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The Phonetic Researches Of North-Altai Turkic Languages By The Advanced Research Techniques

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Abstract

An instrumental research of the sound systems of the peoples of Siberia and the neighboring regions has been carried out in the Novosibirsk Institute of Philology of the Siberian Branch of the Russian Academy of Sciences (SB RAS) since 1968. At the present stage of development of high-precision X-ray and Electronic Technologies, it is considered necessary to transfer experimental-phonetic researches on qualitatively new methodological and technological layers. The complex multidisciplinary investigation of phonetic systems in Siberian minority languages is carried out by the linguists and medical men of the three Institutes of SB RAS. The objective experimental-phonetic data on the endangered languages have been obtained by the techniques of the Magnetic-Resonance Tomography, Digital Roentgenography and Direct Laryngoscopy. The aim of our research is to promote the human rights for minority ethnic groups to preserve their native languages and cultures; the research is also in agreement with the efforts of the world scientific society aimed at preserving the autochthonous (indigenous) languages as a constituent part of a biological, cultural and linguistic unity. Our mission is to persistently develop the values by institutional and academic growth through qualitative research contributions

Key Words: Experimental-Phonetic Researches, Sound Systems, Magnetic-Resonance Tomography, Digital Roentgenography, Endangered Turkic Languages Of North-Altai.

Introduction

All the Altai peoples were united into Altai Republic, where the Altai language develops its literary norms and is taught at schools. But it is based on the dialect of the most numerous Southern Altai ethnic group – Altai-kizhi (Čumakaeva 1978; Shaldanova 2007).

Northern-Altai ethnic groups differ considerably from South-Altai peoples both in their anthropological, ethnic and cultural features. Peculiarities of North-Altai spiritual culture are especially evident in the languages. The linguistic researches, including the researches of the phonological systems, show that North-Altai languages were formed as a result of an interaction of the Turkic superstratum and Ugro-Samoyedic substratum language systems.

The principle difference between North- and South-Altai languages is caused by ethnic features and makes it difficult for North-Altai children to study the Altai language and other subjects on it. The negative social consequences are: poor quality of primary education of the Kumandy, Chalkan and Tuba children, gradual falling behind their class-mates, expelling from school, sense of their personal failure, loss of interest to the native language as non-prestigious.

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In such situation the multidisciplinary investigation of North-Altai languages is very acute: it will help not only to reveal common and specific features in phonetic and grammatical systems, but also to use the results in the native languages teaching.

Methods And Techniques

Instrumental research of the sound systems of the peoples of Siberia and the neighboring regions has been carried out in the Novosibirsk Institute of Philology of the Siberian branch of the Russian Academy of Sciences since 1968. The Laboratory of Experimental-Phonetic Research (LEPR IP SB RAS) has investigated different aspects of phonetics of over forty languages without any written tradition or with newly appeared literary tradition including their territorial dialects and varieties. The investigated languages belong to different language families – Turkic, Mongol, Tungus-Manchu, Samoyedic, Ob-Ugric, Yenisei and Paleoasian.

The analysis of sound systems included both the results obtained through linguistic investigations and the objective instrumental data – somatic (static radiography, dentopalatography, lingualgraphy and labiography of vowel and consonant articulations) and acoustic (obtained by the use of PC programs for sound files creating and processing, such as CoolEdit, CoolPro, AudioCon, WinCecil, SpeechAnalyzer). All the procedures were carried out by the uniform methods providing the comparability of results.

At the turn of the 20th and 21st centuries, it is considered necessary to transfer experimental-phonetic researches on qualitatively new methodological and hardware layers. The objective experimental-phonetic data on the endangered languages have been obtained by the techniques of the Magnetic-Resonance Imaging (MRI), Digital Roentgenography and Direct Laryngoscopy.

Tomographic non-invasive experiments on visualization of the work of the articulatory apparatus during speech sounds production were performed on the scanner Philips Achieva Nova Dual 1.5 T, coil Head/Neck synergy SENSE (Philips medical systems; Eindhoven, Netherlands) in Medical Diagnostic Laboratories of the Institute "International Tomography Center" of SB RAS. Graphics processing, archiving and morphometry of tomographic images were performed on the workstation Philips ViewForum RS.1 (Dell).

Articulatory sounds settings are also studied by using the digital X-ray machine "Sibir-N" worked out at the Institute of Nuclear Physics SB RAS. An adaptation of a laryngoscopic methodology for experimental-phonetic purposes is made by scientists and doctors of the Institute of Chemical Biology and Fundamental Medicine SB RAS.

