels is reduced: in phonetic

transcription, linguists generally distinguish eight or nine vowel sounds, but that number

is decreased to five or six for unstressed vowels *(Hamilton, 1980)*. Table (1) displays the

full inventory of Russian vowels, whereas table (2) shows the inventory of unstressed

vowels.

(1)

Full inventory of Russian vowels			
	Front	Central	Back
High	i		u ɔ
Mid	e ɛ	ɨ	o
Low	a		ɑ

(2)

Reduced inventory of Russian vowels			
	Front	Central	Back
High	i		u
Mid		ɨ ə	
Low	ʌ		

Let's look at an example of vowel reduction:

(3)

Transliteration	IPA	Gloss
moloko	məlʌˈko	milk

If we hear a native speaker pronounce the word, we will hear a change in quality of the first two vowels. We will hear something like [məlʌˈko], which will be different from what we read on a piece of text if we know how to read Cyrillic. In Russian, reduced vowels are unstressed vowels that change their quality based on the position they take in the word. In some instances, we notice a complete loss of distinction between different vowels, for example [o] and [a]:

(4)

Transliteration	IPA	Gloss
vol	ˈvol	ox
val	ˈval	billow

The distinction between the two vowels is clear when stressed, but neutralization occurs when [o] and [a] are unstressed:

(5)

Transliteration	IPA	Gloss
(a) voly	vʌˈlɨ	ox (nom. pl.)
(b) valy	vʌˈlɨ	billow (nom. pl.)

Neutralization is a term that describes the loss of distinction between two phonemes in a particular environment. The two words in (5) sound exactly the same, though in the first syllable of (5a) the underlying phoneme changes from /o/ to /a/ ([ʌ] being an allophone of /a/), whereas in (5b) the real identity of the vowel is showing (even if the vowel is reduced, and thus changes to its allophone, [ʌ]) .

Now that we basically know how vowel reduction operates, we can talk about the different ways it occurs in different environments. Earlier on I said that Russian vowel reduction is a phenomenon that affects all unstressed vowels. In fact, even if it is more evident when /o/ reduces to [ʌ] or when /a/ reduces to [ə], vowel reduction applies to all vowels, even if the vowel in question doesn't seem much different the hearer.

(6)

Transliteration	IPA	Gloss
Mir	ˈmir	world, peace
Mira	miˈra	" (n. pl.)

The unstressed high phoneme in (6) reduces to one of its allophones, located closer to the center of the vowel chart than its stressed counterpart. The high vowel, when unstressed, becomes shorter and quieter, but it doesn't really change its quality. There are two basic vowel sounds that are not intensely modified with the occurrence of vowel reduction: /i/

([i], [ɨ]) and /u/.

The three remaining basic vowel sounds are /a/, /e/ and /o/, which are all affected by vowel reduction in unstressed position. How exactly does vowel reduction have an effect on these vowels when they occur in an unstressed environment? Let us retrieve our Russian word for 'milk':

(7)

IPA	Gloss
məlʌˈko	milk

We can see the first vowel reducing to [ə] and the second one to [ʌ]. Why does this happen? The reason why vowel reduction applies in two different ways will be discussed later on in this chapter.
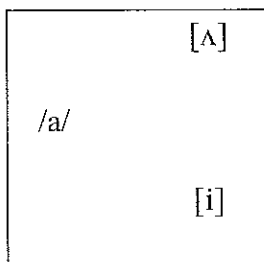
Let us now consider:

(8)

Transliteration	IPA	Gloss
(a) zhar	ˈʒar	heat
(b) zhara	ʒʌˈra	hot weather

(7)

Transliteration	IPA	Gloss
(a) chas	ˈtʃas	hour
(b) chasa	tʃiˈsa	hour (gen.)

To specify the phonetic quality of a vowel, we need to find it in tonic or stress position, which is why knowing that the 'a' in (9b) is really /a/ is important. But the phoneme /a/ reduces to [ʌ] in (8b), while it reduces to [i] in (9b):

(10)

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┌─────────────────┐
│            [ʌ]  │
│                 │
│  /a/            │
│                 │
│            [i]  │
│                 │
└─────────────────┘
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It seems like vowel reduction here is produced in two different ways. What is the reason

for these two different states of vowel reduction? If we take a look at the differences

between (8) and (9), we can understand that the phonological environment affects the

different reduction of the same vowels: in fact, the nature of the consonants that precede

them is different.

Almost all Russian consonants classificate as either hard or soft. Palatalization is

that process that makes the consonants "soft", since the hard palate is the region the

tongue touches when soft consonants are produced. In (8), the Russian consonant [ʒ] is

always hard. Thus, the vowel that follows it in this example, if it is unstressed (as in

(8b)), will be [ʌ]. In (9), the Russian consonant [tʃ] is always soft. In (8b), the vowel that

follows, which goes through reduction because unstressed, becomes [i].

From (8) and (9), we conclude that:

(11)   V   →   V   /   C   ___
        [-stress]   [-stress]   [+palatal]
                         [+high]

(12)   V   →   V   /   C   ___
        [-stress]   [-stress]   [-palatal]
                         [+low]

Rules (11) and (12) describe two different ways in which vowel reduction occurs. When a vowel in unstressed position is preceded by a soft consonant, the underlying phoneme (the vowel which shows its true quality) is reduced to a high vowel, whereas if the consonant that precedes it is not palatalized, the vowel will reduce to a lower vowel phoneme. (13) gives a schematic approach of these two different processes of Russian vowel reduction:

(13)

Vowel reduction after soft consonants:

