



Chapter 7

From consonant to tone: Laryngealized and pharyngealized vowels in Udihe

Elena Perekhval'skaya^a

^aLLACAN CNRS, France



The article gives a comprehensive analysis of special phonemes of the Udihe language, laryngealized and pharyngealized vowels. Their realization in different Udihe varieties is considered, their etymology is traced. The classification of the Udihe dialects is considered. The presence of pharyngealized vowels is one of the most important features that distinguishes the northern dialect cluster from the southern one. The fall of pharyngealized vowels has led to changes in the morphology and syntax of the dialects of the southern cluster.

The analysis provides a basis for a complete picture of the dialectal continuum, which includes dialects of Udihe and a closely related Oroch language. The internal mechanisms of the dialectal continuum is shown, taking into account types of pronunciation in neighboring varieties.

1 Introduction

Udihe (Udeghe, Udege) is a highly endangered Manchu-Tungusic language spoken in the southern part of the Russian Far East. The Udihe live in Khabarovskij Krai (districts: Imeni Lazo, Nanaisky) and Primorskij Krai (districts: Terneiskij, Pozharskij, Krasnoarmejskij), and also in the Jewish Autonomous Region. The original name is *Udihe* or *Udie*.¹ The official Russian name is *Udegeiskij jazyk*.² In linguistic literature it is also known as *udeiskij* (Eugeny Shneider 1936) and



¹Until the 1920s, the Udihe did not have a common self-designation but used clan names, derived usually from names of rivers.



²The name *Udege* is the transmission of the self-designation *Udihe*: the pharyngealized element was perceived as a consonant /ɣ/ and was written down with the Cyrillic letter <р>, which



udykheiskij (Igor Kormushin 1998). In the 2010 census Udihe named themselves as: *Udie, Ude, Udegeitsy, Udekhe, Udekheitsy*.

According to the latest censuses³ (1989, 2002 and 2010), the number of Udihe is constantly decreasing from 1.902 in 1989 to 1.496 people in 2010. In 2010 620 people were registered in the Khabarovskij Krai; 793 people lived in the Primorskij Krai. An additional 83 Udihe were registered outside of these territories, including 42 people in the Jewish autonomous area. The census data also reflect the steady decline of the language: according to the 1989 census, Udihe was spoken by 462 people, in 2002 it was 227 people, and in 2010 it was only 103 people. The 2010 census shows a sharp drop in the Udihe competence in the Khabarovskij Krai (from 96 to 16 people!).

Traditionally, the Udihe were semi-nomads, moving within a limited territory, each along a particular river and its tributaries, thereby forming territorial groups which usually consisted of several families. The territorial groups are mostly named by corresponding rivers: (1) Kur-Urmi, (2) Samarga, (3) Aniuj, (4) Hungari, (5) Khor, (6) Bikin, (7) Iman, (8) Sea shore. In the 1930s, the Udihe were forcibly made sedentary: each territorial group was settled in a specially built permanent settlement: Kukan (Kur-Urmi), Bira (Aniuj), Kun (Hungari), Agzu (Samarga), Gvasiugi (Khor), Siain, Mitaheza and Olon (Bikin), Sanchiheza (Iman). The less numerous Sea shore Udihe were dispersed. At present, the largest Udihe settlements are: Agzu (Terneiskij district), they constitute about 80% of the population of the village; Gvasiugi (Imeni Lazo district; 65% of the population), Krasnyj Jar and Olon (Pozharskij district; 55% of the population). Each territorial group is characterized by a specific language variety. Dialectal differences primarily concern phonetics and vocabulary, to a lesser extent morphology and syntax.

Morphologically, Udihe is an agglutinative language; the agglutination is combined with elements of fusion mainly in verb paradigms. The root, both nominal and verbal, always occupies the extreme left position in a word; it is followed by derivational and inflectional suffixes, which form a chain that can number up to six or seven suffixes (in the case of verb forms). In addition to synthetic forms the verb system contains analytical constructions with auxiliary verbs. The verbal negative construction consists of the negative verb with the main verb without any specific con-negative suffixes (for more details see Hölzl 2015).

reflected the local Russian pronunciation of /ɣ/ as a fricative consonant. In literary Russian <r> denotes an explosive consonant. “The Russian form *Udege* is based, in a certain sense, on a phonetic misunderstanding” (Kormushin 1998: 5).

³For an analysis of the census data, see Perekhvalskaya (2016).



The peculiarity of Udihe inside the Manchu-Tungusic group is largely due to its phonetics and phonology, primarily the existence of several series of vowels. The northern dialectal cluster has four series of vowels: short, long (including diphthongoids), pharyngealized and laryngealized; the southern dialectal cluster has three series: short, long and laryngealized. Phonological interpretation of these vowels is controversial (see [Nikolaeva & Tolskaya 2001](#): 39-41).

The present article contains a comprehensive analysis of these vowels in Udihe dialects. It is shown that they developed out of tri-phonemic complexes of the V-C-V type, which is found in the closely related Oroch language.

When considering complex vowel phonemes, the phonological system of each territorial variety (dialect) is regarded as independent ([Trudgill 1985](#)). In each variety the full mode and the allegro modes of pronunciation are taken into account, which makes it possible to show that, roughly, the allegro mode of one variety corresponds to the full pronunciation mode of another variety which, in turn, creates a new allegro mode, etc.

The objectives of the article are 1) to give an overview of Udihe dialects and their clusters; 2) to display the anatomy of the “dialectal continuum” by comparison of the modes of pronunciation in each territorial variety; 3) to show the relative character of the synchrony/diachrony dichotomy in a language description; 4) to demonstrate one of the ways of tonogenesis in a previously atonal language.

2 The Udihe, areal groups and dialects

2.1 Udihe and Oroch

The Udihe language area borders with Nanai, Ulcha and Evenk, as well as, historically, Manchu dialects. Udihe had rather intensive contacts with these languages. Thus, Kur-Urmi Udihe situated in traditional Evenk territory underwent a significant influence of the latter. Bikin Udihe and Bikin Nanai (Kilen) acquired a number of similar features ([Perekhval'skaya 2001](#)). The linguistic border between Udihe, on one hand, and Nanai or Evenk, on the other, are clear cut. Neither speakers nor linguists hesitate in attributing a variety to one of these languages.

The situation of Udihe and Oroch is different.⁴ As there are no definite linguistic criteria for distinguishing “language” and “dialect”, it is worth considering the ethnic identity of Udihe and Oroch speakers.

⁴In addition, there is Kilen on the Chinese side, which has been heavily influenced by Udihe or Oroch (for details see [Hölzl 2018](#)). Negidal, most probably, also had an Oroch substrate ([Pevnov 2012](#)).



Traditionally, the Oroch lived along the sea coast and the Tumnin river, their territory borders the Aniuj and Hungari Udihe area in the West and the Samarga Udihe in the South (see Figure 1). Culturally, the Udihe and Oroch are rather close. While the Nanai who lived along large rivers Amur and Ussuri were mainly fishers, the Udihe and Oroch travelled along small taiga rivers, their main occupation being hunting; fishing and gathering were secondary occupations. Their neighbours in the North, the Evenk, were reindeer breeders; neither Oroch nor Udihe were engaged in breeding.

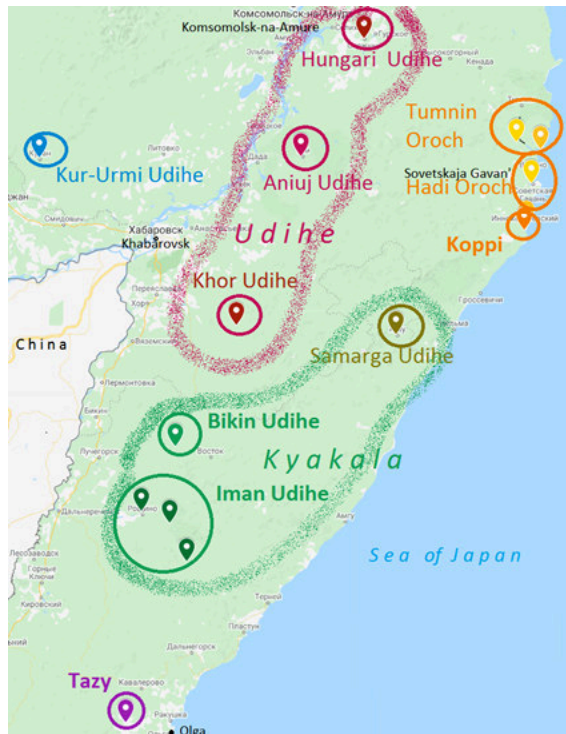


Figure 1: Udihe territorial groups

Previously, the Udihe and Oroch as well as other local ethnic groups had “clan identity”. “...the ethnonym Udihe (Udie) has been used since the 1930s. Before there was no general ethnic designation. Each areal group had its own self nomination: *hungakə* on Hungari, *bikiŋkə* on Bikin, *uniŋka* on Aniuj and so on” (Suliandziga et al. 2003: 142). The Oroch had no general ethnonym either. The Udihe call them *namuŋka* ‘sea shore dwellers’. This name was also used for the Udihe living along small rivers falling into the sea further to the south, so Oroch clans were not distinguished from the Udihe.

