Laryngeal activity in Barabian and the Surgut dialect of Khanty

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Abstract

The paper describes a laryngeal activity in two Siberian languages of different genealogical belonging: Baraba-Tatar (Turkic) and the Surgut dialect of Khanty (Ob-Ugrian). The method of direct digital laryngoscopy has been used accompanied by acoustic data analysis. The results show that larynx actively participates in the production of the vowels in the languages under consideration. The data obtained are supported by previous MRI investigations.

Keywords: Baraba-Tatar language, Khanty language, laryngoscopy, larynx, vowels

Introduction

The contribution of larynx into speech production process has long interested phoneticians but remained for decades poorly understood. The modern techniques such as, e.g., digital laryngoscopy, allows scientists to clarify the activity taking part in the lower part of pharyngeal cavity (tube) (see, e.g., Esling 2012; Moisik et al. 2010; Moisik et al. 2012). In the Siberian languages larynx plays an important role in the production of both consonants and vowels. In some of languages (e.g. in Shor), laryngeal activity is a constitutive-differential feature within the consonant system: consonants are classified as ejective and injective units. In others, which include Barabian and Khanty, the status of the larynx contribution into articulatory process is not quite established. The purpose of the paper is to investigate the laryngoscopic data on vowels in the idioms under consideration and to find out common and specific traits of the laryngeal activity in both of them.

Barabian is the Turkic language of the indigenous people of the Novosibirsk region, whereas Khanty is the Ob-Ugrian language of the aboriginal peoples of Khanty-Mansi and Yamalo-Nenets regions of the Russian Federation. However different may the languages and peoples seem at first sight, they do appear to have something in common. It has been established that the ancestors of the Baraba-Tatars had been Ob-Ugrian tribes that were turkified by the Turkic tribes coming from Southern-Eastern Asia into the territory of Siberia in the Middle Ages. The process of turkification was global and the majority of the

Southern Siberian Turkic peoples were formed during that period. Though some predecessors of the contemporary Siberian Turkic peoples merged with the Turks forming new tribes, some native inhabitants of the Siberian region moved northward preserving their languages and culture, and it seems to be the situation with the Khanty. Thus, the Baraba-Tatars and the Khanty people might have had some common ancestors. Similarities are found in culture, traditions and may also be present in language.

Methods

The laryngoscopic material was obtained from the native speakers of these two idioms in the Medical centre with Pentax bronchoscope FB-18V (Pentax, Japan) and the OLYMPUS BF-3C40 bronchofibroscope (Olympus, Japan). Simultaneous video and audio recordings were made with EVIS EXERA II Video System Center Olympus CV-180 and AVER Media program. A special technique for data interpretation has been developed, but in this study we mainly used visual control of the articulatory process to determine the laryngeal role in the vowel production. The analysis of the Barabian and Surgut sound files was performed in PRAAT.

Results and discussion

Previous studies of the vocal systems of the Barabian and Khanty languages have shown that their systems differ a lot: in Khanty (the Surgut dialect) there is an opposition of long and short (reduced) vowels (Honti 1977, Csepregi 1998, etc.), whereas the Barabian vocalism seems to be rather simple: there are only short units, the status of diphthongs is not clear (Urtegeshev et al. 2003). The so called intermittent vowels (usually long units with the glottal or laryngeal insertion in the middle of articulation (Urtegeshev, Koshkereva 2018)) have been identified in both idioms; in the Surgut dialect they have even been distinguished as a special sub-class (Urtegeshev, Koshkareva 2018).

Our previous study of the Surgut intermittent vowels by the digital laryngoscopy (Ryzhikova et al. 2021) has shown that larynx is actively engaged in the production of this type of sounds: they can be classified as injective (when larynx lowers and glottal resonator narrows) or as ejective (larynx moves upward and glottal cavity becomes wider) and are usually accompanied by changes in F0 and intensity during the vowel production (Fig. 1).

The investigations of the Baraba-Tatar vowels by magnetic-resonance imaging (MRI) have suggested that some sounds are pronounced with the ejected larynx whereas others are articulated with the injected larynx (Ryzhikova 2021). In the Barabian word-form ***mitch*** 'an oven' a rise of the larynx has been fixed both on the MRI and laryngoscopic images (Fig. 2). There can also be noticed an active work of the epiglottis moving to and fro causing additional acoustic effect of noise. One can see this noise on the waveform, but there is no change in F0 movement.

