

**JOURNAL OF TURKISH STUDIES**  
**TÜRKLÜK BİLGİSİ ARAŞTIRMALARI**  
Special Edition Vol. 1  
December 2021

Edited by  
Cemal KAFADAR • Gönül A. TEKİN

**AYAGKA TEGİMLİĞ BAĖIŞI:**  
**FESTSCHRIFT IN HONOR OF**  
**MARCEL ERDAL**

Guest Editors

Irina NEVSKAYA - Hatice ŖİRİN - Ferruh AĖCA

Published at the Department of Near Eastern Languages and Civilizations  
Harvard University  
2021

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Bütün telif hakları yayınlayanlara aittir

Managing Editor of  
JOURNAL OF TURKISH STUDIES  
Günay KUT

Designed and arranged by  
İbrahim Tekin

Baskı:  
ŞEN YILDIZ YAY. MATBAACILIK LTD. ŞTİ.

Library of Congress Catalog Card Number 70-131003  
ISSN: 0743-0019

Cover design and background • Kapak düzeni  
By Sinan AKTAŞ  
Tughra, Mehemed II (1481)  
Aşık Paşa : Garib-nâme (Sül. Ktp. Lâleli 1752 vr. 238<sup>a</sup>)

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## On the quality of the lax vowels in Kazakh and Volga Tatar

Arman ELEUSIN\*

### Introduction

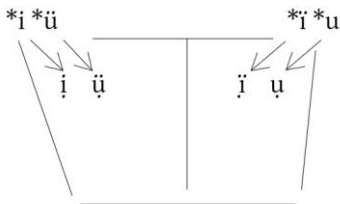
In the Kipchak languages of the Volga-Uralic (NW<sup>N</sup>) and Aralo-Caspian (NW<sup>S</sup>) subgroups, there are four lax or reduced vowels that are represented in different ways in old and new descriptions. Almost in all sources, the Volga-Kipchak lax vowels are represented with characters that presuppose a higher degree of openness than the vowels of the languages of the Aralo-Caspian subgroup. Much more rarely, the reduced vowels of all these languages are denoted by the identical characters, which are used in the works of Baskakov and Tenishev.<sup>1</sup> Lars Johanson also proposed recently a ‘Broad Turcological transcription’, where he employs the same characters for describing the lax vowels in both NW<sup>N</sup> and NW<sup>S</sup>. In this article, his system will be deployed.

The descriptions of the particular sounds imply that the reduced vowels in NW<sup>N</sup> are more open than vowels in NW<sup>S</sup>. However, most scholars have to depend on their perception. Although formant analyses exist in the works of Aralbaev and Salimov, there is no comprehensive comparison of the corresponding lax vowel phonemes to put an end to the existing discordancy.<sup>2</sup> It can be also assumed that the representations are influenced by orthographies.

In this article, I pursue the aim of checking the correctness of the classification and description of the reduced vowels in NW<sup>N</sup> and NW<sup>S</sup> based on earlier analyses and my samples. For this purpose, the vowel phonemes of Kazakh and Tatar as substitutes for both subgroups are compared with one another. For better comprehensibility, German and Turkish sound systems are also taken into consideration.

### The emergence of the lax vowel phonemes

The NW<sup>N</sup> and NW<sup>S</sup> languages have undergone the vowel shift: the former close vowels became reduced and consequently centralized.<sup>3</sup> This development can be illustrated as follows:



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<sup>1</sup> Nikolaj Aleksandrovič Baskakov, *Istoriko-tipologičeskaja fonologija tjurkskix jazykov*, (Moscow: 1988): 136ff., 141ff.; Edhem Tenišev (ed.), *Sravnitel'no-istoričeskaja grammatika tjurkskix jazykov, Regional'nye rekonstrukcii*, (Moscow, 2002): 254.

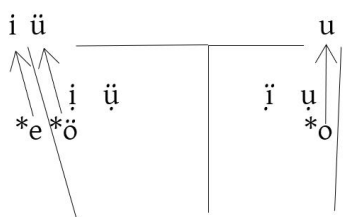
<sup>2</sup> Zhubanysh Aralbaev, *Vokalizm kazaxskogo jazyka*, (Almaty, 1970); Xalil Salimov, *Spektral'nyj analiz tatarskix glasnyx*, (Kazan, 1975).