Vowel reduction after hard consonants:
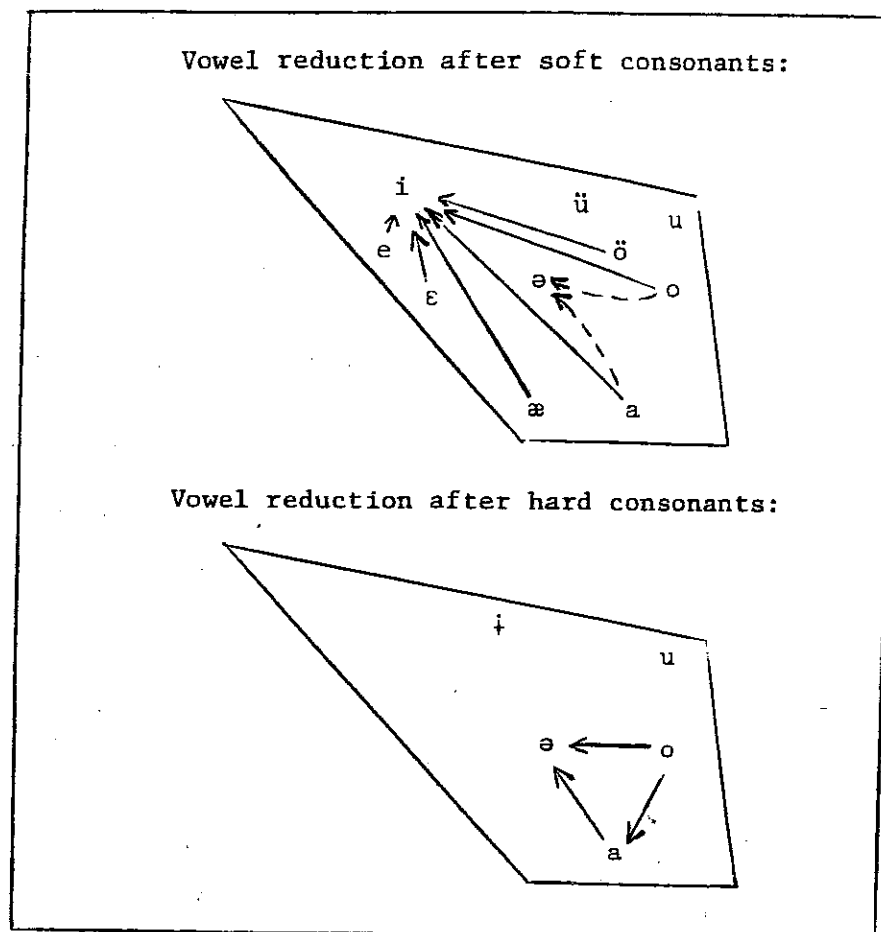
(Hamilton, 1980)

The fact that after palatalized consonants unstressed vowels reduce to the high area of the mouth (to [i], a *high* vowel), can perhaps be explained by the fact that the tongue stays in the same position, the palatal area, after having pronounced the soft (palatalized) consonant.

So, it seems that vowel reduction can be seen from a perspective as a question of

ease of articulation: the shift of intensity and length and the reduction of distinction between vowels in unstressed position can be possibly accounted for by the reduced energy of the tongue while traveling through the vocal cavity. Thus, since less energy is given to unstressed vowels, the number of distinction between vowels in this position is reduced, because of the smaller area of the vocal tract is used. In particular, this area is the low or central region of the mouth, for unstressed vowels either following hard consonants, or in first position. For unstressed vowels preceded by soft consonants, this area is located both more high and more forward in the mouth.

We can say that vowel reduction closely depends on the consonants that precede them, since the way unstressed vowels reduce differs because of the nature of the preceding consonant. This suggests that vowels are subordinates to consonants in matters of vowel reduction; in fact, this relationship is true in general in the Russian language. Although this subordination certainly does not show in the alphabet, which deceives our perception of softness: we might think that it is the vowel that determines the softness of a consonant, and not vice versa.

The system on which the Russian alphabet is based can also deceive us when we are thinking of the true quality of reduced vowels. We can ask ourselves, how do we know what the real identity of a reduced vowel is by looking at the alphabet? And how do native speakers instinctively know how to pronounce unstressed vowels when they see a piece of written text? This brings us back to the question of vowel chains:

(14)

IPA	Gloss
gərʌˈdok	little city

How do we know that in (14) the first o is pronounced [ə] and the second o is [a]? Is it only the alphabet that is fooling us into the belief that the underlying phoneme is /o/?

Why not write it just simply as 'a'? Let us analyze (15):

(15)

| Transliteration	IPA	Gloss
(a) gorodok	gərʌ'dok	little city
(b) za gorodom	zəgʌ'rodom	behind the city
(c) gorod	'gorət	city

We determined that the underlying quality of a vowel can be detected only when the stress falls on it; if we find other words derived from the same root with a different stress pattern, we succeed in obtaining the underlying phoneme for each vowel.

Looking at (15), the main stress falls on the third [o] in (15a), on the second [o] in (15b) and on the first 'o' in (15c). The stressed vowel is indeed [o] in all three cases. Thus, Russian speakers, applying vowel reduction in their speech, with the aid of the alphabet know that there is a link between (15a), (15b) and (15c). Therefore, we understand that stress is a crucial suprasegmental feature of Russian vowels.

Let us consider the word 'skovoroda', which means 'frying pan'. If we pronounce it the standard way, the vowel in the last syllable will be the highest in volume, with a smaller peak on the vowel of the syllable immediately preceding it.