Results and Discussion

In the basis of the research there lies a concept of possible usage of experimental phonetic data when reconstructing language and ethnic history. An analysis of experimental-phonetic, grammar as well as historical data allowed Vladimir Nadeljaev, the founder of the laboratory, to put forward a hypothesis that within an ancient Altai linguistic union there was a younger (I–IX centuries AD) Circum-Baikal language union which, in its turn, was divided into two sub-unions: the Baikal-Sayan sub-union characterized by vowel pharyngealization and the Sayan-Altai sub-union with consonant systems based on a substrate of the Ugric-Samoyedic type (Nadelyayev 1986).

Complex investigations of a number of South Siberian Turkic vocal and consonant phonological systems allowed us to reveal the inventories of phonemes, their main constitutive-differential features (CDF), their structure, the dominant characteristics of the articulatory-acoustic bases of ethnic groups – native speakers of these languages. This research was fulfilled on the material of the Altai literary language, of the Onguday sub-dialect of Altai-Kizhi, which is the base dialect of the Altai literary language; of the Telengit, Bachat-Teleut, Chalkan, Kumandy, and Tuba languages as well as the Sagay and Kacha dialects of the Khakas language and the Kaa-Khem sub-dialect of the Tuvan language.

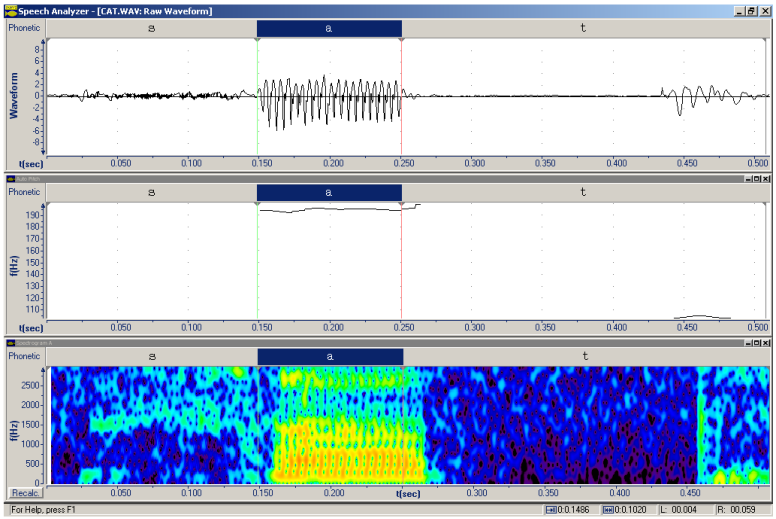
Vocal systems

The interdisciplinary experimental-phonetic researches have shown that the systems of the North-Altai languages vowel phonemes and the vocalisms of the other Southern-Siberian Turkic languages exhibit the common organization principles: they are all structured by the oppositions based on the row, height, labialization, length. The exception is made by the Tuvan (BichelҮdey 2001) and Tofalar (Rassadin 1971) languages as well as by the Altaian Tuba-dialect (Sarbaševa 2004), in which the characterization by the presence/absence of the pharyngealization is one of the constitutive-differential features of the phonemes: in the Tuvan vocalism it is one of the main CDF, while in the Tuba-dialect it is a differential feature accompanying the length.

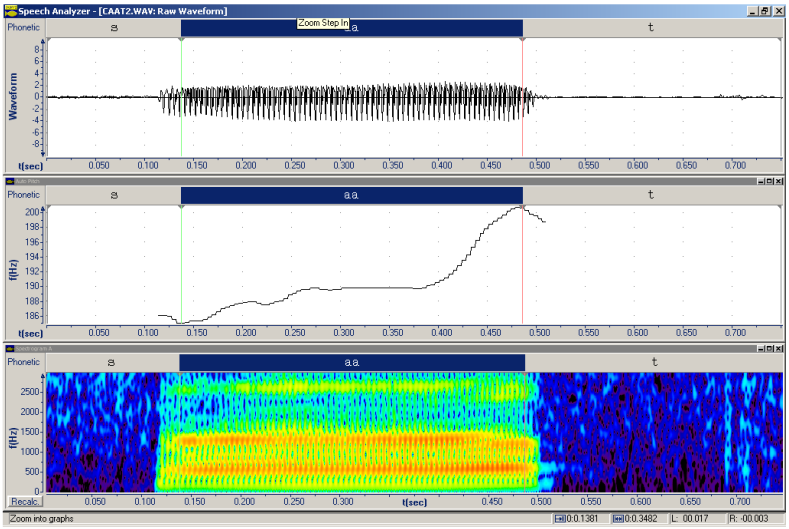
As for the phonic-phonological systems of the Northern and Southern Altai, they differ mainly in their substantial features, in their articulatory-acoustic bases; in the phonological organization of these systems there is more similarity than differences.

The objective data show that the articulatory-acoustic bases of Kumandy (Seljutina 1983; Selyutina 1998), Chalkan (Kirsanova 2003) and Tuba (Sarbaševa 2004) can be characterized as weak ones. There are three zones of vowel articulation: front, central, central-back. The central-back articulation is dominant. There are five grades of the mouth opening (2–6). Nasalization is positional-combinatory. Initial prevocalic aspiration and pharyngalization are facultative (except of pharyngealization in Tuba).