<sup>3</sup> C. Lars Johanson, “Linguistic convergence in the Volga area”, (ed.) Dicky Gilbers, *Languages in Contact* (Studies in Slavic and General Linguistics), Vol. 28, (Amsterdam, 2000): 174; Nikolaj Aleksandrovič Baskakov, *ibid*, 83; Árpád Berta, *Lautgeschichte der tatarischen Dialekte*, (Szeged, 1989): 92.

**Figure 1: The emergence of reduced vowels in NW<sup>N</sup> and NW<sup>S</sup>**

The newly created centralized short vowels can be described as lax, which stand in opposition to the relatively long vowels of the peripheral articulation area, which are formed with greater articulatory intensity.

The former opposition close-mid vs. close is replaced by the division into tense vs. lax vowel phonemes.<sup>4</sup> An additional development takes place in NW<sup>N</sup>, as a result of which the vacated slots of the earlier close vowels are occupied by the former close-mid vowels. In contrast, the close-mid vowels in NW<sup>S</sup> are not or not completely subjected to the raising process.



**Figure 2: The vowel raising in NW<sup>N</sup>**

### Descriptions and designations of the reduced vowels in different sources

For the reduced vowels in NW<sup>N</sup> and NW<sup>S</sup>, different symbols are used.

Lax vowel phonemes in NW <sup>N</sup> and NW <sup>S</sup> in the 'Broad Turcological transcription'	<i>ɨ</i>	<i>ü̈</i>	<i>ı̈</i>	<i>ü</i>
PTF representation for NW <sup>N</sup>	<i>ě</i>	<i>ö̃</i>	<i>ĩ</i>	<i>õ</i>
PTF representation for NW <sup>S</sup>	<i>i</i>	<i>ü</i>	<i>ı</i>	<i>u</i>

**Table 1: The representations of the reduced vowel phonemes in NW<sup>N</sup> and NW<sup>S</sup>**

Most sources use symbols for the vowel phonemes in NW<sup>N</sup> denoting a higher degree of opening which can already be found in Radloff's studies.<sup>5</sup> The respective descriptions also point out the differences with the vowel phonemes of NW<sup>S</sup>. According to Dmitriev, the reduced /ɨ/ in languages such as Kazakh, Nogai, North Crimean Tatar comes close to Bashkir and Tatar /i/ but does not reach its degree of openness.<sup>6</sup> The same structure applies to the relationship between the correspondences for the reduced /ü/ in both groups. He notices that the tongue position takes the same position when articulating this vowel as when articulating /i/.<sup>7</sup> Kiekbayev characterizes the reduced /ü/ in Bashkir as a half-close or half-open vowel and the reduced /ü̈/ sound as a vowel similar to the German long /ö/,

<sup>4</sup> Lars Johanson, *Linguistic convergence in the Volga area*, (Amsterdam, 2000): 174.

<sup>5</sup> Wilhelm Radloff, *Phonetik der Nördlichen Türksprachen*, (Leipzig, 1882): 15f., 26f.

<sup>6</sup> Nikolaj Dmitriev, *Grammatika baškirkogo jazyka*, (Moscow, 1948): 11.

<sup>7</sup> Dmitriev, *ibid*, 9.

as in *hören*, with the remark that the Bashkir /ü/ is a little higher.<sup>8</sup> Subsequent descriptions by other scholars do not provide any further information.

The use of the identical graphemes for vowel phonemes in both groups can be found in more recent works published by Baskakov and Tenišev.<sup>9</sup> The authors assume a common phonetic development in NW<sup>N</sup> and NW<sup>S</sup> according to the Bulgarian-Chuvash model.<sup>10</sup> Though, Baskakov agrees with Hattori, who describes the Tatar lax vowels as equivalent to the Kazakh lax vowels but as more centralized than the Kazakh counterparts.<sup>11</sup> In contrast to the openness claimed by many researchers, Johanson notes, that “the tense vowels in Tatar are not necessarily higher than the lax ones”.<sup>12</sup>

Although most of the descriptions convey a higher degree of openness of the reduced vowels in NW<sup>N</sup>, there is no unanimous agreement regarding the quality of the reduced vowels in NW<sup>N</sup> and NW<sup>S</sup>. Dmitriev pointed out the need to clarify the differences between the vowel phonemes in NW<sup>N</sup> and NW<sup>S</sup> using experimental methods.<sup>13</sup>

### Formant measurements

The formant measurements can be found in Aralbaev’s and in Salimov’s studies for Kazakh and for Tatar respectively.<sup>14</sup> The measurements of Salimov were adopted by other authors and used in later works. Salimov tries to compare the vowel phonemes of some Turkic languages with one another.<sup>15</sup> He makes the mistake of comparing sounds that are not etymologically related but look the same or closely resemble in writing, such as the values of the vowels marked with the graph <o> in Tatar and Kazakh.