Thus, a scheme of intensity level applied to the word 'skovoroda' will look like this:

(16)

сковорода́
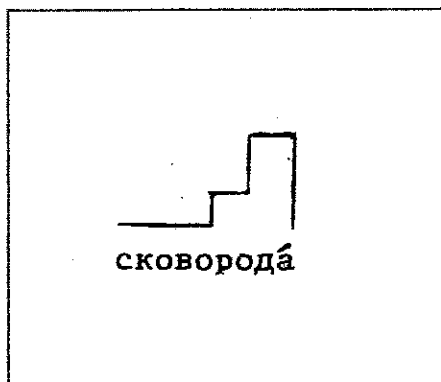
(Hamilton, 1980)

The Russian stress pattern, unlike the English one, is completely predictable, once one

knows where the main stress is located. The graph (17) represents the Russian stress

pattern, in which the same volume patterns occur in the same environment for every word

of the Russian language:

(17)
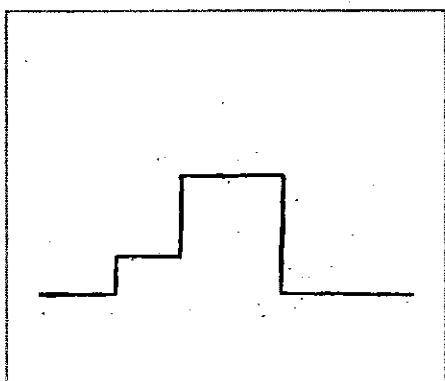
(Hamilton, 1980)

While the highest bar represents the main stress, and the lowest bar represents unstressed

syllables, the intermediate bar preceding the highest one is the weak stress. In Russian the

weak stress occurs in the immediately pretonic syllable, unlike in English, where the

immediately pretonic is the least stressed syllable. We must also note that the weak stress

can also occur in another position other than pretonic: weak stress also falls on vowels

that are located at the beginning of a word:

(18)

американец

(Hamilton, 1980)

(19)

Transliteration	IPA	Gloss
amerikanez	[ʌmeri'kanits]	american

This tells us something about the relationship between the stress pattern and vowel reduction in Russian:

(20)

Transliteration	IPA	Gloss
skovoroda	[skəvɔrʌ'da]	frying pan

The distribution of [ə] and [ʌ] is not random. The phoneme /o/ reduces to both these phonemes depending on its position in the word. This way, the phoneme /o/ will always be reduced to /a/ in pretonic position, and to /ə/ in the other unstressed syllable.

Referring the above to its stress pattern scheme in (18), we see that the intermediate bar corresponds to vowel reduction of /o/ to /a/ in this example; thus if on the vowel /o/ falls the weak stress, we will have this type of vowel reduction.

If we consider the weak stress position and unstressed position for all vowels, we will have a chart that looks like this:

(18)

Spelling transliteration	Weak stressed	Unstressed
a	[a]	[ə]
ja	[i]	[i]
je	[i]	[i]
e	[ɛ], [e]	-
i	[i]	[i]
y	[ɨ]	[ɨ]
u	[u]	[u]
yu	[u]	[u]
o	[a]	[ə]
jo	-	-

(21) gives us a way of predicting vowel reduction from the alphabet, although this is a general approach and exceptions are not accounted for.

Notes on (21):

1. The Russian letter {э} occurs in weak stressed position only in loan words, whereas it never occurs in unstressed position.

2. The Russian letter {ю} is always stressed.

3. Akan'e, Ekan'e and Ikan'e

In this chapter I will introduce the ikan'e-ekan'e problem, which will be the central focus of this paper. I claim that either ikan'e or ekan'e is the dominating rule of vowel reduction after soft consonants. To begin with I will discuss the necessity of rule ordering by introducing the akan'e phenomenon, and then I will explain the implementation of ekan'e

and ikan'e.

Vowel reduction is a process which changes the underlying quality of a vowel in different ways based on different environments; these different environments can be characterized by rules. The rules that govern vowel reduction are numerous; but some of them are more important than others, and are thus general rules, which are, by definition, hierarchically superior to other rules. One such rule is called akan'e, which native speakers adopt instinctively, as will be clear from the following paragraphs.

We have talked about vowel reduction in the context of normal speech. We must note that vowel reduction is linked to a medium/fast production tempo: this reveals that vowel reduction is linked to a weaker energy of speech and to a weaker intensity of articulation in the oral cavity. A question to ask ourselves would then be, does it then follow that vowel reduction exists when native speakers, for example, repeat words for clarity or pronounce words slowly?

In such cases, the vowel reduction process does still exist, however, it does not follow the same rules described in Chapter 1. It is documented that for example, in singing, native speakers reduce the vowels, but the process of reduction adopts simpler, fewer rules. But, we must note, the rule process widely known as akan'e occurs unconditionally in Russian unstressed vowels after hard consonants.

We can define akan'e as "roughly, 'saying [a]'" (Crosswhite, 2000). The akan'e rule states:

(1)

$$/o/ \rightarrow [a]$$
$$[\text{-stress}]$$

The akan'e rule still occurs when all syllables are distinctly and slowly pronounced, or sung, i.e. when there is no reason, for example, for the tongue to save energy by working in the same position, that to be in the same articulatory area. It is well documented in the literature that akan'e still occurs (Thelin, 1971), which gives us the reason to believe that vowel reduction is not only a phonetic process, but also an intentional, intuitive process.

Scerba (1912) writes that "differences in strength and their consequences - qualitative differences- disappear" in unstressed vowels. So, "no-one sings ....[ɡəlʌ'va]. In exactly the same way no-one sings [ɡolo'va], the only possible pronunciation in this case being [ɡala'va]."

Thus, we can say that the rule (2)

(2)

/o/ → [ʌ], [ə]
[-stress]

is not as important as akan'e, since the latter occurs in any context of speech, but we do not encounter (2) when unstressed vowels are sung, for example. The akan'e rule occurs before the other rules, such as (2): akan'e is hierarchically superior to other processes such as /o/ → [ʌ], [ə] (Thelin, 1971; Ward, 1975).

Another reason offering credibility to rule ordering in vowel reduction, which

puts akan'e in the dominant-rule position, is that there exist dialects showing akan'e pronunciation (without vowel reduction phenomenon): 'rynak' for 'rynok'; 'malinkaj' for 'malinkoj' and 'etat' for 'etot'. (Karinskij, 1936).

Thus, we may conclude that akan'e is a general rule of vowel reduction. This rule, as we stated in Chapter 1, occurs only after hard consonants: we can thus foresee that a similar process should be governing vowel reduction of unstressed vowels after soft consonants.