The first researchers did not separate the Udihe and the Oroch, which, apparently, reflected the real state of affairs. In the absence of a common self-designation, these people / peoples were called by the Russians *Orochen* (*Orochon*). This name was given to the indigenous population, living along the coast of the Tatar Strait and the Sea of Japan, by Jean-François de Lapérouse (Shrenk 1883: 142). This term is essentially erroneous, since it goes back to the Manchu-Tungusic word for reindeer, *oro(n)*. Neither the Udihe, nor the Oroch were engaged in reindeer herding. Nevertheless, this ethnonym was used for some time.⁵ The *Orochon* were considered a separate ethnic group, along with the Gold (i.e., Nanai), Tungus (i.e., Evenki and sometimes Even) or Gilyak (i.e., Nivkh).

In the modern scientific literature, the term *Udihe* appears for the first time in Sergej Brailovskij's work (Brailovskij 1901). He used the autonym of one of the groups of northern Udihe. Brailovskij also introduced the term *Tazy*⁶ as a synonym for Udihe. However, he did not separate the Udihe and the Oroch, and used the term *Oroch* – *Udihe*, and *Tazy* as synonymous. In the late 1920s, the campaign to change ethnonyms of Russian minorities was launched in the country. Old ethnonyms were assumed to be derogatory and were replaced usually by self-designations of respective peoples. Thus, Gold became Nanai, Gilyak became Nivkh, Tungus became Evenk, and Lamut became Even, etc. The *Orochon* were divided into three groups: Oroch, Udihe, and Tazy. This subdivision was apparently worked out by a famous geographer Vladimir Arseniev (Arseniev 1947-1949), who worked in the area.

This division is now universally recognized, and these ethnonyms are included in the list of Russian minorities. They were also recorded in Soviet passports as “nationality”. At present, when these languages are on the verge of extinction, and people themselves firmly know their “nationality”, this separation became reality. Still, the question arises how these idioms actually correlate.

The first dictionaries and other linguistic data on Udihe (Protodjakonov 1888; Leontovich 1898; Nadarov 1887; Margaritov 1888; Schmidt 1928), as well as a generalizing work of Brailovskij (Brailovskij 1901), did not separate Oroch and

⁵The term *Orochon* referring to both the Udihe and the Oroch together was used in all geographical, statistical, etc. documents of the late 19th – early 20th centuries (see, for example, Shrenk 1883; Nadarov 1887; Margaritov 1888; Protodjakonov 1888; Przevalskij 1990 [1870]). It is worth mentioning that in Iman this designation is still used referring to the Udihe, being perceived as pejorative.

⁶The term *Tazy* goes back to Chinese 鞞子 *dázi* ‘local resident of Primorye’; the word is already attested many hundreds of years ago in Chinese sources (Hölzl 2018: 116). *Tazy* is an ethnic group of Tungus-Manchu origin which have lost its native language and which uses a northern dialect of Chinese. *Tazy* were settled down in the village of Mikhailovka, Olginskij district; about the *Tazy* language situation, see Belikov & Perekhvalskaya 1994.



Udihe words.⁷ However, Brailovskij compared the data that he personally collected with words of other territorial groups, and came to the conclusion that the southern Udihe clans which had undergone Chinese influence were particular. He combined northern Udihe (in modern terminology) and Oroch. At the same time, Brailovskij insisted on the cultural and linguistic unity of all “Oroch-Udihe”. The same was the point of view of Paul Schmidt (Schmidt 1928). Anthropologist Viktor Lar’kin also considered Oroch and Udihe two dialects of the same language, and divided Udihe into several sub-dialects (Lar’kin 1959: 5). Udihe and Oroch were considered separate languages since the 1930s, beginning with works by Evgeniy Shneider (Shneider 1936; 1937), Valentin Avrorin and Elena Lebedeva (Avrorin & Lebedeva 1978).

Regardless of whether Udihe and Oroch should be considered closely related languages or distant dialects of the same language, the fact remains that their territorial varieties form a dialect continuum. The Hadi (coastal) variety of Oroch is close to the northern Udihe. The frontier dialect (Koppi variety) is described as either the most southern dialect of Oroch (Avrorin & Lebedeva 1978), or the most distant dialect of Udihe (Kormushin 1998). In fact, here the “official” border between Oroch and Udihe just coincides with the administrative border between the Khabarovskij and Primorskij Krai. Since the mouth of the Koppi river administratively is a part of the Khabarovskij Krai, local “Orochons” received the passport designation “Oroch” and are officially the Oroch. Until recently, the linguistic position of the Koppi variety remained unclear. In 2010 together with Natalia Kuznetsova we conducted a study of the Koppi variety. Based on these data, I came to the conclusion that the Koppi variety combines features of Oroch and Udihe, being a transition from the northern dialects of Udihe to coastal varieties of Oroch. However, it shows more properties characteristic of Oroch. One of the main features being the preservation of etymological V-q-V and V-h-V complexes.

2.2 Udihe and Kekar (Kyakala)

Previously, the Udihe were also known as *Kekar* (*Kyakala*, *Kyakar* or *Kiyakara* in Manchu). “The Oroch call them *Ude* or *Kekar*, they call Oroch *Pæ*” (Emelianov 1927). However, *Ude* and *Kekar* were not used as complete synonyms and referred not to one and the same but to two closely related ethnic groups. Igor Kormushin in 1998 wrote:

⁷There are newly found data on early Oroch (Alonso de la Fuente 2017).

Anthropologist Paul Schmidt in 1915 mentioned a remarkable fact, which did not attract the due attention. Classifying the Manchu-Tungusic ethnic groups, he wrote that Oroch consist of three tribes: Oroch, Kyakar and Udihe. The term «Kyakar» [...] is preserved in Udihe in the form *kæ̃*⁸ (<*keka(r)*).⁹ As the legend says, so was called a legendary clan which gave start to several Udihe clans, localized mainly along the southern sea coast: *Amuliŋka*, *Geuŋka*, etc. If one takes into account that the *Udi*¹⁰ clan participated in the formation of Ulcha, and therefore they should be localized much further to the North, then one should conclude that *Udi* and the *Kekar* correspond to the «Northern» and the «Southern» components of the Udihe ethnos respectively... (Kormushin 1998: 11-12, my translation – E.P.)

Anthropologist Anatolij Startsev suggested that initially there were three Udihe clans: *Udie*, *Kæ̃* and *Pianka* (Startsev 2004). According to Lar'kin (1959) the large *Kæ̃* clan divided into several clans: *Kanchuga*, *Geonka*, *Kuinka* and *Suanka*. It is worth pointing out that in Khor (“Udihe proper”) there were only two clans: *Kialunziuga* and *Kimonko*. Clan names *Kanchuga*, *Geonka*, *Kuinka*, *Suanka* are usual among the Bikin Udihe and *K'æ̃* was registered in Iman.

It may be concluded that two distinct groups, Udihe and Kekar, were classified as one “nation” which is now called Udihe (or Udeghe, Udie). *Udihe* corresponds to the northern dialect cluster (Khor and Aniuŋ varieties); *Kekar* corresponds to the southern dialect cluster (Bikin, Iman and Samarga varieties). Very roughly, it can be said that northern dialects (“Udihe”) are closer to Oroch.

2.3 Udihe areal groups and dialects

Traditionally, the Udihe, being semi-nomads were spread on a fairly large territory: about a thousand kilometers from south to north. First researchers, geographers, and anthropologists (see, for example, Arseniev 1947-1949: V, 81) indicated that dialectal differences in Udihe were so significant, that the Udihe from different territorial groups hardly understood each other. However, modern studies

⁸Note that Kormushin used the sign of apostrophe that marks laryngealized vowels after (not before) the character: *kæ̃'* (Shn. *k'æ̃*, Sim. *Ki'a*).

⁹Janhunen has argued that it goes back to the word for ‘edge’, *kira > kija > kae (2012). However, *K'æ̃* ‘clan *Kæ̃*’ and *keæ̃* ‘edge’ are not homonyms. *K'æ̃* contains the laryngealized /*æ̃*/ which points to the historical change VqV > VʔV > ṼV. It is mostly probable that the sequence *keka transformed into *k'æ̃*.


¹⁰*udi* might be a word from the Manchu branch of Tungusic: Manchu *weji*, Alchuka *udi*, Bala *udi* ‘forest’. It seems there is no other Tungusic language that has a cognate of this word Hölzl (2018: 121-122).

showed that, with all the differences, the Udihe dialects are mutually intelligible (Simonov 1988; Perekhval'skaya 2010). Still, differences between Udihe dialects are not insignificant, and the mutual understanding between the dialects does not mean that they have identical systems (Trudgill 1985: 21-23).

Traditionally, Udihe dialects were named according to river basins where they were spoken. Hunter-gatherer groups roamed within the basin of one river and acquired their specific language variety. The language of a larger areal group, however, was not uniform. Thus, Udihe clans living along the Bikin-river occupied specific smaller areas (along smaller rivers), and their language had specific features. There are still differences in the speech of those who came from camps of Mitakheza, Siain, Olon, Sigou, Ulunga, Toholo, etc.

By the beginning of the 20th century, there were the following Udihe groups (Table 1): Kur-Urmi, Khor, Aniuj, Hungari (now Gur), Samarga, Bikin, Iman (now Bolshaja Ussurka).