In addition to the existing analyses, I also collected data for Kazakh and Tatar. For this purpose, words spoken separately by five male native speakers were recorded and processed using the PRAAT language analysis program. Formants of the reduced vowels were measured in closed syllables in a stressed position: *kır, tık, küt, tıs ~ tüş, qıs, şıq ~ çıq, tıt, tır*. For Tatar recordings, the speakers of the central dialect of Tatar (Kazan Tatar) were involved. As for Kazakh recordings, speakers from different regions were engaged, since Kazakh is homogeneous in terms of dialects.<sup>16</sup>

vowel	parameter	Kazakh		Tatar	
		K1	K2	T1	T2
/i/	F1	450	440	405	424
	F2	1658	1680	2175	1854

<sup>8</sup> Jalil Giniyatovich Kiekbaev, *Fonetika baškirskogo jazyka*, (Ufa, 1958): 35, 66.

<sup>9</sup> Nikolaj Aleksandrovič Baskakov, *Istoriko-tipologičeskaja fonologija tjurkskix jazykov*, (Moscow: 1988): 136ff., 141ff.; Edhem Tenišev (ed.), *Sravnitel’no-istoričeskaja grammatika tjurkskix jazykov, Regional’nye rekonstrukcii*, (Moscow, 2002): 254.

<sup>10</sup> Tenišev, *ibid.*, 254ff.

<sup>11</sup> Nikolaj Aleksandrovič Baskakov, *Istoriko-tipologičeskaja fonologija tjurkskix jazykov*, (Moscow: 1988): 83; Shiro Hattori, *O formirovanii tatarskogo i čuvaškogo jazykov*, (1980): 88.

<sup>12</sup> Lars Johanson, “Linguistic convergence in the Volga area”, (ed.) Dicky Gilbers, *Languages in Contact (Studies in Slavic and General Linguistics, Vol. 28)*, (Amsterdam, 2000): 174.

<sup>13</sup> Dmitriev, *ibid.*, 9.

<sup>14</sup> Zhubanysh Aralbaev, *Vokalizm kazaxskogo jazyka*, (Almaty, 1970); Xalil Salimov, *Spektral’nyj analiz tatarskix glasnyx*, (Kazan, 1975).

<sup>15</sup> Xalil Salimov, *Tatar telenej suzik awazlari*, (Kuybyšev, 1989).

<sup>16</sup> cp. Mark Kirchner, *Phonologie des Kasachischen*, (Wiesbaden, 1992): 10.



/ü/	F	375	420	355	405
	F2	1370	1550	1595	1700
/i/	F1	480	525	475	500
	F2	1250	1200	1185	1185
/u/	F1	375	460	445	445
	F2	927	1100	970	1100