There are two rules that can be held responsible for the reduction of unstressed vowels following soft consonants: the ikan'e rule and the ekan'e rule. Throughout the past century, many Soviet normative grammarians have been debating as to which one of the two should be the general rule governing the pronunciation of CSR (Delwin and Priestly, 1980).

However, the debate has been challenged by several complications, one of them being the use of the terms in very different ways: ikan'e and ekan'e are used sometimes in the phonological sense, and other times in the phonetic sense. In the phonological sense, these words refer to a particular kind of vowel reduction, whereas in the phonetic sense, e.g., ikan'e is used to prescribe a pronunciation close to that of /i/.

Ikan'e, in the phonological sense of the term, describes the process of reduction of unstressed vowels to the phoneme /i/. The ikan'e rule says:

(3)

$$\begin{array}{cc} \text{V} & \rightarrow \text{[i]} / \quad \text{C} \quad \underline{\quad} \\ \text{[-stress]} & \text{[+palatal]} \end{array}$$

Unstressed vowels /a/, /o/ and /e/ reduce to /i/ when positioned after a soft consonant, as table (4) demonstrates:

(4)

Transliteration	IPA	Gloss
jazyk	jɪˈzɨk	tongue
semena	sʲɪmʲɪˈna	seeds

If the ikan'e rule permits the neutralization of three vowels, ekan'e involves the neutralization of two of the vowels permitted after soft consonants, which are /a/ and /e/. Neutralization, as previously mentioned in Chapter 1, is the loss of distinction between two or more different phonemes, due to the particular environment in which they are situated. Ekan'e is what Delwin and Priestly call VR-1, or Step-One vowel reduction, "the simplest instance of vowel-reduction after soft consonants".

Ekan'e, in other words, is the process in which unstressed /a/ and unstressed /e/ after soft consonants are pronounced identically. Table (5) describes the ekan'e rule:

(5)

$$V \rightarrow [e] \ / \ C \ \_\_$$
$$[\text{-stress}] \qquad [\text{+palatal}]$$

Unstressed vowels reduce to /e/ after soft consonant. For example:

(6)

Transliteration	IPA	Gloss
predat'	prʲeˈdatʲ	to betray
chastota	tʃʲestʌˈta	frequency

Ekan'e was being taught in Russian schools, at the time in which Jones and Ward

published Russian Phonetics (1966), in which they state that ekan'e "distinguishes itself from the fact that members of the phoneme /e/ do occur in unstressed positions". We know that in the nineteenth-century ekan'e was the normal pronunciation in the "full" style (Thelin, 1971), while later on, at the beginning of the twentieth century, the ikan'e pronunciation had started replacing the ekan'e pronunciation amongst the younger generation, thus reflecting the then current colloquial pronunciation.

An example of how ikan'e and ekan'e differ from each other:

(7)

	Transliteration	IPA	Gloss
ekan'e	predat'	prʲeˈdatʲ	to betray
ikan'e	predat'	prʲiˈdatʲ	to betray

However, some scholars (Thelin and Ward above all), insist that the ekan'e rule is a necessary rule to the vowel reduction process, no matter what the final pronunciation is. At this point, armed with a more concrete comprehension of the use of ikan'e and ekan'e, we can now delve into the vowel reduction literature regarding the ikan'e-ekan'e debate.

Chapter 3: Ikan'e or Ekan'e?

As discussed in chapter two, another general rule in the style of akan'e is needed for reduction of unstressed vowels in CSR. Standing apart from akan'e, which governs vowel reduction of unstressed vowels preceded by hard consonants, there needs to be a rule explaining the reduction of unstressed vowels preceded by or positioned in between palatalized consonants. In the literature there exist two theories of thought concerning what I call the "ekan'e-ikan'e problem": a first way of thinking, which champions ikan'e as a general rule, and a second one, which favors ekan'e as the basic rule of vowel

reduction. In this chapter I will put forth an analysis of these two opposing theories and a brief overview of the scholars behind them, and then conclude by hypothesizing that giving precedence to ekan'e is a more effective way of dealing with vowel reduction in CSR.

For many years Soviet grammarians have been debating which of the two rules should be the basis for the norms of the CSR pronunciation, but the debate has been obscured by complications, such as the difference in terminology used, which I described in the previous chapter (phonological vs. phonetic use of the terms ikan'e and ekan'e). Another complication is posed by the fact that in normal speech the distinction between the two realizations is an almost imperceptible detail.

Some scholars present their point of view in a vague way, sometimes oscillating between one leaning and the other, and thus rendering it difficult to identify their position or a drawn conclusion. Such an example, is R. I. Avanesov, who seems to prefer ekan'e to ikan'e, but then prescribes both in his conclusions. Herein, I have decided to divide the authors into two different groups, according to their main preference, even though in their findings they did not categorically exclude one or the other solution.

Scholars such as Halle, Jones and Boyanus, propose that ikan'e should be included in the general rules governing Russian vowel reduction along with akan'e. For example, in "The Sound Pattern of Russian" (1959), Morris Halle states:

"The following rules govern the phonetic implementation of the unaccented vowels (ikan'e and akan'e)."

According to Halle, the rules of vowel reduction for CSR are as follow:

- *Rule P 7g. In position after {c} {s} and {z} unaccented noncompact nondiffuse vowels become diffuse and of high tonality; i.e., {i}.*

- *Rule P 8. Unaccented nondiffuse noncompact vowels become compact and nonflat;*

i.e., {a}.

• *Rule P 9a. After all sharped segments unaccented compact vowels become diffuse and of high tonality.*

Halle uses Rules P 7g and P 9a (where P stands for Phonological) to explain the ikan'e process, whereas Rule P 8 is the description of akan'e. Rule P 7g states that unaccented compact vowels (unaccented vowels, like /e/[1]) become of high tonality (/i/) after [ts], [ʃ] and [ʒ], which are hard consonants. This is a case in which a phoneme like /e/ is permitted after a hard consonant; thus ikan'e will also be implemented after certain hard consonants. Although, in this case, the phoneme /e/ will not be reduced to /i/, but instead to /i-/, because of the non-palatalized consonant which precedes the unstressed vowel.