Table 1: Udihe and Oroch dialects

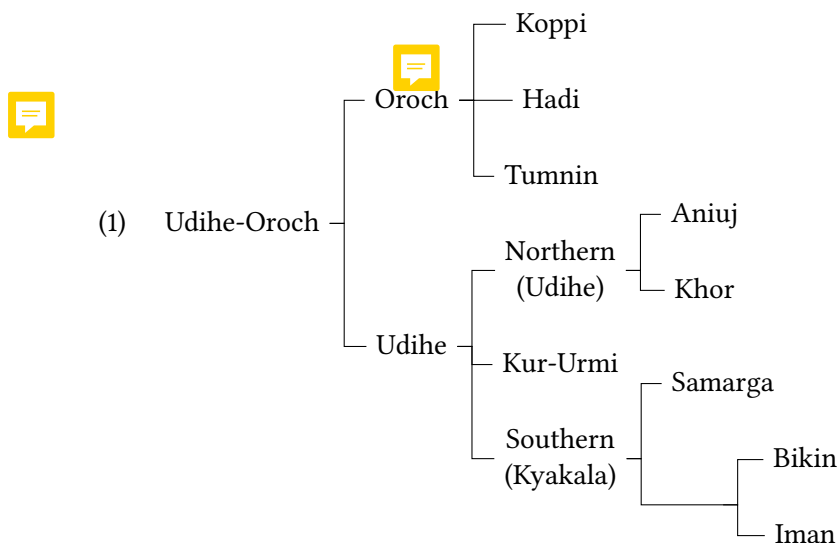
	Cover terms	Subgroups	Dialects
Udihe		Northern (Udihe)	Kur-Urmi
			Khor
			Aniuj (Hungari)
		Southern (Kyakala)	Iman
			Bikin Samarga
Oroch			Koppi
			Hadi
			Tumnin

In the 1930s, the Udihe were forcibly made sedentary: each areal group was settled in a specially built permanent settlement: Kukan (Kur-Urmi Udihe), Bira (Aniuj), Kun (Hungari), Agzu (Samarga), Gvasiugi (Khor), Siain, Mitaheza and Olon (Bikin), Sanchiheza (Iman). The less numerous sea-shore Udihe were dispersed. In the 1960s and 70s in the course of the “consolidation of villages” campaign, smaller Udihe villages were liquidated: Bira (Aniuj), Sanchiheza (Iman), Siain and Mitakheza (Bikin). The Bikin Udihe resettled in the new Udihe village of Krasnyj Jar; and Aniuj and Iman Udihe were resettled into neighboring Russian villages. Therefore, a significant number of the Udihe were dispersed and

came into daily contact with speakers of Russian. In the late 1930s the Kur-Urmi Udihe village of Kukan became a place of exile of political prisoners. After the building of the railway Khabarovsk-Sovgavan', Kun, the village of the Hungari Udihe, became a railway station. Soon Udihe were an insignificant part of population in these villages.

At present, the largest Udihe settlements are: Agzu (Terneiskij district), where they constitute about 80% of the population of the village; Gvasiugi (Imeni Lazo district): 65% of the population, Krasnyj Jar and Olon (Pozharskij district): 55% of the village population.

Each territorial group was characterized by a specific language variety. From a linguistic point of view, there are significant similarities between the Iman and Bikin dialects, on the one hand, and between the Khor and Aniuj dialects, on the other. They form the northern Udihe dialect cluster (Khor and Aniuj varieties), and the southern Udihe cluster (Bikin and Iman varieties). Samarga displays mixed features, however, it seems to be historically closer to the southern (Kekar) group. As for the Kur-Urmi dialect, it was heavily influenced by Evenki. Orest Sunik expressed the idea of the proximity of Samarga and Hungari varieties (Sunik 1968: 231). According to Sunik, three dialect groups were distinguished in Udihe: Iman-Bikin, Khor-Aniuj and Samarga-Hungari. This statement cannot be verified because the Hungari variety is completely lost and no data on it were published. From purely a geographic point of view Hungari dialect should be placed in the northern cluster. Therefore, I will contrast the northern group (Aniuj, Khor) and the southern group (Bikin, Iman, Samarga) (1).



2.3.1 Dialect continuum

The linguistic reality is more complicated than the division of language into two dialect clusters. Territorial varieties of Udihe and Oroch form a “dialect continuum”. Neighboring varieties are linguistically rather close to each other, while the extreme points show significant differences. Moving from one variety to another, one can observe the gradual loss of certain linguistic features and the appearance of other features. It concerns all language levels: phonetics and phonology, morphology and syntax, vocabulary. In this article I will focus on the concrete realization of complex vowels in different varieties of Udihe.

3 Data

The work is based on the study of the following data:

1. Dictionaries

- Dictionaries of Oroch (Schmidt 1928; Avrorin & Lebedeva 1978);
- Dictionaries of Udihe (Nadarov 1887; Shneider 1936; Kormushin 1998; Simonov & Kialundziuga 1998; Girfanova 2001).
- Tungus-Manchu Comparative Dictionary. Materials for the etymological dictionary (Cincius 1975/77).

2. Descriptions

- Linguistic descriptions of Udihe varieties (Shneider 1936; Sunik 1968; Simonov 1988; Kormushin 1998; Nikolaeva 2000; Nikolaeva & Tol'skaya 2001; Hölzl 2018).

3. Field data gathered in a number of field trips

- Tumnin and Hadi variety of Oroch, Khabarovskij Krai (2001, 2010); main speakers: Anatolij Namunka, Inna Akunka.
- Khor variety, Khabarovskij Krai (1989, 2011, 2013, 2014, 2018); main speakers: Valentina Kialundziuga, Nelli Andreeva (Kimonko), Polina Sun (Kialundziuga), Tatiana Dvoynova (Sulaindziuga).
- Koppi variety, Khabarovskij Krai (2006, 2010); main speaker Alexandr Ivaschenko (Pudza).
- Samarga variety, Primorskij Krai (1989, 2010, 2011); main speakers: Anatolij Kamandiga, Tatiana Kaza.

- Bikin variety, Primorskij Krai (more than 10 trips in the period 1984-2011); main speakers Aleksandr Kanchuga, Nadezhda Kukchenko, Aleksandr Pionka, Lydia Simanchuk, Susan Geonka, Anna Kanchuga, Andrej Suanka, Evdikija Kialundziga.
- Iman variety, Primorskij Krai (1989, 2010); main speakers: Ksenia Ajanka, Antonina Suanka, Aleksandr Kialundziga.
- Field data were gathered with the help of Vladimir Belikov, Fatima Eloeva, Albina Girfanova, Irina Nikolaeva, Maria Tolskaya, Vlada Baranova, Kirill Maslinskij, Ksenia Viktorova, Valentin Vydrin, Natalia Kuznetsova.

4 Pharyngealized and laryngealized vowels in Udihe varieties

4.1 Udihe vowels

The peculiarity of Udihe inside the Manchu-Tungusic group is largely due to its phonetics and phonology, specially the existence of several series of vowels. Laryngealized (glottalized) and pharyngealized (aspirated) vowels are features that clearly distinguish Udihe from Oroch and other Manchu-Tungusic languages (Zinder 1948: 58; Cincius 1949). However, the pharyngealized vowels in Udihe prove to be less stable than the laryngealized ones. Bikin and Iman varieties have lost pharyngealized completely, in Samarga they are kept only in some root morphemes. They are fully preserved only in the Khor dialect. On the contrary, laryngealized vowels are preserved in all varieties, although their specific realization may significantly differ (Shneider 1936; Simonov 1988; Nikolaeva 2000). In fact, the concrete realization of laryngealized vowels is one of the important features which distinguish Udihe dialects.

One of the most significant features that distinguishes northern and southern varieties is the lack of pharyngealized long vowels in southern Udihe (2):

		‘fire’		‘button’
(2)	Khor	<i>tō</i>	~	<i>to^ho</i>
	Bikin	<i>tō</i>	~	<i>tō</i>

4.2 Interpretation of the Udihe complex vowels

The interpretation of the Udihe vocalic complexes, laryngealized and pharyngealized, has long been controversial. Trubetskoi’s phonology counts in Udihe

Table 2: Vowel inventory of Khor and Aniuj varieties (Shneider 1936: 83-86; Simonov 1988)

Description	Vowels								
Short	a	o	u	ə	i	e	æ	ɵ	(y)
Long	ā	ō	ū	ē	ī	iə	eæ	yɵ	yi
Long laryngealized	‘a	‘o		(‘ə) ^a					
Long pharyngealized	a ^h a	o ^h o	u ^h u	ə ^h ə	i ^h i	(i ^h e)	e ^h æ	y ^h ɵ	y ^h i

^aLaryngealized /‘ə/ is postulated by Nikolaeva and Tolskaya on the basis of one verb form: the perfect stem for verbs of the type *ətətə* ‘to work’ - *ətət’ə* ‘he has worked’ (Nikolaeva & Tolskaya 2001: 40). However, this phoneme has a very narrow scope: it does not occur in any other position.

Table 3: Vowel inventory of Bikin, Iman and Samarga varieties

Description	Vowels								
Short	a	o	u	ə	i	e	æ	ɵ	(y)
Long	ā	ō	ū	ē	ī	ē	æ̃	ɵ̃	
Long laryngealized	‘a	‘o		(‘ə)					


several dozen vowel phonemes, as it was presented by Shneider (1936); in some other works the phonemic status of these complex vowels is not clarified (Nikolaeva 2000).

I regard suprasegmentals as an independent tier (Goldsmith 1976). Therefore, I postulate the appearance of the suprasegmental tier as a compensation for the simplification of the segmental tier. In Khor, Bikin and Iman varieties it was the representation of suprasegmental tier that underwent changes while the segment tier remained unchanged. The concrete realizations of pharyngealized and laryngealized long vowels differ according to the variety and also according to the mode of speech.


