

IRINA JAKOVLEVNA SEL'UTINA, *Kumandinskij vokalizm. Eksperimental'no-fonetičeskoe issledovanie*. [The vocalic system of the Kumandin language. Phonetico-experimental investigation] Novosibirsk: Sibirskij Hronograf, 1998. 184 pp.

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I. J. Sel'utina's monograph is the second part of the project on the Kumandin language, a Turkic language of the Altai. Sel'utina is a pupil of the late well-known phonetician, Turkologist, and Mongolist, Vladimir Mihailovich Nadel'aev, who was in his turn a pupil of the great phonetician, Lev Vladimirovich Shcherba and an outstanding Turkologist and Mongolist, Sergei Efimovich Malov. In 1966, Nadel'aev came to Siberia from Leningrad to develop phonetic investigations of the languages of the Asian part of the former USSR. In 1968, he founded in Novosibirsk the first laboratory for experimental phonetic investigations, which began to study the languages of Siberia and the Far East by the methods of experimental phonetics, involving the languages of such language families as Turkic, Mongolian, Tungus-Manchurian, Paleo-Asiatic, Finno-Ugric, and Samoyedic. His main idea was to study, with the help of experimental phonetic methods, as many languages as possible in order to state their articulatory bases, since he believed that the articulatory base is the most conservative element of a language, and therefore is preserved even if the lexical stock is changed and grammatical characteristics are lost. Nadel'aev had many graduate students, who studied nearly all the languages of Siberia by the methods of palatography, intonography, pneumo-oscillography, X-ray filming, spectrography, etc. Much work was done in the field of phonological statistics, involving 84 languages of the world. Thus the book under review is just one of the great number of articles and books published on the phonetics of the languages of Siberia by Nadel'aev and his pupils. By Siberian languages, I mean languages of different language families spoken in Siberia, e.g. Mansi (Vogul) and Hanty (Ostyak) which are Finno-Ugric languages, alongside Altai and Hakas which are Turkic languages, and Nanai and Evenki which are Tungus-Manchurian languages, and Nenets and Nganasan which are Samoyedic languages, and Ket and Yukagir which are Paleo-Asiatic languages, etc.

In 1973, Sel'utina began the study of the phonetic system of one of the Turkic languages of Siberia—the Kumandin dialect of the Altai language, which she (after Malov and Nadel'aev) proposed considering as a separate language because of its great differences from Altai. Being the

head of the most powerful phonetic laboratory in Siberia, Sel'utina could unite Siberian scholars in the field of phonetics to continue the experimental-phonetic investigations started by Nadel'aev even in a most difficult time for Russian science, when scholars are underpaid and there are no funds for phonetic investigations. Actually, the book under review is a product of Sel'utina's enthusiasm and hard work.

In this new book she has tried to apply Nadel'aev's idea of a conservative articulatory base to the Kumandin language. It looks as though it is true, because her data—obtained by the methods of experimental phonetics—only verify the fact that the Kumandin people have a different system of anthropological, ethnographical, and grammatical features which allow her, Nadel'aev, and other Turkologists to differentiate the Kumandin people from the Altai-Kizhi, Teleut, and Telengit people. The first part of Sel'utina's investigation was published in 1983 (cf. my review of it, Tambovtsev [1985a]). In the present book, Sel'utina sums up all her previous data and claims that the results of her experimental phonetic studies indirectly give a clue that the Northern Altaic ethnic groups were formed as a result of the assimilation of the previous Ugro-Samoyed population by Turkic tribes. The Kumandin people live in the south of Siberia in the northern region of the Altai mountains. They are part of the Altai people.

In the first chapter, "Inventory of the vowels", Sel'utina states that she found in Kumandin 14 vowels, i.e. the classical inventory number for a Turkic language vocal system, including 8 short vowels but only 6 long vowels (pp. 3–8). One of the most interesting results of her present phonological investigation is the phonemic frequency data of Kumandin, which has never been computed before. She computed 8 samples of Kumandin prose, composed of 6611 words, obtaining frequency data for the vowels and consonants in all possible positions of the word. She counted the frequency of: mono- and polysyllabic words; the frequency load of syllable types; and the mean length of the word. Sel'utina's results show that the Kumandin speech chain consists of 51.4% words of two syllables, 34.4% words of three syllables, and the rest are words of one syllable or more than 3 syllables.

The ratio of the frequency of consonants to vowels is called the consonantal coefficient. The value of the consonantal coefficient is 1.46, which is very close to those of Komi-Zyrian (1.42), Hanty (1.48), and Mansi (1.53). I have made these computations of some Turkic languages on large samples of prose, obtaining the following consonantal coefficients, which are much less: Hakas (1.38), Baraba Tatar (1.34), Altai

reliable results, since they had taken only 2,400 and 4,000 phonemes respectively (Kirchner 1992:71). I have compared Kirchner's phonostatistical data with my own data using the chi-squared criterion, receiving a positive result that the data are similar.