Here are some examples for P7g, proposed by Halle himself:

(1)

Transliteration	IPA	Gloss
tsena	tsɨ'na	Price
zhena	ʒɨ'na	Wife

Rule 9a states that unaccented compact vowels become diffuse and of high tonality (therefore, /i/) after all sharped (palatalized) consonants; this is a rule which we are already familiar with, and which was discussed in the previous chapter. Thus, taking into consideration Halle's stance on the implementation of unaccented vowels in CSR, we reach the conclusion that the author considers akan'e and ikan'e the principal ways of

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[1] a compact phoneme is one displaying a concentration of energy in a narrow central area in the spectrogram; e.g. : vowels /e/, /a/ and /i/ in the English 'pet', 'pat' and 'pot'; a diffuse phoneme is the opposite; e.g. : vowels /ɪ/. /ʌ/ and /u/ in 'pit', 'putt' and 'put' (Hartman and Stork, 1972)

dealing with vowel reduction implementation. This fact is further documented by the fact that the ekan'e rule is not mentioned at all in "The sound pattern of Russian".

On the other hand, in "The phonetics of Russian" (1966) David Jones and Dennis Ward describe both rules as possible, although they opt for the "ikan'e" rule. They talk about "ekan'e" as a feature of yet another type of pronunciation (and here the authors cite the one described by Avanesov), which does differ by the fact that members of the /e/ phoneme do occur in unstressed positions, and are therefore not replaced by members of the /i/ phoneme. Authors Jones and Ward decide to adopt the "ikan'e feature" believing that in fast speech, the distinction between the unstressed members of the /i/ phonemes and the unstressed members of the /e/ phonemes "tend to disappear", leaving the "ikan'e feature" as the dominating factor.

Another advantage of taking "ikan'e" as a basis, as pointed out by Thelin (1971), even though expressing preference for the "ekan'e" rule, is that the unstressed vowels would be reduced to a three-vowel triangle. We already know that the distinction between vowels reduce in unstressed syllables, because of neutralization. Consequently, with "ikan'e" governing vowel reduction, we would have a convenient triangle of three vowels, which is indeed advantageous because it fosters simplification of the vowel reduction process, as shown below in table (2):

(2)
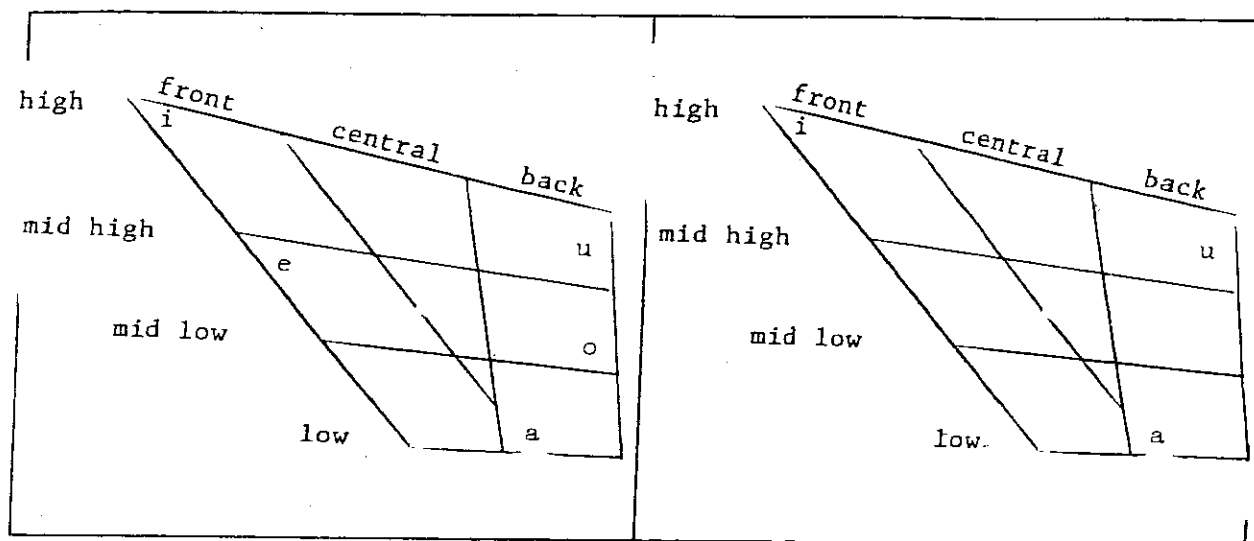
I already mentioned Avanesov and his preference for the ekan'e rule, in spite of his occasional shifts to the prescription of the other rule. I will now attempt to describe his positions on the subject. Interpreting Avanesov is not easy, since the different editions of "RLP" (Russkoe Literaturnoe Proiznoshenie. 1958, 1960, 1972) have shown a gradual drift from a position where ekan'e was the only permitted rule and ikan'e was totally rejected, to the later position where he seems to prescribe both.

But Avanesov makes it clear that ekan'e occurs in the "elevated style" of speech, whereas the "conversational style" of speech can only allow the use of ikan'e: the author is still vague about the "neutral" CSR style of speech. For example, he states that ikan'e is widely used in speech, even if he still prescribes ekan'e; however elsewhere he suggests that the use of either is to be based on the "stylistic marking of the lexical item concerned" (Derwin and Priestly, 1981). Nevertheless, he uses ekan'e in his data, and maintains that the popularity of ikan'e in the speech style has obscured the ekan'e rule. Therefore, Avanesov in his last edition prescribes both rules as possible ways of governing vowel reduction, but basically remains in favor of ekan'e.