4.3 Pharyngealized long vowels

4.3.1 Etymology

Udihe pharyngealized vowels go back to a combination of three phonemes, V-s-V. In root morphemes:¹¹

- 
- (3) Udihe *a^hanta* ‘woman’ ~ Oroch *asa*, Pl. *asa-nta*; Negidal *asixān* ‘girl’; Evenk *asī* ‘female’;
 - (4) Udihe *a^hikta* ‘fir-tree’ ~ Oroch *asikta*, Evenk *asikta*, *acēkān*, Nanai *xasikta* ‘fir-tree’;
 - (5) Udihe *i^hi* ‘larch tree’ ~ Oroch *isi*, Negidal *isi*, Manchu *isi*, Evenk *ismama* ‘dry larch tree’;
 - (6) Udihe *o^hə*, *wo^hə* ‘deer-leg fur’ ~ Oroch *ōso*, Negidal *ōsa*, Evenk *ōsa* ‘deer-leg fur’;
 - (7) Udihe *u^həndə*, *wu^həndə* ‘to throw’ ~ Evenk *usəndə* ‘to throw (weapon)’, Negidal *usə* ‘spear’.

In suffixes:

- 
- (8) Udihe *bəli^hə* ‘girl (in tale)’ < **bəli-sə* ~ Negidal *bəlin*, Evenk *bəlin* ‘hysteria’;
 - (9) Udihe *tumi^hə* ‘path in mountains’ < **tumi-sə* ~ Negidal *tuasan* ‘footprint’, Evenk *tū* ‘to step on’.
 - (10) Udihe *ɲama^hi* ‘warm’ < *ɲama-si* ~ Oroch *ɲama*, *ɲama-si*, Nanai *ɲama*, Evenk *ɲama* ‘warm’.

It is worth noting that the transition V-s-V → V^hV in root morphemes took place mostly when this complex was at the beginning of the word, in other words, the root began with a vowel (see examples above). Later, a prosthesis could appear *o^hə* > *wo^hə* ‘deer-leg fur’; *i^hi* > *ji^hi* ‘larch tree’, but it happened already in Udihe.

When a consonant was at the beginning of the word, this transition often did not take place, cf.:

¹¹Hereinafter, the correspondences are given according to (Cincius 1975/77).

- (11) Udihe *gaja* ‘waterfowl, duck’ ~ Oroch *gasa* ‘waterfowl’, Negidal *gasa* ‘swan’, Evenk *gasa* ‘crane’;
- (12) Udihe *kəjə* ‘word, language’ ~ Oroch *xəsə* ‘word’, Negidal *xəsə* ‘word, language’, Nanai *xəsə* ‘word, order’, Manchu *xəsə* ‘order, command’.¹²

Some words which have a consonant before the pharyngealized vowel do not have a convincing Tungus etymology:

- (13) *gə^hə* ‘bad’, *dü^hi* ‘brain’, *ʒa^hi* ‘wild boar’, *tə^hu* ‘all’.

Or go back to different complexes:

- (14) Udihe *to^ho* ‘button’ ~ Negidal *toxon*, Nanai *toχō* ‘button’, Manchu *toχon* ‘metallic button’.

Intervocalic *-s-* in Udihe goes back to *-č-*: *asa-* ‘to fit’ ~ Oroch *ača-*, Nanai *ača-* ‘to come to’; Evenk *arča-* ‘to meet’.



4.3.2 Realization

Pharyngealization in different Udihe varieties can be realized as: a) break of the sound by aspiration; b) breathy voice phonation, c) “clean” long vowel. The concrete realizations of pharyngealized long vowels differ according to the variety and also according to the mode of speech.

Table 4 shows that each Udihe variety is characterized by two different modes of pronunciation: the full mode (FM) which is shown in the cell to the left and the allegro mode (AM) in the right cell.

Taking into account different tempo modes in each variety, Table 4 shows that the allegro mode of pronunciation of one variety corresponds to the full mode of pronunciation of the neighboring one, which produces a new allegro mode. It demonstrates the internal “anatomy” of the dialect continuum.

From a phonological point of view, the VhV sequence with a weakened consonant in the intervocal position is of particular interest. Acoustically it is a long vowel interrupted by aspiration. Its phonemic interpretation, however, can be twofold depending on the variety analyzed.

In Koppi, this is an optional pronunciation variant characteristic of the allegro mode; the full mode of pronunciation is V-h-V (sequence of three phonemes).

¹²Shneider gives forms *ga^hæ* ‘duck’ and *kə^hiə* ‘word’, which are not confirmed by modern material. I did not find such forms in any of the varieties.

Table 4: Types of realizations of pharyngealized long vowels in different Udihe varieties and Oroch^a

	Oroch			Udihe		
Varieties	Hadi, Tumnin			Koppi (transitional)		
				Khor, Aniuj (Udihe)		
				Bikin, Iman (Kyakala)		
Stages	V-s-V	V-h-V	V ^h V	Ȳ	Ṽ	

^aComments:

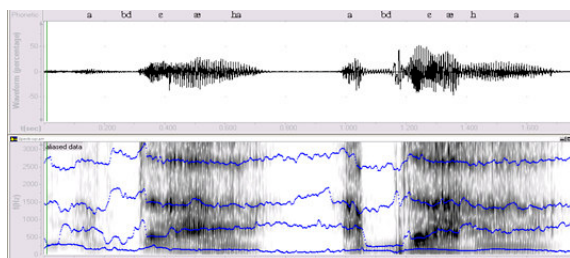
V-s-V and V-h-V: sequences of three segments;

V^hV: long vowels broken by aspiration;

Ȳ: long vowel with the pharyngealized phonation (“breathy voice”);

Ṽ: long vowel.

In the speech of Alexandr Ivashchenko, a Koppi speaker, sequences of this type were pronounced as two syllables in the full mode of pronunciation. In order to clarify a word Ivashchenko could chant it, clearly dividing these sequences into **two** syllables *abdæha*¹³ ‘leaf (of a tree)’ (ab.dæ|ha). However, in the allegro mode, the V-h-V sequence contracted into a long vowel, interrupted by a brief aspiration (**ab.dææ^ha**). See the following pronunciation of the word /abdæha/ ‘leaf (tree)’ in allegro (left) and full (right) modes of pronunciation.

Figure 2: Koppi dialect, speaker Akexandr Ivashchenko: (abdææ^ha), (ab-dææha) ‘leaf’

Similar observations were made by Igor Kormushin:

¹³Hereinafter, aside from specific phonetic realizations, Udihe words are given in the Shneider’s writing system.

In the fully marked type of pronunciation, if the vowels surrounding the pharyngeal consonant are similar, they are pronounced with the equal length and, in fact, form two syllables with **h** being voiced: *ahanta* (a-ḥan-ta) ‘woman’, *gehe* (ge-ḥe) ‘bad’, *oloho* (o-lo-ḥo) ‘boiled fish’, *ihi* (i-ḥi) ‘larch’. In the fully normal type of pronunciation, **h** is articulated simultaneously with the second vowel, becoming a pharyngeal overtone in its initial part; at the same time, pharyngeal consonant is fused with the previous vowel, so that a single complex sound is formed; as a result, the syllable border is lined differently, combining two syllables into one: a^hanta, ge^he, olo^ho, i^hi. [...] in the normally abbreviated type of pronunciation, the surrounding vowels fuse into a long one, the pharyngeal consonant following it [...] a^hnta, ge^h, olo^h, i^h. This pronunciation creates conditions for the fall of **h** [...] (Kormushin 1998: 64-65, my translation – E.P.).

Kormushin distinguished three pronunciation modes: fully marked, normally full and normally abbreviated. They correspond to chant, full style and allegro mode.

According to my data, none of the varieties exhibit coexistence of all the types of pronunciation that Kormushin singled out. Most likely, the researcher combined phenomena observed in different varieties.

Evgeniy Shneider who worked in the 1930s with Aniuŋ Udihe interpreted the sequence VhV (full style in Aniuŋ) not as a sequence of two syllables, but as a long vowel interrupted by aspiration.

Of course, *h* in this sound complex is not an independent consonant [...] When comparing Udihe words with pharyngealized vowels with words of the same meaning in other Manchu-Tungusic languages, it turns out that [...] the two-syllable combination turned into monosyllabic, i.e., the transformation process s (ṣ) > h (ḥ) was accompanied by the contraction of the pair of identical vowels. It resulted in the emergence of a new category of vowels, for example *aha-* ‘to catch up’ (Evenk *asa-*); *imaha* ‘snow’ (Oroch *imasa*); *iḥi* ‘larch’ (Oroch, Manchu *iṣi*) [...] (Shneider 1937: 10-11, my translation – E.P.).



4.3.3 Realization of pharyngealized vowels

4.3.3.1 Koppi

The two types of pronunciation, V-h-V and VhV, seem to be characteristic of the northernmost dialects of Udihe: Koppi, and, apparently, Hungari. Most likely, at

the end of the XIX century pronunciation of pharyngealized complexes as three segments V-h-V was also characteristic for Khor Udihe. In Nadarov's work we find *яга* (jaga) 'eye' (Shn. *jehæ*, Sim. *jâ*), *нюге* (niuge) 'nose' (Shn. *nyhø*, Sim. *niê*), *тозо* (togo) 'button' (Shn. *toho*, Sim. *tô*). It is not clear what kind of sound was represented by the Cyrillic letter «Г»; most likely it was a pharyngeal consonant, possibly sonorous. In some cases, Nadarov did not note it, cf. another variant of the word 'eye' *я* (ja), *ниама* (niama) 'leather jacket' (Shn. *nehæma*, Sim. *nâma* 'leather')¹⁴.