My phonostatistical investigations show distances between different languages on the basis of the functioning of various phonemic groups (e.g. the frequency of labial, front, palatal, velar, sonorant, occlusive, fricative, voiced, etc.) in the speech chain. After comparing the sound pictures of the Turkic and Finno-Ugric languages with Kumandin, I can state that Sel'utina's results seem to verify mine. Actually, the sound picture from the Kumandin speech chain is more similar to that of Veps (5.46), Vach-Hanty (7.75), or Komi-Zyrian (8.29) from the Finno-Ugric family, than to those of the Turkic family, because the closest Turkic language to Kumandin is Yakut, with a distance of 9.58. The other Turkic languages sound still less similar to Kumandin: e.g. Hakas (17.06), Azeri (16.08), Uigur (16.10), Altai (13.47), etc. As a matter of fact, Altai shows greater closeness to Kirgiz (1.80), Kazakh (3.22), Uzbek (3.48), or Tatar-Baraba (3.72). Actually, the greatest phonostatistical distance between Altai and any other Turkic language is 7.98 (Karakalpak), much less than the closest analogical distance between Kumandin and the closest Turkic language Yakut (9.58). The distribution of various phonemic groups in the Kumandin speech sound chain was influenced by earlier contacts with prehistoric Finno-Ugric or some other languages of unknown background. To some extent, on the other hand, these distances may speak for the strong Finno-Ugric substratum in Kumandin.

In the second chapter, Sel'utina deals with the phonetic and phonological lengths of Kumandin vowels in bisyllabic and polysyllabic words (pp. 8–49). She discovered that Kumandin has a certain tendency to differ from Hakas, though lengthening of open short vowels before closed short vowels is typical of all Turkic languages of Kypchak origin (p. 49).

The third chapter (pp. 50–71) describes the articulatory analysis of Kumandin vowels based on static X-ray studies. In fact, Sel'utina used the vector principle of description of the articulation base invented by Nadel'aev and proved on various (his and his pupils') X-ray data of the vowels of Siberian, Mongolian, and other Asian languages. She found out that the articulation processes are rather inconsistent, which she explains as the result of different ethnic components in the Kumandin people (p. 71).

The fourth chapter is devoted to the study of the correlation of the qualitative and quantitative parameters of Kumandin vowels (pp.

(1.33), Kazakh (1.33), Turkish (1.32), Yakut (1.32), and Azeri (1.32) (cf. Tambovtsev 1985b).

The great difference between the value of the consonantal coefficient in Kumandin and the other Turkic languages may be accounted for either by a great difference in the speech chains, or by Sel'utina's small sample. Unfortunately she does not provide the reader with the exact size of the Kumandin phonemic sample from which the consonantal coefficient was computed. Actually, having done the computations for the Turkic and Finno-Ugric languages mentioned above, I can conclude that a sample size of 6000 phonemes allows the confidence interval to fluctuate within the limits of 0.20 to 0.26. Taking half of the largest interval (0.13), one can estimate the greatest possible statistical error, which here is equal to $1.46 + 0.13 = 1.59$, or $1.46 - 0.13 = 1.33$. As we can see, the lower limit suits us perfectly. So, even if we must make the second assumption, i.e. that the sample size is too small, and thus that the consonantal coefficient fluctuates too much, we can state that Sel'utina's consonantal value is within the limits of the usual consonantal values for a Turkic language. My phonostatistical investigations show that one should take sample sizes of texts of not fewer than 30,000 phonemes, as with this sample size the confidence interval is less than 0.05. If one assumes that Sel'utina's sample was between 30,000 and 40,000 phonemes (cf. 6,611 words), then the confidence interval for her sample should be 0.05 or less. This is why the limits of fluctuation of her consonantal coefficient must be between 1.51 and 1.41. These values are much closer to the data of the three Finno-Ugric languages than to those of the Turkic languages. So one can conclude (if and only if the sample was not fewer than 30,000 phonemes and the calculations were correct) that Kumandin was influenced by Finno-Ugric, Samoyedic, or some other unknown languages so much that its speech chain functions more like a Finno-Ugric than a Turkic speech chain. However, one should bear in mind that this conclusion is true only with respect to the functioning of the ratio of consonants and vowels in the phonemic chain. Generally speaking, a sample greater than 10,000 phonemes may reduce the possible statistical error to less than 0.10. However, strictly speaking, my phonostatistical studies showed that one should take a sample greater than 150,000 phonemes in order to be able to reduce this error to less than 0.02. This is why it has been especially pleasant to observe that the young generation of Turkologists is well aware of the need for a large sample, e.g. Mark Kirchner, who took a Kazakh text of 109,610 phonemes and correctly criticized W. Veenker and A. Tretiakoff for un-