Another scholar who preferred ekan'e is Thelin. Thelin (1971) believes that

unstressed /e/, which is slightly raised and retracted and can be symbolized as [e-],

becomes /i/- like. Therefore the distinction between the two unstressed phonemes (or

members thereof) /e/ and /i/ is neutralized. It would seem that he is adopting ikan'e, but in

reality he is addressing the fact that the ikan'e rule should follow ekan'e in the realization

of unstressed vowels; consequently, Thelin's interpretation of these rules does not entail

the elimination of one in favor of the other, but rather a novel approach of ordering. In

this way, both are possible in the same environments, because of consequential ordering.

Let us consider an example, to better understand the ordering process of these

rules:

(3)

Transliteration	IPA	Gloss
Chaikovskij	tʃi'kofskiʲ	Chaikovski
Chasi	tʃi'sɨ	Hours

In this case the unstressed vowel is an underlying /a/ phoneme. Vowel reduction,

in this case, consists of a three-fold process, as shown in table (4):

(4)

(1.)	**ekan'e**	
	/a/ → [e] [-stress] [-stress]	
(2.)	/e/ = [e] [-stress] [-stress]	
(3.)	**ikan'e**	
	[e-] → [i] [-stress] [-stress]	

In (3.1), the underlying vowel [a], unstressed, changes to /e/ following the ekan'e rule; the allophone of /e/ which symbolizes unstressed /e/ is [e-], i.e. [e] slightly retracted and raised (3.2). This process is then taken a step further, by applying the "ikan'e" rule, resulting in a reducing of [e-] to /i/ (3.3).

Delving deeper into this rule ordering process, it is possible to yet add another rule, that of /o/ to [a] (akan'e). In fact, unstressed /o/ does end up reducing to [i], in some cases, because of the rule ordering process: ekan'e follows akan'e, and ikan'e follows ekan'e:

(4)

Transliteration	IPA	Gloss
(a.) gil'otina	gilʲaˈtinə	guillotine
(b.) majonez	maiaˈnez	mayoneise

However, the final stage of the process (reduction of /a/ to [e] and then to [i]) happens rarely in this case, because /o/ seldom follows a soft segment in the Russian language. In Cyrillic the soft segments which cause the palatalization of /o/ in (4) are the soft sign, 'ь' in (4)a., and [й] in (4)b., which make the words easily recognizable as loan words.

Thelin's interpretation is also shared by another scholar, who in the past had adopted the ikan'e rule in his work: Dennis Ward, the coauthor of "The Phonetics of Russian". In his 1966 paper Ward adopts a position similar to Thelin's, and considers ekan'e as a necessary step for the implementation of ikan'e.

Having laid the background to the "ikan'e-ekan'e" debate, I will give conclusions based on the second group of scholars, the ekan'e group. I opt for this position in the understanding of the vowel reduction process. In fact, the precedence of ekan'e (before

ikan'e), and therefore the rule-ordering factor, is also strongly evidenced by the

explanation of yet another gray area of vowel reduction. In post-tonic positions, words

such as 'more' (mor+o) (gloss: sea) /o/ is said to reduce to [ə] in some grammatical

forms, and to [i] in others, factor which has always perplexed scholars in the field.

But the fact that ekan'e would precede ikan'e in the rule ordering system, gives a solution

to this problem.

Let us consider:

(5)

Transliteration	IPA	Gloss
(a.) vmore	'vmorə	in the sea (prep.)
(b.) vmore	'vmorʲɪ	into the sea (acc.)

source ?

We notice that in table (5), examples a. and b. are strikingly similar. But in one point they

do not coincide: their phonetic realization is not the same. The difference between the

two forms is that we have an accusative case in (5)a., but prepositional in (5)b.; or, in

other words, it is the difference between (/vmor, +o/) and (vmor, +e). The explanation to

this problem is that /o/ is said to reduce first of all to [ə], which then may be raised to [e-]

and then [ɪ]. Therefore, speakers may decide to emphasize the difference between the

grammatical cases, realizing them in a different way phonetically.

If we can explain how to account for the different realization of grammatical endings, the

latter is the key to solving the "ikan'e-ekan'e" problem. We can consider the two

different realizations of the grammatical endings [ə] and [ɪ] as manifestations which

express the two similar steps of the vowel reduction ordering process, "ekan'e" and then "ikan'e".

Conclusions:

The principle motivation behind the writing of this thesis was to clarify to some degree CSR vowel reduction. In doing so, it seemed necessary to address the problem of the "ikan'e-ekan'e debate". The akan'e rule, governing vowel reduction after hard consonants is already widely recognized in the literature. However, what is lacking here is the agreement on the part of the literature as to a basic rule governing the reduction of unstressed vowels preceded by soft consonants.

At present, with a review of the literature, we find ourselves in the midst of a debate as to which is the dominant rule, ekan'e or ikan'e. Here within there has been an attempt to address the debate by taking into consideration another problematic area of vowel reduction: grammatical endings in [ə]. This particular gray area aids us in understanding the importance of the process of rule ordering: in fact, an analogous process appears in the reduction of unstressed vowels after soft consonants. Therefore, it is not just one rule with the exclusion of the other rule, but it is the coexistence of the two rules within the same environment. In conclusion, rule ordering seems necessary, with the hierarchical precedence of ekan'e over ikan'e.

4. Appendix:
Understanding vowel reduction of native Russian speakers: a pilot experiment on loan words

Introduction

A pilot experiment was conducted in order to determine and evaluate the rate and

implementation of vowel reduction on loan words in native Russian speakers. It was my

intention to request the Test group to pronounce words from two different categories:

1) Russian words that have been borrowed from other languages (loan words)

2) foreign words with which the Test subjects have no prior acquaintance

This is to verify the use of reduction of unstressed vowels in foreign words.

Loan words, which enrich the vocabulary of the target language, are 'loaned' or

'borrowed' words from other languages. Loan words can be assimilated into the target

language, to such an extent so as not be regarded as loan words anymore; on the other

hand, they can still maintain their foreign character. In the first case, they are pronounced

the same way as in the target language, and they do not form an exception to the

grammar's rules. In the latter case, these words do not completely adhere to the

phonological and morphological rules of the target language. These words appear to

undergo gradual modification over a period of time.