4.3.3.2 Khor

In Khor Udihe a “new category of vowel” was formed. In the 1930s, the Udihe on the Khor River apparently pronounced V^hV in the full pronunciation mode, and V^hV in the allegro mode. The full pronunciation mode of Khor Udihe was the basis of the “literary” Udihe, in which several textbooks for primary school were published. Simonov who worked with Khor Udihe since the late 1970s, noted at that period the V^hV variant was the full mode, and pharyngealized vowels were pronounced \tilde{V} in allegro mode:

Pharyngealized vowels are pronounced with a sharp increase in intensity towards the end of the phonation. [...] When the aspiration is present, it is not in the middle of the vowel, but is superimposed on its entire second half. (Simonov 1988: 52, my translation – E.P.)

Simonov presented to the speakers words with a pharyngealized vowel, pronounced in two syllables: “words *je.hæ (instead of *jâ* ‘eye’); *a.han.ta (instead of *ânta* ‘woman’); *imo.ho (instead of *imô* ‘fat’) were simply not understood by speakers” (Simonov 1988: 52, my translation – E.P.).¹⁵

In a 2006, only one type of pronunciation of pharyngealized vowels was observed in Khor variety. With the most complete pronunciation mode, a separate word could be pronounced as V^hV. However, even in this case, aspiration appears also after the vowel, cf. Figure 3:

Figure 3 shows that the area bounded by cursors loses vocalic characteristics turning into an aspiration. The final complex consists of a long vowel (250 milliseconds), the duration of which is almost twice of the initial short vowel (u).

¹⁴Simonov suggested that Nadarov recorded pharyngeal (h) only at the rhythmic boundaries of the word, but this does not explain the presence of doublets in Nadarov's list of words: 'eye' *я* and *яга*; 'nose' *нюгу* and *нионê* (Nadarov 1887).

¹⁵This consideration was the reason for changing the type of writing for Khor Udihe made by Simonov; he introduced circumflex “ \hat{v} ” to mark breathy voice phonation (aspiration): *imô* ~ Shn. *imoho*.

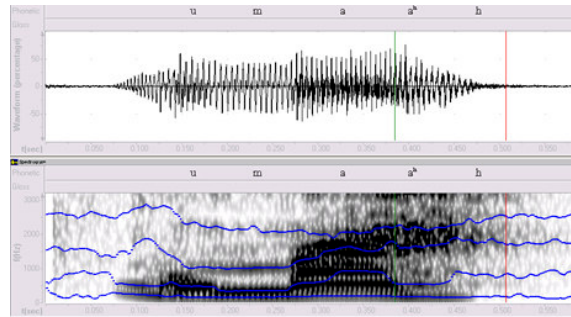


Figure 3: Khor variety. Speaker Valentina Kialundziuga: **umaha** (uma^hah) ‘bone marrow’

Compare pronouncing by the same speaker of the Accusative case form of the same word: *umahawa* (Figure 4).

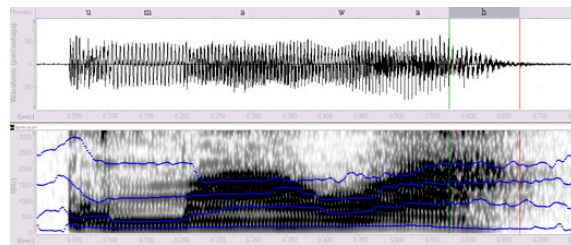


Figure 4: Khor variety. Speaker Valentina Kialundziuga: **umahawa** (umaaw^hah) ‘bone marrow (Acc)’

Figure 4 shows that the long vowel /ā/ in *umaha* has lost its pharyngealized character, but the aspiration appears at the absolute end of the word (segment between cursors). Such a transfer of aspiration to the end of phonetic word may be an individual characteristic of the speaker, but most likely it reflects the pronunciation of pharyngealized vowels in Khor variety. Kormushin also pointed out such a realization of pharyngealized vowels.¹⁶

Compare the realization of these two words:

By principles of Autosegmental phonology (Goldsmith 1976) this is explained by the independent character of the suprasegmental level. Phonation character-

¹⁶Nikolaeva questioned the possibility of such a realization: if pharyngealization realizes at the end of the word, it contradicts the basic phonotactic rules of Udihe. However, it is not a consonant, but a pharyngealized vowel (Nikolaeva 2000). This is an additional consideration in favor of the interpretation of these complexes as single phonemes.

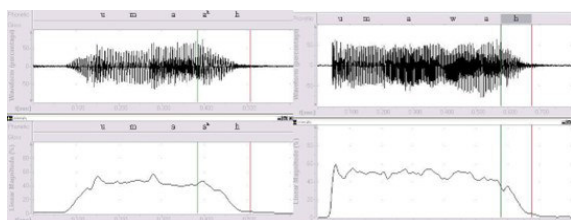


Figure 5: Khor variety. Speaker Valentina Kialundziuga: *umaha* (umaah) ‘bone marrow’; *umahawa* (umaawah) ‘bone marrow (Acc)’

izes the whole word and not any particular segment and is realized at the end of the word.

As pointed out by Kormushin, such pronunciation creates the conditions for a drop of aspiration. This happened primarily with pharyngealized vowels in the final position, as in the examples above. Apparently, the loss of pharyngealization occurred primarily in non-root morphemes. The pharyngealization, therefore, was lost in the personal markers 2SG, PL: *-i* > *-i*; *-u* > *-u*; and by past tense suffixes: *-q-* / *-q-* / *-q-* > *-a-* / *-o-* / *-ə-*.

Table 5: Personal possessive forms in Udihe varieties and in Oroch^a

Form	Oroch	Khor Udihe F	Khor Udihe AM, Bikin Udihe	Translation
1SG	təgə-wi, təgə-ji, təgə-i	təgə-i	təgə-i	‘my shirt’
2SG	təgə-si	təgə- <i>i</i>	təgə-i	‘your (Sg) shirt’
1PL.EXCL	təgə-mu, təgə-wu	təgə-u	təgə-u	‘our (excl.) shirt’
2PL	təgə-su, təgə-hu	təgə- <i>u</i>	təgə-u	‘your (Pl) shirt’

^aOroch data are taken from Avrorin & Lebedeva (1968) and Avrorin & Boldyrev (2001). In both sources, alternative forms are given without comments. I suggest that forms which are closer to Udihe are characteristic of the Hadi dialect which is more innovative.

In the Khor variety, this loss is characteristic of the allegro mode of pronunciation. Auxiliary and negative verbs as most frequent ones, were also “erased” as the full mode of their pronunciation was replaced by the allegro mode. Besides, in

the speech of younger Khor variety speakers, pharyngealized vowels are totally lost and are replaced with pure long vowels in all positions.

Published Khor Udihe texts demonstrate incoherence in marking the pharyngealized vowels, which reflects differences in modes of pronunciation. An example are folklore texts recorded mainly with the Khor Udihe (Simonov & Khasanova 1998). In the vast majority of past tense forms, pharyngealization is not marked in suffixes, cf. in text No. 1: *oloktoni* (< **olokto-ho-ni*) 's/he cooked'; *andalati* (< **andala-ha-ti*) 'they made friends'; *alasiēni* (< **alasi-hə-ni*) 's/he waited' (Simonov & Khasanova 1998: 74). Similarly, pharyngealized vowels in personal suffixes are also not marked in these texts. And in root morphemes, pharyngealized vowels are sequentially marked.



4.3.3.3 Samarga

In the Samarga variety, pharyngealization is kept only in some root morphemes.

4.3.3.4 Bikin and Iman

Pharyngealized vowels are completely lost in Bikin and Iman, where the corresponding complexes are pronounced as clear long vowels, cf. the word for 'leaf': Oroch (*abdasa*); Koppi variety (*abdəha*) (FM) ~ (*abdə^ha*) (AM); Khor Udihe (*abdə^he*) (FM) ~ (*abdæ^he*) (AM); Bikin Udihe (*abdææ*). When in Khor the loss of pharyngealized vowels is a recent phenomenon; and elder speakers pronounce them at least under the full mode of pronunciation, in Bikin and Iman varieties, pharyngealization was not characteristic for the speech of people born in 1920-1930s. It means that pharyngealized vowels have to be lost at least a hundred years ago. In the Bikin variety, the etymological pharyngealized vowels were replaced by long ones, and there is a tendency for these vowels to become short (Nikolaeva 2000: 115-116; Tsumagari 2012).

In sum, the data presented show that Udihe varieties present different stages of one process: weakening of the consonant in the inter-vocalic position with the substitution of segment units by suprasegmental ones.

4.3.4 Loss of pharyngealization and its effects in morphology

Loss of pharyngealization had a significant impact on the morphological system of the southern dialects. The main consequence of the fall of pharyngealized vowels here was formal coincidence of possessive suffixes of first and second person singular and plural (Exclusive form) for vowel-final stems; cf. data in Table 6.

Table 6: Fragment of the paradigm of personal possessive conjugation of the noun *kusigə* ‘knife’ in Bikin and in Khor Udihe

	Nominative		Accusative	
	Khor	Bikin	Khor	Bikin
1SG	kusigə-i	(bi) kusigə-i^a	kusigə-wə-i	kusigə-wə-i
2SG	kusigə-ḷ	(si) kusigə-i	kusigə-wə-ḷ	kusigə-wə-i
3SG	kusigə-ni	kusigə-ni	kusigə-wə-ni	kusigə-wə-ni
1PL.EXCL	kusigə-u	(bu) kusigə-u	kusigə-wə-u	kusigə-wə-u
1PL.INCL	kusigə-fi	kusigə-fi	kusigə-wə-fi	kusigə-wə-fi
2PL	kusigə-ḡ	(su) kusigə-u	kusigə-wə-ḡ	kusigə-wə-u
3PL	kusigə-ti	kusigə-ti	kusigə-wə-ti	kusigə-wə-ti

^aForms merged in Bikin Udihe are bold.