72–84). Sel'utina provides an abundance of reliable material in the tables showing the lengths of the short and long Kumandin vowels (pp. 110–82). One can calculate many other additional results, based on her actual data. The only thing one needs to do is to apply the methods of linguistic statistics. In fact Sel'utina provides a great amount of valuable data on the lengths of various vowels in Kumandin. It is very interesting to find out the limits of different sorts of variation in the lengths of different Kumandin vowels, especially short and long. The easiest way to compare the peculiarities of these vowels is to use the coefficient of variance, which can give a reliable measure for variables of different values, thus obtaining commensurable results. Here, the numerical data of the values of the short and long vowels cannot be compared directly. However, it is possible to compare them indirectly, i.e. taking into account their means. If the value of this coefficient is greater in one case than in the other, then the measure of variability there is greater, and vice versa. Or in other words, the smaller the value of the coefficient of variability, the greater the stability of the length of the vowel. The value of this coefficient in short /a/ is 14.72% and in long /a:/ 11.30%; /ɔ/ 18.04%, and /ɔ:/ 6.39%; /e/ 16.89% and /e:/ 5.49%; and /ø/ 15.37% and /ø:/ 7.91%. Thus one can see that in every “short-long” pair, short vowels have greater values of the coefficient of variance. This means that long vowels do not fluctuate as much as short vowels. For certain reasons, the native speakers of Kumandin pronounce the vowel /e:/ with more or less the same length in all phonetic positions, while the length of the vowel /ɔ/ is the least stable, fluctuating greatly. The lengths of the short vowels are distributed according to the Gaussian (normal) law, while those of the long vowels are not. In fact, long /ɔ/, /e:/, or /ø:/ are not distributed according to this law either, while their short counterparts are. This may mean that for Kumandin speakers short vowels are quite casual, thus unmarked, while long vowels are special, thus marked. One can also measure the homogeneity in the production of the short and long vowels, using Pearson's test, which is often called the “chi-square test”. It turns out that /a/, /ɔ/, /e/, and /ø/ are not homogeneous, while /ɔ:/, /e:/, and /ø:/ are quite homogeneous in their length distribution. Long /a:/ is on the border between homogeneity and chaos. In conclusion, I can state that the application of certain simple statistical methods can help one find the correct decision in an ocean of data, as in this book. One can also see that it is very easy to overlook these tendencies in the abundance of data on the length of Kumandin vowels. I have calculated the means of all the Kumandin vowel lengths from the tables which Sel'utina provided in the appendix to the book and obtained the same results. This means that her

calculations are correct, although she could have gone further and used slightly more sophisticated statistical methods.

The fifth chapter, the last but not the least, deals with the dominant features of the Kumandin vowel system (pp. 85–94). One of the most interesting features of this chapter are some unpublished ideas of Nadel'aev, who supposed that central articulation is the most characteristic for Old Turkish (p. 92). Sel'utina found central articulation of vowels in Kumandin (p. 92), which means that the Kumandin people have preserved the Old Turkish manner of articulation, although she also found a great deal of influence from the Old Ugro-Samoyedic articulation (p. 93). The fact that modern Mongols also use central articulation of vowels, according to Nadel'aev, may mean that modern Mongols, i.e. Khalkha, have a significant Old Turkic substratum (p. 93). This brilliant idea of Nadel'aev is virtually unknown among the community of Mongolists, Turkologists, and other linguists, although, in my opinion, it deserves greater attention, since he was and is one of the few linguists who considers that the articulation base (p. 86) is the primary feature of the ethnos of the articulatory effort of the people who speak some other language and not the original language itself. He claimed that the dominant phonetic features appear in the articulation base as a result of the common structure of the movements of the active organs of speech of this ethnos, due to some psychological or social reasons. This is why, if some ethnos has lost its original language, it does not lose its articulation base. On the contrary, the articulation base continues to serve further, now with a newly acquired language. The old articulation base usually changes the phonetic system of this new language, adjusting it to the old sounds of the former language. Thus it is possible to reconstruct the ethnic history of some language from the peculiarities of its articulation base. Nadel'aev considered the length, the height, the row, the tension, the labialization, the nasalization, and some other phonetic features to be the potential vocalic dominants which may help to trace language contacts.

I hope that in spite of the stressful conditions in Russia currently, more books of this distinguished scientific level will be published. My less than complete treatment in no way should detract from the overall excellence of what Irina Sel'utina has accomplished. I can highly recommend her book.

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