It is recognized (Holden, 1980) that the assimilation rate of loan words is

influenced by frequency of use, which is, in turn, affected by time and other sociological

factors. Thus, in CSR, vowel reduction will be less likely to be applied to newer, more

unfamiliar borrowings, than to more frequently used loan words. An example

(Glovinskaja, 1971) which illustrates this pattern is comparing the unstressed /o/ in

'foksterjer' and 'model': in the first case reduction does not occur, since the word is fairly

unfamiliar and recent, but the /o/ of the second word, which is enjoys widespread usage, is reduced.

It should be noted that in some words the foreign pronunciation has been indicated by the spelling --therefore, spelling of [ɔ] instead of [e] is provided (except for это and similar forms) . This happens in words such as электричество (electricity), элеватор (elevator). There are also cases of some well-established loan words, which simply do not reduce, an example of which is the word радио (radio).

Such forms will be presented to 5 native Russian speakers. This experiment is to be seen as an aid to the understanding of Russian vowel reduction, expanded to words which are less susceptible to the rules encountered in CSR vowel reduction. The purpose of this Appendix is gain further understanding the influence of general rules such as akan'e, and ekan'e (and then ikan'e) on loan words.

I will begin with an account of the method used for the experiment, followed by a description of the experiment itself; I will conclude by confirming or changing my prediction, which will be exposed in the first part of this chapter (description of method).

Description of method used

Five native speakers of Russian will be requested to verbally respond to a 30 minute testing. The interview will be tape-recorded, and the data subsequently collected. Each individual's specific personal profile will be carefully noted as well as the phonetic implementation of the word list. I will ask them to read loan words typed in Cyrillic, divided in three different categories:

1) loan words of frequent usage (words which have long been included in the Russian

vocabulary and which are frequently used in conversation)

2) loan words of infrequent usage and names of foreign cities

3) foreign words that the native speakers have never seen (words of the Italian

language).

The loan words selected for data are divided in two groups: words with unstressed /e/

phoneme(s) and words with unstressed /o/ phoneme(s), in order to analyze the reduction

of unstressed vowels in borrowed foreign words. The words will have unstressed /e/ and

/o/ phonemes in the first and second pretonic syllable, and in the first and second

postonic.

Analogously, the Italian words group will show unstressed syllables with the /e/

and /o/ phonemes, in first and second pretonic and posttonic syllables. I have chosen

Italian as a source for words that the speakers have never seen, because the Italian

language fits quite well in the Russian sound pattern and there are not big differences

between the two vowel inventories.

A list of the words which will be used in the experiment follows:

Table (1)

Vowel reduction of /e/		
Common loan words	**Non-common loan words**	Italian words in Cyrillic
1. Детектив 2. Телефон 3. Бизнесмен 4. Кофе 5. Президент 6. Метро	1. Тенденция 2. Атеизм 3. Атеистический 4. Ноттингем 5. Тегеран 6. Манчестер 7. Герметический	1. Венере 2. Серено 3. Ченере 4. Ерметиста 5. Джелато

Table (2)

Vowel reduction of /o/		
Common loan words	**Non-common loan words**	**Italian words in cyrillic**
1. Модель 2. Отель 3. Радио 4. Фотография 5. Фотоаппарат	1. Пончо 2. Формировать 3. Фокстерьер 4. Философия 5. Лос-Анджелес	1. Боттичелли 2. Волато 3. Консонанте 4. Котолетта 5. Атоно

At present I will predict the results of the pilot experiment. I predict that the Russian native speakers interviewed for the pilot experiment will not reduce words like 'foksterjer', 'poncho' and 'detektiv', because of their obvious foreignness. The speakers will feel the need to adopt a special pronunciation for the foreign words, even if they have been in the Russian vocabulary for a long time. In the same way, the Italian words used as data will present similar reduction (or lack thereof) of unstressed vowels. On the other hand, native speakers will pronounce common words like 'telefon', 'president', and 'model', applying reduction on the unstressed vowels. Vowel reduction is present in this case because these words are at present in wide use in the Russian language and are not viewed foreign anymore; the native speaker of Russian that reads a list of such words does not think about their foreign origin, but reads them as they would read any other word in a Russian dictionary.

This is not the case for words that are widely used, but that somehow sound foreign, or appear such because of certain 'unrussian' characteristics: such is 'radio', where the diphthong 'jo' could never exist orthographically in a word of a Russian origin; such is also 'filosofia', where the segment 'f'' makes the loan word identifiable. Accordingly, because these particular words 'inspire' foreignness, native Russian speakers will unconsciously not reduce such borrowings.

Description of the experiment

Table (3) gives the necessary information about the Test subjects:

(3)

Information about the Test subjects				
	Subject 1	Subject 2	Subject 3	Subject 4
Letter initials	A. R.	I.	A. R.	E.
Sex	M	F	M	F
Age	19	19	18	58
Native of	Ukraine	Belarus	Moscow	Saint Petersburg
Years lived in America	14	12	10	3
Russian Schooling in America	No	No	Yes	No
Speaks Russian at Home	No	No	Yes	Yes
Bilingual (English-Russian)	Yes	Yes	Yes	No
Additional Comments	-	Dyslexic	-	-

For the pilot experiment, two different methodologies were used: one using three speakers, and one using only one speaker.

The first methodology consisted of presenting the speakers with a list of written words, as shown in tables (1) and (2) (p. 27). The speakers were instructed to read the list of words, and their responses were tape recorded. It should be noted that the native speakers were given some time beforehand to read and become familiar with the words.

Because of the background of the first three speakers (they had arrived in the United States very young, and in some cases, they had not been reading Russian for several years), they sometimes needed to be reminded of the positions of the stresses in some of the words; the stresses were indicated but not always followed. I presented the speakers with the lists shown in tables (1) and (2), with the addition of a hand-written diacritic placed above the stressed vowel. In some cases the speakers would misplace the stress, causing unstressed vowels in the original word to be stressed, and viceversa. In those cases, the reduction will be presented in the data as 'unavailable'.