In southern Udihe, in order to clarify the “possessor”, personal pronouns are used. While in northern Udihe the use of personal pronouns codes the emphasis, in southern Udihe it is neutral. Therefore, southern Udihe displays a greater analytism.

4.4 Laryngealized long vowels

4.4.1 Etymology

Udihe laryngealized vowels go back to the V-q-V complex, which was a three-phonemes combination and is present in many Tungusic languages, cf.:

- (15) Udihe *um'a* ‘fishing hook’ ~ Oroch *uməkə(n)*; Negidal *umaxa/umaka*; Evenki *umika*;
- (16) Udihe *l'o-* ‘to hang’ ~ Oroch *lō/loko* (loqo); Negidal *loko-*; Solon *loko-*; Kilen *loqo-*; Evenki *loko-*;
- (17) Udihe *x'ai*¹⁷ ‘liver’ ~ Oroch *xākin* (xāqin); Negidal *xāxin*; Kilen *xakī*; Evenki *hakin*;
- (18) Bik. Udihe *g'ata* ‘cranberry’ ~ Oroch *gākta/gakka* (gaq:a); Negidal *gaxakta*; Evenki *gakakta*;

¹⁷In sequences *a-q-i the first vowel holds the phonation: (a²ai) or (aai), in practical writing: 'ai.

- (19) Udihe *g'ai* 'crow' ~ Oroch *gāki* (gāqi); Negidal *gāxi*; Evenki *gāki*;
- (20) Udihe *kakt'a* 'half' ~ Negidal *kaltaka/kaltaxa*; Evenki *kaltaka*; Solon *xaltaxa*;
- (21) Udihe *s'ou* 'scoop' ~ Evenki *sokowun/hokowun*; cf. Oroch *soko-* (soqo), Negidal *soxo-* 'to scoop'.

It should be noted that only the uvular variant (q) of the phoneme /k/ transformed into the glottal stop and further created the creaky voice phonation. The velar (k) was preserved in Udihe as (x) and (k):

- (22) Udihe *joxo* 'kettle' ~ Oroch. *iko*; Negidal *ixā*; Evenki *ikā*.
- (23) Udihe *jaxə* 'to sing' ~ Oroch *ikə*; Negidal *ixā*; Evenki *ikā*.
- (24) Udihe *cikə-* 'to urinate' ~ Negidal *cixān*; Kilen *cikā*; Evenki *cikān-*.

In Oroch, in accordance with the rule of sound harmony, the uvular (q) occurs only after the vowels (a) and (o). In other cases, the velar (k) appears. Apparently, a similar rule was also present in Udihe. The uvular (q) then transformed into the glottal stop. This explains why the series of laryngealized vowels in Udihe is limited to 'o and 'a.

Evgeny Shneider, on the basis of general system considerations, postulated the presence of the entire set of laryngealized long vowels, both simple and diphthongoids (Shneider 1936: 83). As Simonov showed, this does not correspond to the linguistic reality (Simonov 1988).

It is worth noting that "non-etymological" laryngealized vowels sporadically appear in position after the plosives *b*, *p*, *c*, if followed by vowel *a*, cf.:

- (25) Udihe *b'ata* 'boy' ~ Oroch *bātu*, *baturi* 'strong warrior', Nanai *ātor* 'strong warrior'; Manchu *baturu* 'hero, warrior';
- (26) Udihe *c'aligi* 'white' ~ Oroch *čām* 'white'; Nanai *čāyžā* 'white'¹⁸.

It is also noticeable that many Udihe words with laryngealized vowels do not have a reliable Tungusic etymology. Often they are registered only in Udihe: 'ana

¹⁸However, consider Evenk *bagadi* 'strong, brave', proto-Mongolian **bayatur* and proto-Mongolian **čayān* 'white'. Based on a comparison of Udihe forms with the old Mongolian (as given by Cincius 1975/77), it may be imagined that the Udihe retained a more ancient form. However, Udihe laryngealized vowels originate from -q- and not -g/γ-.

‘boat’, *d’a* ‘cotton wool’; *gob’o* ‘fly’, *’asa* ‘bay’; *t’añki* ‘middle’, *s’ai* ‘salt’ and others. Still, these words are known in all Udihe dialects. The etymology of some other words is not very convincing, e.g. *od’o* ‘grandfather’ is compared with Oroch *adiyi*; Ulcha *adəkə(n)* ‘father-in-law’ which is doubtful.

It may be supposed that Udihe had undergone an influence of a substrate or adstrate non-Tungusic language which was also the source of non-Tungusic loan-words.

4.4.2 Types of realization

Laryngealization in different Udihe varieties can be realized as: a) break of the sound by the glottal stop; b) creaky voice phonation, c) the increased intensity in combination with the low/falling tone. The flattening effect of laryngealization is observed in all Udihe varieties. However, only in the most innovative varieties of Bikin and Iman, it became the main (and in Iman Udihe the only) distinctive feature (Tone+). Thus, these varieties should be classified as tonal which untypical for Manchu-Tungusic languages.

The concrete realizations of laryngealized long vowels differ according to the variety and also according to the mode of speech.

Table 7: Types of realizations of laryngealized long vowels in different Udihe varieties and Oroch^a

	Oroch			Udihe	
Varieties	Hadi, Tumnin		Koppi (transitional)		Khor, Aniu (Udihe)
				Bikin, Iman (Kyakala)	
Stages	V-q-V	V-ʔ-V	V’V	Ȳ	Ṃ

^aComments:

V-q-V and V-ʔ-V: sequences of three segments;

V’V: long vowels broken by a glottal stop;

Ȳ: long vowel with the laryngealized phonation (“creaky voice”); Ṃ: long vowel with falling (low) tone.

Table 7 shows the two modes of pronunciation: the full mode (FM) which is shown in the cell to the left and the allegro mode (AM) in the right cell.

Udihe varieties and the closely related Oroch language represent movement of certain phonetic complexes “from consonant to tone”; each variety representing a certain stage of this process. The innovation was spreading, roughly, in the direction North → South: Oroch → Koppi variety → Khor and Aniuj varieties → Bikin and Iman varieties.

Cf. the word for ‘dog’: Oroch (inaqi); Koppi variety FM (inæʔi), AM (inə^ʔi); Khor variety FM (inæ^ʔai), AM (inəʔei); Bikin variety FM (inəʔei), AM (inə̀èi).

4.4.3 Realization of pharyngealized vowels

To study realizations of laryngealized vowels in different Udihe varieties is a difficult task when based on written sources. In the case of pharyngealized vowels written sources provide more or less reliable information, but laryngealized vowels are written with an apostrophe uniformly by all researchers; this spelling hides rather different types of realization.

4.4.3.1 Oroch and Koppi

According to Avrorin and Lebedeva, in Oroch the phoneme /k/ is realized as uvular (q) in the position after /a/, /ä/, /o/ between the equal vowels or before /i/ (Avrorin & Lebedeva 1978). This is also characteristic of Koppi variety.

It should be noted that in slower speech, an aspiration (h) is clearly heard between the vowel and the uvular (q): (na^hqi) ‘dog’, (beæ^hqa) ‘river’, (ara^hqi) ‘strong spirit’, (ga^hqi) ‘crow’. A variant realization is a pause before (q), what is perceived as a “long stop”: (maa^ʔqi). Here (^ʔq) represents a preglottalized consonant. See Figures 6 and 7 on the pronunciation of the words (beæ^hqa) and (maa^ʔqi) in Koppi.

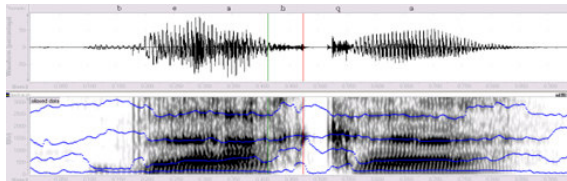


Figure 6: Koppi variety. Speaker Alexandr Ivaschenko: (beæ^hqa) ‘river’

The spectrogramme of (beæ^hqa) ‘river’ shows the aspiration (highlighted by cursors) after a long diphthongoid (eæ), then there is a gap followed by the stop (q). The spectrogramme of (maa_{qi}) ‘there is no’, seems to present no aspiration, but the silence zone before the stop lasts for more than 70 milliseconds.

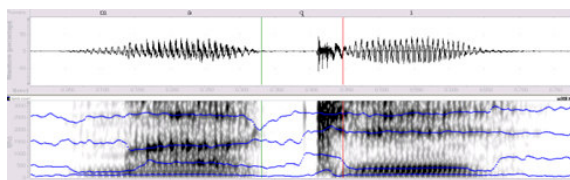


Figure 7: Koppi variety. Speaker Alexandr Ivaschenko: (maa^ʔqi) ‘there is no’

In other phonetic contexts the phoneme /k/ is realized as a velar (k): (ukəhə) ‘door’: Bikin ukā ‘door, doorway’. The Koppi speaker never pronounced (q) as (?). Apparently, this pronunciation is not typical for the Oroch language, including the Koppi dialect. Obviously, we are dealing with a sequence of independent phonemes, and not with a complex sound in this variety.