Quantity is a constituent-differential property. As in the majority of the Turkic languages including Kumandy, Chalkan and Tuba the vowel quantitative differences (along with the articulatory parameters of a row, rise and labialization) serve as a main phonemic feature: the phonemes are opposed as the long and the short ones (compare, for example, the quantity of vowels ***a*** and ***a:*** in Tuba language, Figure 1).



a)



b)

Figure 1: Sound files of Tuba word-forms:

a) ***sat*** *'to sel' with a short vowel /**a**/; b)* ***saat*** *'an hour' with a long vowel /**a:**/*

The acoustic investigations show that there can be distinguished three types of the vowel lengths: the secondary or the contracted length; the primary or the etymological one; the positional one. Along with the still uncompleted process of contracted length formation phonologization of positional length occurs. The process of vowel shift similar to the analogous phenomenon in Khakas, Tatar, Bashkir and in the Baraba Tatars' language has its specificity in Kumandy, Chalkan and Tuba. There is a significant lengthening of a wide vowel sound in the open syllable before the narrow vowels of the next syllables (Figure 2: wide short vowel ***e*** in position in an open syllable before a syllable with narrow vowel ***i*** in Chalkan word-form ***pelim*** 'back=my' acquired longitude: ***e*** → ***e:***).

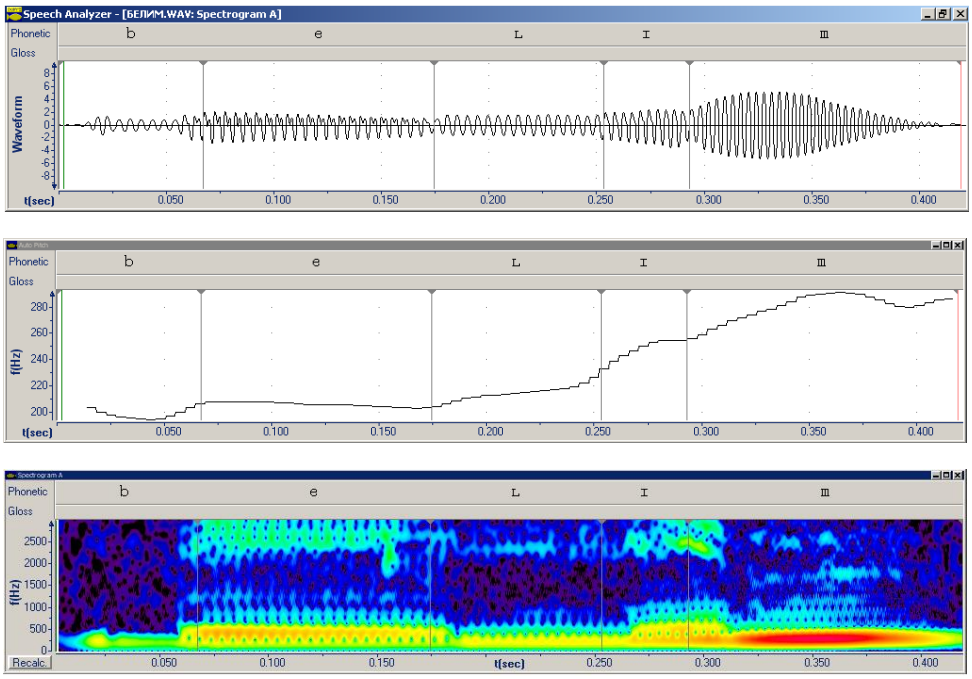
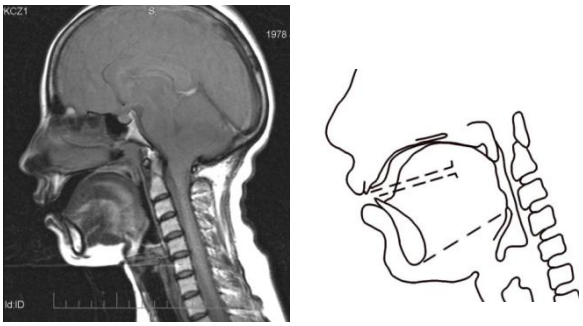


Figure 2: Sound file of Chalkan word-form **pelim** 'back=my'