The speakers were all given a list of words in Cyrillic, with the exception of one speaker, who, suffering from dyslexia, was not able to read Cyrillic. A list of the same

words in transliteration was provided; however, the speaker's dyslexia caused some problems in the pronunciation, leading her to substitute some words for others (especially the less common loan words, and obviously the Italian ones).

The other methodology used was tested only on one speaker, the only non-bilingual native Russian speaker, who had lived in the United States only for three years. She was presented the list of Russian loan words, but for the Italian words another method was used: the Italian words were pronounced for her by a native speaker (myself); she repeated what she heard, and was instructed to pronounce them as would a Russian speaker who doesn't know any other languages. The speaker asked to see the word list to pronounce the Italian words, instead of repeating the words. The speaker found the task harder than the rest, because having a basic knowledge of the English language, she was tempted to pronounce the words with a different accent.

The raw data of vowel reduction of /e/ and /o/ in pretonic and posttonic position are noted in tables (4) through (7).

Table 4: Vowel Reduction of /e/ in pretonic position								
	Speaker 1			Speaker 2		Speaker 3		Speaker 4
Детектив	je	e		e	e	je	e	e	je
Телефон	je	e		je	e	je	e	i	i
Бизнесмен	e			e		e		e	
Президент	e			e		i		i	
Метро	je			e		e		i	
Тенденция	je			e		je		e	
Атеизм	je			i		je		e	
Атеистический	je			n.a.		je		e	
Тегеран	je	je		n.a.		je	je	e	e
Герметический	i	je	je	n.a.		e	e	je	i	i	i
Серено	je			n.a.		e		-	
Ерметиста	e	e		e	e	e	e	-	

Table 5: Vowel Reduction of /e/ in posttonic position						
	Speaker 1		Speaker 2		Speaker 3		Speaker 4	
Кофе	je		je		je		je	
Ноттингем	e		n.a.		n.a.		n.a.	
Манчестер	je	je	e	n.a.	n.a.	je	je	i
Венере	je	i	i	n.a.	e	e	-	

Table 6: Vowel Reduction of /o/ in pretonic position							
	Speaker 1		Speaker 2		Speaker 3		Speaker 4
Модель	ʌ		ʌ		ʌ		ʌ
Отель	ʌ		ʌ		ʌ		ʌ
Фотография	ə	ʌ	ə	ʌ	ə	ʌ	ə	ʌ
Фотоаппарат	o	ʌ	ə	ʌ	o	ʌ	o	ʌ
Формировать	ə	ʌ	ə	ʌ	ə	ʌ	ə	ʌ
Фокстерьер	o		o		o		o
Философия	ʌ		ʌ		ʌ		ʌ
Лос-Анджелес	o		o		o		o
Боттичелли	ə		ə		ə		-
Консонанте	ə	ʌ	o	ʌ	ə	ʌ	-

Table 7: Vowel Reduction of /o/ in posttonic position							
	Speaker 1		Speaker 2		Speaker 3		Speaker 4
Радио	o		ə		o		o
Пончо	jo		jo		jo		o
Волато	ʌ	ə	ə	o	ə	o	-
Джелато	ə		o		ə		-
Атоно	n.a.	o	n.a.	o	o	o	-

The raw data for the second methodology used are recorded in table 8.

Table 8

Raw Scores for Vowel Reduction of /e/ and /o/ in pretonic and posttonic syllables: Repeating words from Italian Native Speaker's Previous Utterance					
Venere	e	e	Botticelli	ə	
Serena	i		Volato	o	ə
Ermetista	e	e	Consonante	ə	ʌ
	e		Cotoletta	ʌ	ʌ
-	-		Torino	ʌ	ʌ
-	-		Gelato	ʌ	

The results of the pilot experiment are noted in Table 9.

Table 9: Raw results (not statistically significant) for vowel reduction

	Established Loan Words		
	Non-target	Target	Total
/o/→/a/	6	26	32
/e/→ /i/	16	16	32
	Non-established Loan Words		
	Non-target	Target	Total
/o/→/a/	6	26	32
/e/→ /i/	17	16	33
	Italian Words		
	Non-target	Target	Total
/o/→/a/	6	26	32
/e/→ /i/	17	16	33

Because of the nature of the experiment, the above data is not statistically significant. The experiment was helpful in confirming the fact that unstressed vowels in Russian loan words behave differently from Russian words. We must notice that the hypothesis was verified in some ways, but not in others. I had predicted that reduction of unstressed vowels would not apply in all cases, especially when the word is obviously (for spelling reasons, for example) a loan word (for example, 'radio'). The obvious foreignness leads the speaker to the analysis of the written word as a Cyrillic transliteration of a borrowed word. Therefore, the Russian native speakers will unconsciously not adopt the phonological rules of their native language, since they know the same rules don't apply to words of a different language.

The prediction was not fulfilled in all cases, mainly because of the non-uniformity of the data produced by the four speakers.

The pilot experiment was ineffective for several reasons: principally, the selection of the speakers and the choice of methodology used.

The experiment should be modified in the methodology used. A better way of recording data for the reduction of unstressed vowels would be inserting the word selection in the context of a phrase, or better yet, embedding key words in a discourse, guiding the interviewee to the natural production of the data, thus emulating natural

speech. Reading a list of words is not as effective, because the data collected in such a pre-defined context can bear traces of artificiality.

Another factor that contributed to the ineffectiveness of the experiment was the choice of the speakers: the Test subjects must first of all be speakers of the same dialect, because of differences in the production of unstressed vowels (as we can see in Table 4, where Speaker 1 consistently reduces /e/ to [ʲe]). Secondly, the Test subjects must be native non-bilingual speakers, since the proficient knowledge of another language can disturb the production of unstressed vowels.

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