4.4.3.2 Khor

Shneider described laryngealized vowels of Khor Udihe as having a stop interrupting the vowel; Lev R. Zinder and Margarita I. Matusевич¹⁹ showed that this stop occurs closer to the beginning of the vowel (Zinder 1948). At present, these vowels are pronounced in allegro mode with “creaky voice” phonation. See two variants of *in’ai* ‘dog’ pronounced by the same speaker within the same recording session. At first, the speaker clarified the word (full mode); later, she pronounced it more “carelessly” (allegro mode). It is worth noting that, the speech tempo remained almost the same; it was the intensity of pronunciation and the tonal pattern that changed.

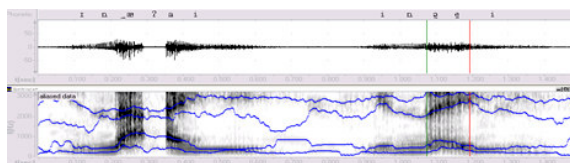


Figure 8: Khor variety. Speaker Valentina Kialundziuga: in’ai ‘dog’: FM (inæ^ʔai), AM (inəɕi)

On Figure 8. The cursors highlight the creaky phonation zone (AM pronunciation). It should be noted that in FM the part of the vowel before the stop is also pronounced with creaky phonation.

¹⁹The results of the study of the Udihe phonetic system, carried out in the 1930s by Lev Zinder and Margarita Matusевич in the laboratory of experimental phonetics of Leningrad State University, were not published. Partially they were given in Zinder (1948) and Kormushin (1998).



These observations confirm conclusions made by Zinder and Matusевич. Indeed, there is a pronunciation variant when the vowel is broken by a stop. Still, at present the most common way to pronounce a “laryngealized vowel” in Khor Udihe (FM) is when the vowel is not broken with a stop, but with a glottal approximant, cf. utterance by V.T. Kialundziuga of the word *bul'a* ‘ash’ (the area between the cursors is the glottal approximant), see Fig. 10.

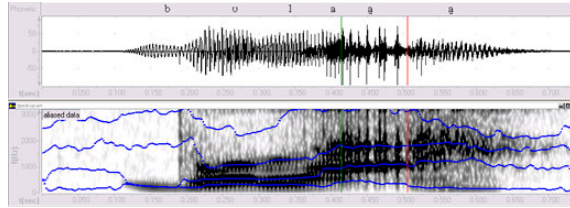


Figure 9: Khor variety. Speaker Valentina Kialundziuga: *bul'a* ‘ash tree’
(*bulaʔa*)

Thus, in Khor Udihe, three types of pronunciation of laryngealized vowels coexist: a) vowel is interrupted by a stop; 2) by an approximant; 3) vowel bears creaky voice phonation. However; the creaky phonation does not characterise the whole vowel, and happens in the place where the stop would have been pronounced under another mode of pronunciation.

4.4.3.3 Bikin, Iman

In varieties of the southern dialect cluster laryngealized vowels with glottal stop are not registered. Specific realizations of laryngealized vowels are in fact a diagnostic feature that differentiate local varieties of Bikin Udihe. The Udihe came from different smaller camps before settling down in the village of Krasnyj Jar, and they still retain certain speech differences. Unfortunately, at present, it is difficult to make a detailed study of these varieties due to the poor preservation of the language and the small number of speakers. However, our language consultants distinguish people speaking *Siain*, *Olon*, *Ulunga*, *Mitahiza*, *Sigou* and other varieties. Basing on the data that I have, it may be concluded that Udihe varieties located upstream the Bikin-river were more conservative in vocalism, and the most innovative one being *Olon*, the village lowest downstream.

The realization of laryngealized vowels in Bikin Udihe varies significantly. It may be a) laryngeal spirant; b) creaky voice phonation; c) sharp increase of intensity of the vowel in combination with a low tone. The latter (c) is typical primarily for people from *Olon*. Consider realizations of laryngealized vowels: laryngeal spirant and creaky voice phonation with a speaker of *Sigou* variety.

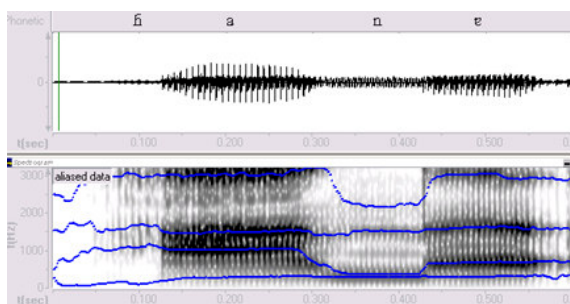


Figure 10: Bikin variety. Speaker Lydia Simanchuk: ‘ana’ boat’ (hane)

Figure 10 shows that the laryngealized vowel is in the beginning of the word and is realized as a laryngeal spirant, what is clearly visible on the spectrogram. The vowel (ā) is long and carries the creaky phonation. The next vowel (e) is more closed. The example presented concerns the full pronunciation mode in Bikin variety; in the allegro mode, laryngealized vowels are never pronounced as a laryngeal spirant.

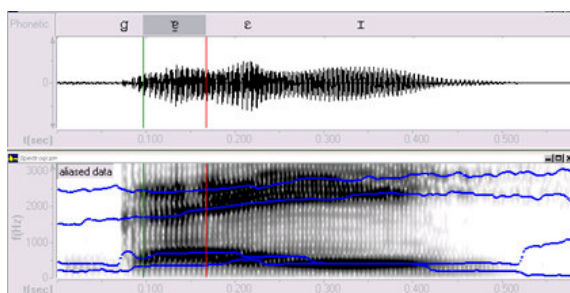


Figure 11: Bikin variety. Speaker Lydia Simanchuk: g’ai ‘crow’ (gɛi)

In Figure 11, the laryngealized vowel is in the syllable of type CV. It has a more closed articulation and carries the creaky phonation.

It is interesting that in some Bikin variants the laryngealized element, as an independent suprasegmental unit, can change the position in the word. It can be located at the beginning of the vowel (see Figures 10, 11), and it can also move to the end of the vowel (see Figure 12). It may be an individual characteristic of the speaker, or, perhaps, characteristics of a local variety. Figure 11 presents the example of phonation realized at the second part of the vowel. The cursors mark the zone of the vowel, the carrier of phonation.

In Figure 12, the oscillogramme shows a decrease in pitch on a laryngealized vowel. This peculiarity of pronouncing laryngealized vowels for Khor variety

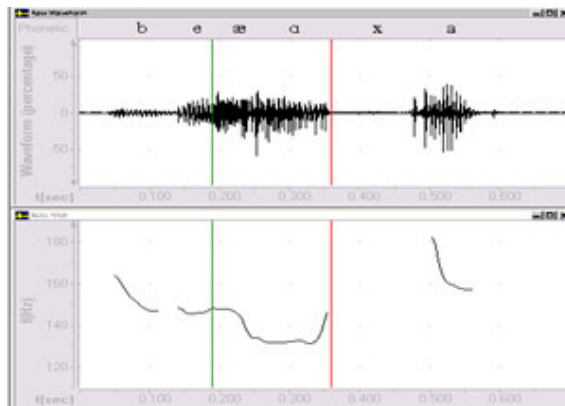


Figure 12: Bikin variety. Speaker Nadezhda Kukchenko: *b'æsa* 'small river' (beḡsa)



was noted by Galina Radchenko, who conducted an experimental study of the phonetics of this variety (Radchenko 1988: 37). Radchenko explained this phenomenon by tone-decreasing effect of laryngealization. This is even more obvious in Bikin variety. Consider the pronunciation of *od'o* 'grandfather' by a speaker of the Siain variety:

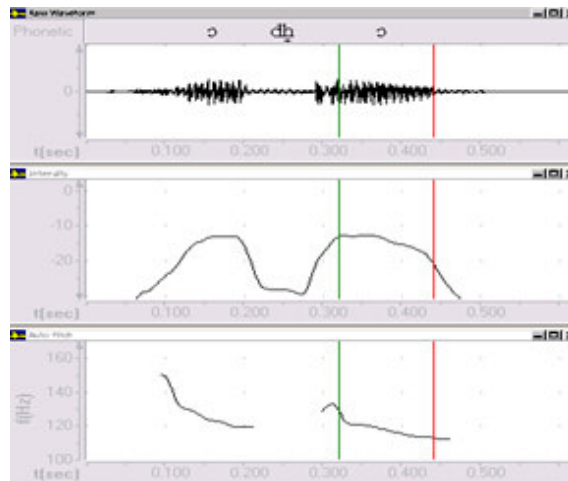


Figure 13: Bikin variety. Speaker Alexandr Kanchuga: *od'o* 'grandfather' (od'o)

Figure 13 presents the oscillogramme, the curve of intensity (middle) and the pitch movement (below). It is a word pronounced in the full mode; the area of

creaky phonation is highlighted. It shows that the laryngealized vowel is characterized by a high intensity and lowering of the pitch.

In the Khor variety low pitch was a side-effect of a vowel laryngealization. In Bikin variety, due to the gradual loss of creaky phonation in allegro mode, low pitch accompanied by a high intensity of pronunciation became the main distinctive feature of laryngealized vowels in some idiolects. Consider the following example: the word *b'oto* 'ligneous mushroom' pronounced by the same speaker.