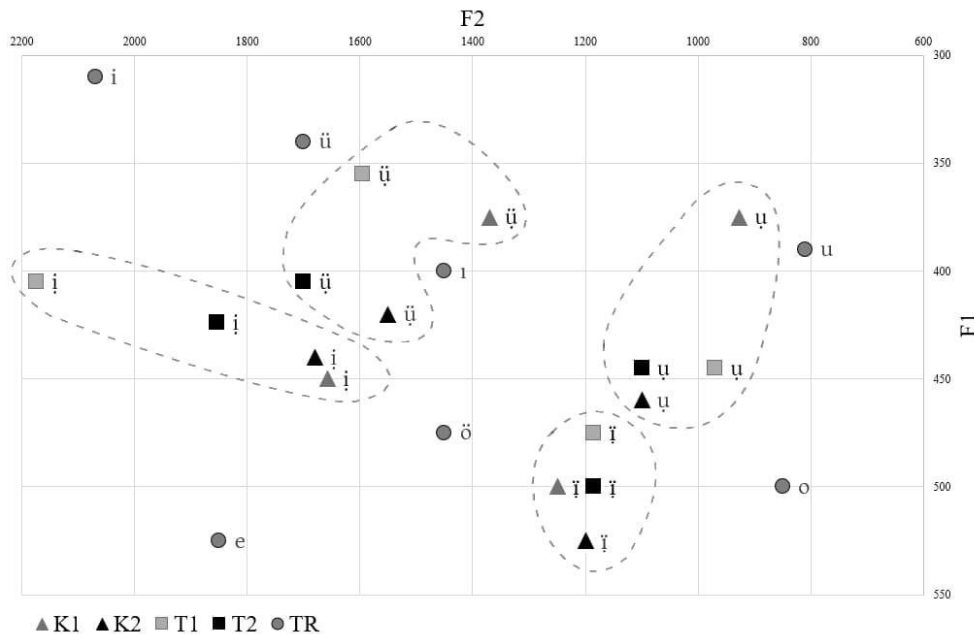
K1 -

values in Aralbaev, T1 - values in Salimov, K2 / T2 - results of my measurements

**Table 2: The average formant values of the reduced vowel phonemes in Kazakh and Tatar**

The proximity of the formant values in my results for Kazakh and Tatar originate from the measurement of the vowels in similar positions, since neighbouring sounds also play a major role. The results for Kazakh come close to Salimov's data for Kazakh, which he does not list separately, but it can be deduced from his graphical representations.

A comparison with the Turkish vowels can better illustrate the values of the lax vowels (see Figure 3).



TR - The average values of the Turkish vowel phonemes<sup>17</sup>

<sup>17</sup> Yunus Korkmaz, Ayтуğ Boyacı, "Classification of Turkish Vowels Based on Formant Frequencies", (2018), URL: <https://www.researchgate.net/publication/331277195>.

### **Figure 3: Formant map for lax vowel phonemes in Kazakh, Tatar and Turkish**

The Tatar reduced vowel /i/ turns out to be a vowel that is formed rather in the upper front side than its Kazakh equivalent. The far-left position of the average value of the Tatar /i/ in Salimov's measurements, can probably be explained by the inclusion of the female voices. There is an overlap area of the Tatar short vowel with the Kazakh /i/ in the F2 range from 1700 to 1800 Hz. The reduced Kazakh /i/ seems to be a little more open, which makes it closer to the Russian open [ɛ] with F1:480 and F2:1800 than the Tatar counterpart.<sup>18</sup> The frequency values of both reduced vowels are far from the values of Turkish /e/ and /i/. When compared with the German vowel system, the reduced /i/ in both languages would correspond to the higher frequency range of the short [ɪ] in German.

The reduced vowel /ü/ is very close to the reduced /i/ and forms its rounded counterpart. The formant values of /ü/ and /i/ can overlap. Similar to /i/, the Tatar variant is formed further in the upper front. According to its values, the reduced /ü/ corresponds to the centralized sound [ɻ].

The formant values of the reduced vowel /ɨ/ almost completely coincide in both languages. Contrary to the schwa sound, /ɨ/ is articulated further back.

The sound /ʊ/ appears as a labialized pair from the reduced /ɨ/. Their values are very close and partly overlap. In this position, the IPA symbol [ʊ] corresponds to them best. The frequency values of the half-open [ɔ] are in a higher frequency range.

### **Conclusion**

The formant analysis of the reduced vowels in Kazakh and Tatar shows that, in opposition to widespread conceptions, the Tatar vowel phonemes are by no means more open and more centralized than their Kazakh counterparts. In Tatar, the front vowel phonemes are customarily articulated further in the upper front. In both language groups, NW<sup>N</sup> and NW<sup>S</sup>, the reduced vowels are to be characterized as close-mid and near-close (and not as open-mid). The designation of the lax vowels as /e/, /ö/ and /o/ carries the risk of their interpretation as open vowels, which could not be proved. In addition, the use of different graphemes for reduced vowel phonemes in NW<sup>N</sup> and NW<sup>S</sup> leads to misconceptions about the character of phonetic development in both groups.

The established graphic designations are orthographically motivated. Due to the historical vowel raising in NW<sup>N</sup>, the inventory of graphemes for mid vowels was free and it was reused for the notation of the lax vowel phonemes, which was not possible in the languages of NW<sup>S</sup>.

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<sup>18</sup> Ablaev, *ibid*, (1975): 64.

## Abbreviations

ebd.	ebenda
NW <sup>N</sup>	Volga-Uralic
NW <sup>S</sup>	Aralo-Caspian
PTF	Deny, Jean et al. (ed.) (1959), <i>Philologiae Turcicae Fundamenta</i> , Band 1, Wiesbaden: Aquis Mattiacis.

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