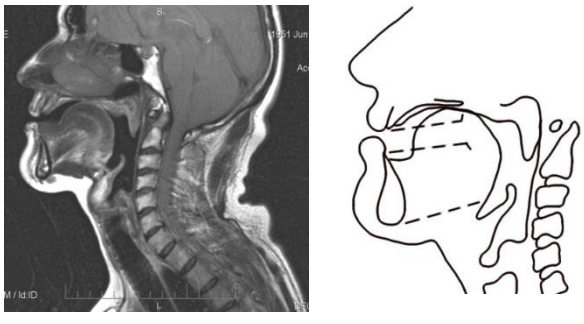
Consonant systems

Magnetic-Resonance Tomography and Digital Roentgenography data indicate significant differences in articulatory settings of consonants in the languages of North and South Altai. Consonants in the Altai-kizhi language are far more tense and back in comparison with Kumandy, Tuba and Chalkan (compare Figures 3 and 4, 5 and 6).



a) b)

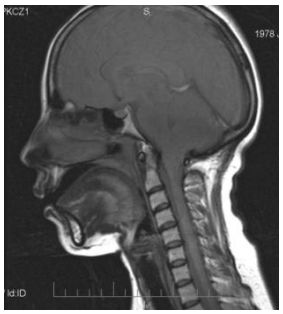
Figure 3: MRI image (a) and scheme (b) of the Altai sound /**k**/ in the word-form **meke**



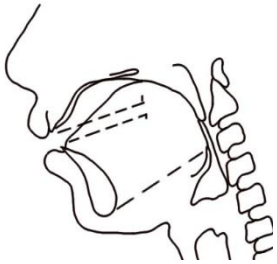
a) b)

Figure 4: MRI image (a) and scheme (b) of the Kumandy sound /**k**/ in the word-form

‘deception’



a)



b)

Figure 5: MRI image (a) and scheme (b) of the Altai sound /**g**/ in the word-form **mege** ‘to me’

eki ‘two’

a)

b)

Figure 6: MRI image (a) and scheme (b) of the Kumandy sound /**g**/ in the word-form **segis** ‘eight’

Judging by instrumental multidisciplinary researches data consonantal systems structured in accordance with quantitative features function in northern languages of Altai. System functioning in some Altai-Sayan Turkic languages and structured by opposition in accordance with the length, which has resulted from overlapping of superstratum articulatory-acoustic base by substratum Ugro-Samoyedic one, points to the existence of Ancient Turkic elements in the Altai-Sayan languages. These elements are characterized by triple opposition of strong / weak / superweak consonants: unacceptable for aboriginal population strong articulation transferred to the long one.

Conclusions

Our interdisciplinary investigation shows that the Sayan-Altai branch of the Circum-Baikal language union is divided into two subgroups: the northern one with the typical process of vowel shift and the phonologization of positional duration which includes the Kumandy and Chalkan North-Altai languages and the Sagai and Kacha dialects of the Khakas language; and the southern one with more front vocalism which includes the Altai literary language, the Ongudai subdialect, the Bachat-Teleut and Telengit South-Altai languages.

The Tuba language is in between the two branches of the Circum-Baikal language union – the Sayan-Altai branch with the quantitative system organization of the consonantism and the loss of the Old Turkic ⇑ like that of the Southern-Altai type, and the Baikal-Sayan branch with the vowel pharyngealization.

To sum up, in the sound systems of the Turkic languages of North and South Altai there are found both the common features and the specific ones, proving the different historical contacts of the ethnic groups on the territory of Siberia.

Knowledge of the specific features of the North-Altaic articulatory-acoustic bases and peculiarities of structural organization of phonological systems will result in rising the efficiency of education, strengthening children’s love to the native language and culture,

becoming aware of their unique personalities, making the process of social adaptation easier for them. That is especially important for children of indigenous peoples of Siberia. It will undoubtedly favour the solution of the problem of the native languages maintenance and will promote the development of intercultural dialogue.

References

Čumakaeva M., 1978. *Soglasnye altajskogo jazyka (na osnove ėxperimental'no-fonetičeskix issledovanij).* Gorno-Altajsk.

Shaldanova A., 2007. *Vokalism dialekta altai-kizhi (v sopostavitel'nom aspekte)*. Novosibirsk.

Nadelyayev V., 1986. CirkumbaykalҮskiy yazykovoy soyuz // *Issledovaniya po phonetike yazykov i dialektov Sibiri.* Novosibirsk. S. 3-4.

BichelҮdey K., 2001. *Faringalizatsiya v Tuvinskom yazyke*. Moskva.

Rassadin V., 1971. *Phonetika i leksika tophalarskogo yazyka.* Ulan-Ude.

Sarbaševa S., 2004. *Fonologičeskaya sistema tuba-dialekta altaiskogo jazyka.* Novosibirsk.

Seljutina I., 1983. *Kumandinskij konsonantizm. Experimental'no-fonetičeskoe issledovanie.* Novosibirsk.

Selyutina I., 1998. Kumandinskij vokalizm. Experimental'no-fonetičeskoe issledovanie. Novosibirsk.

Kirsanova N., 2003. Konsonantizm v jazyke čalkancev (po ėxperimental'nym dannym). Novosibirsk.