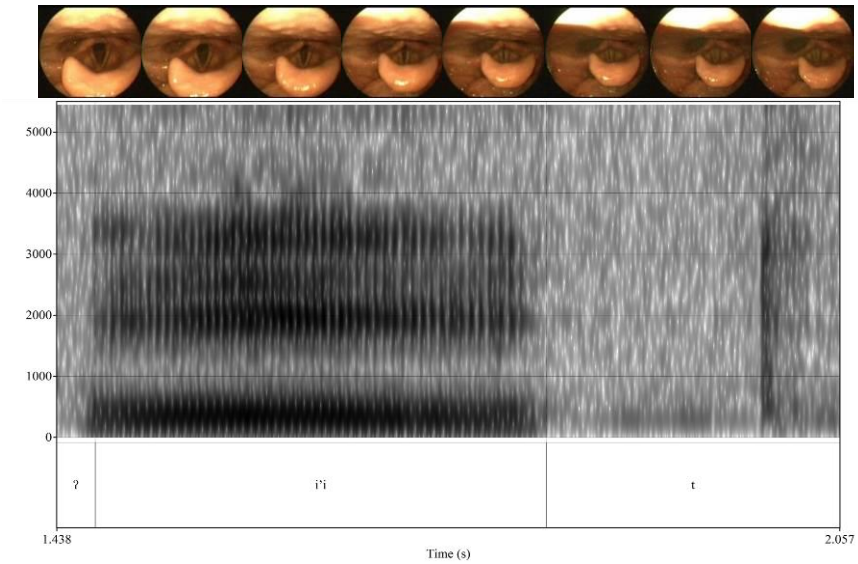

Figure 1. Laryngogram and spectrogram of the Surgut vowel iˀi in the wordform ***it*** 'now'.

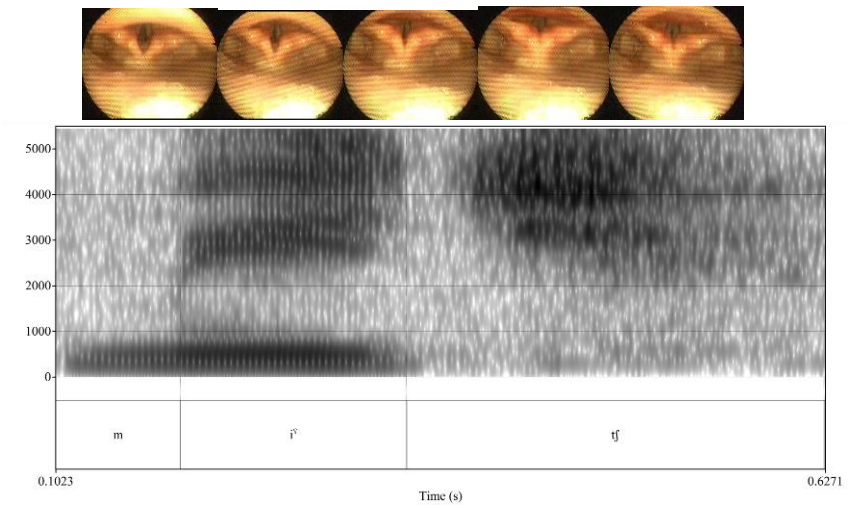

Figure 2. Laryngogram and spectrogram of the Barabian vowel iˤ in the wordform ***mitch*** 'an oven'.

Conclusions

The experimental results show that in both idioms larynx actively participates in vowel production, its movement depending on the type of a vowel. When pronouncing the so-called intermittent sounds, the larynx moves down, whereas while producing long vowels in Surgut it moves upward. The short sounds are articulated with the neutral position of larynx. Epiglottis also moves actively, preventing the direct airflow from the lungs. Such complicated laryngeal work correlates with acoustic effect of tone changes: whether falling, rising, or level. In Baraba-Tatar there also exist injected and ejected vowels showing that larynx also actively participates in the vowel production, but the correlation with the tone changes has not been stated. Generally, laryngeal activity is very important for the Siberian languages of different origin.

Acknowledgements

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