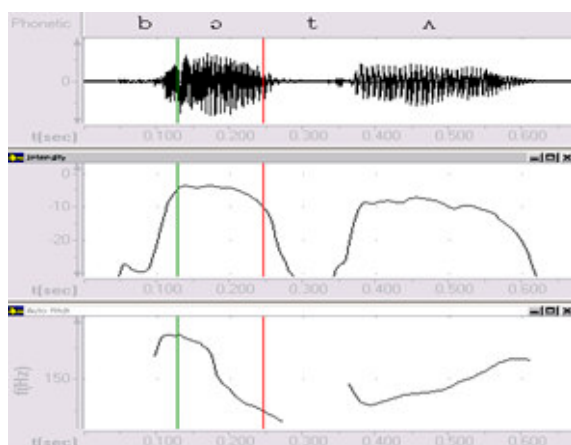


Figure 14: Bikin variety. Speaker Alexandr Kanchuga: *b'oto* 'ligneous mushroom' (**bɔʈɔ**)

Figure 14 Bikin variety. Speaker Alexandr Kanchuga: *b'oto* 'ligneous mushroom' (**bɔʈɔ**).

Examples in Figures 13 and 14 present different tones (pitch movements): $\grave{\text{a}}-\grave{\text{a}}$ and $\grave{\text{a}}-\acute{\text{a}}$.

Tone raising on the second syllable as shown in Figure 13 was described by Shneider in 1936 who interpreted it as an exponent of musical accent in Udihe (Shneider 1936: 92). See details in Nikolaeva (2000: 134-137). This interpretation seems erroneous, since accent (stress) is connected with the hierarchy of syllables in a word. In Udihe, a word is characterized rather by a melodic pattern, which is closer to tone than to stress. Thus, we may conclude that in the vocalic systems of southern Udihe, tonal systems are under formation. This is most obvious in bisyllabic and polysyllabic words; however, it is also characteristic of monosyllabic words which have at least two moras (Simonov 1988). Consider the following example: the verb *b'aami* 'I met' pronounced by a speaker of the Olon variety which is the most innovative one and where phonations are lost.

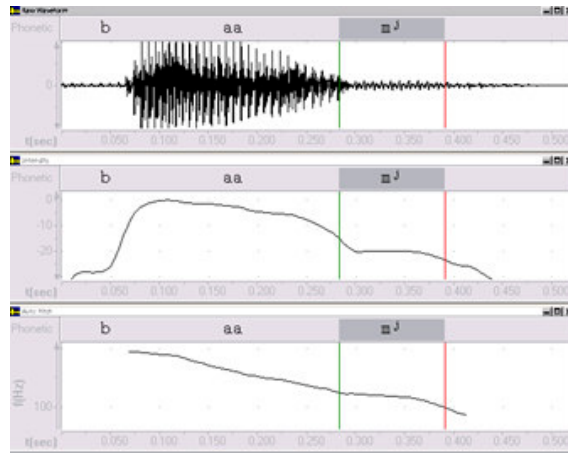


Figure 15: Bikin variety. Speaker Alexandr Pionka: (baamⁱ)

Laryngealized vowel is realized by sharp raise of intensity together with low tone, in other words, on suprasegmental level. The movement “from consonant to tone” is complete.

5 Discussion

Juha Janhunen suggested the appearance of tonal distinctions in Udihe under the Chinese influence (Janhunen 1999). His argument could be summarized as follows: a) Udihe is the southernmost of the Tungusic languages, and it was in contact with Chinese which is tonal; b) generally, tones in many Asian languages have arisen as “suprasegmental compensation” for the loss of segment sequences; c) four types of vowels of Udihe correspond to four tones of Chinese, which was also noted by Radchenko (1988: 104). Janhunen pointed out that Chinese tones also have complex realizations and are characterized not only by changes in pitch, but also by the duration and the presence of phonations. There are certain objections to this explanation.

5.1. The contraction of the V-s-V and V-q-V segment chains into a single complex vowel is already characteristic of the Koppi transitional dialect. And there was no Chinese influence in Koppi.

5.2. The four types of vowels which correspond, according to Janhunen, to four tones of Chinese are found only in varieties of the northern dialect cluster. And, these are the varieties which were much less affected by Chinese influence than Bikin and Iman Udihe. Indeed, many features of the southern va-

rieties can be explained by intensive linguistic contacts with Chinese (for more details see [Perekhval'skaya \(2001\)](#)). However, the influence of Chinese manifested itself, rather in the general trend to analytism, which was also noted by [Tsumagari \(2012: 83-84\)](#) and in a certain “simplification” of the system: alignment of paradigms by analogy, etc.

Still, the origin of Udihe vocalism is hard to explain. Using Edward Sapire's term “drift”, it can be said that in Udihe and in neighbouring Oroch varieties there was an influence of a certain “constant factor”. This had to be some peculiarities of articulation that were not characteristic of other Manchu-Tungusic languages. A big amount of Udihe common words are of non-Tungusic origin: *gə^hə* ‘bad’, *du^hi* ‘brain’, *ʒa^hi* ‘wild boar’, *tə^hu* ‘all’, ‘*ana* ‘boat’, *d'a* ‘cotton wool’; *gob'o* ‘a fly’, ‘*asa* ‘bay’; *t'anʒki* ‘middle’, *s'ai* ‘salt’, *kæfakta* ‘firewood’ as well as the word *asasa* ‘thank you’ and some others. On a rather cautious assumption, Udihe was influenced by a non-Tungusic language, previously spread in this area, but not Chinese.

6 Conclusions

In the dialects of the southern cluster, three types of vowels correspond to the four types of vowels characteristic of the northern dialect cluster of Udihe.

The decrease in pitch on a laryngealized vowel is characteristic for all Udihe varieties; but in the dialects of the northern cluster the low pitch was a side-effect of a vowel laryngealization. In Bikin and Iman, due to the gradual loss of creaky phonation in allegro mode, low pitch became the main distinctive feature of laryngealized vowels in some idiolects.

All Udihe varieties are characterized by a specific prosodic structure of the word. The word has minimally two moras, and consist of the initial and the final rhythmic part that differ by suprasegmental pattern. This was noted by researchers of Udihe before ([Simonov 1988](#)). Still it was often interpreted in terms of “stress” (accent): Shneider and Sunik wrote that an Udihe word has two stresses, one of which falls on the initial syllable of the word, and the other on the final syllable ([Shneider 1936](#); [Sunik 1968](#)). The term stress or accent is not appropriate here. It is the prosodic structure of the word that is contrastive: words with similar segmental chains can differ by their prosodic structure.

Contrastive prosodic patterns depend on the presence of a laryngealized vowel and on its place in the word. Contrastive prosodic patterns are, in fact, linguistic tones. Thus, Udihe and especially its southern varieties became a tonal language of the type of languages with low tone density, like Scandinavian dialects or Latvian.

Further research is hindered by the fact that suprasegmental patterns in modern versions of Udihe are lost due to the influence of Russian.

The study of Udihe varieties shows how conventional the line between synchronous and diachronous descriptions of language can be. A synchronous description and comparison of modern varieties can shed light on with a study of the history of these varieties.

The study of the Udihe dialect continuum reveals the internal mechanisms of language changes. It becomes obvious that in all territorial varieties of the Udihe language, similar trends acted, but in different areas they appeared with different with different degrees of intensity. The internal “structure” of the dialect continuum has been demonstrated: the allegro-style of one dialect corresponds to the full style of the neighbouring dialect, which produces a new allegro-style, and so on.

It is easy to see that each dialect is an independent system that is not reducible to the system of another dialect. At the same time, mutual understanding between speakers of different dialects is preserved and can be quite easy.

As a result of these considerations, it becomes clear that the idea of the unity of “language” (the concept of “such and such a language”) in the absence of codification is often misleading and causes disputes among linguists. “One language” is an abstraction. In reality, there are specific systems - idiolects that can be combined into dialects, language varieties and separate languages. However, the higher the taxon, the more likely it is that the various systems are combined. The foregoing does not apply only to cases where the “language” means a codified norm.

Abbreviations

Sim.	data from Simonov & Kialundziuga (1998)	C	any consonant
Shn.	data from Shneider (1936)	ʋ	vowel with creaky voice phonation
AM	allegro mode of pronunciation	ṽ	vowel bearing low tone
FM	full mode of pronunciation	ʋ̤	vowel with breathy voice phonation
V	any vowel		

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References

- Alonso de la Fuente, José Andrés. 2017. An Oroch word-list lost and rediscovered: A critical edition of Tronson’s 1859 pseudo-Nivkh vocabulary. *Bulletin of SOAS* 80(1). 97–117.
- Arseniev, Vladimir K. 1947-1949. *Sochinenija v 5-ti tomah [Works in 5 volumes]*. 5 vols. Vladivostok.
- Avrorin, Valentin A. & Boris V. Boldyrev. 2001. *Grammatika oročskogo jazyka [Grammar of Oroch]*. Novosibirsk: RAN.
- Avrorin, Valentin A. & Elena P. Lebedeva. 1968. Oročskij jazyk [The Oroch language]. In Petr Ja. Skorik (ed.), *Jazyki narodov SSSR [Languages of the USSR]*, vol. 5, 191–209. Leningrad: Nauka.
- Avrorin, Valentin A. & Elena P. Lebedeva. 1978. *Oročskije teksty i slovar’ [Oroch dictionary and texts]*. Leningrad: Nauka.
- Belikov, Vladimir I. & Elena Perekhvalskaya. 1994. Tazov jazyk [The Tazy language]. In *Krasnaja kniga narodov Rossii. Entsiklopedičeskij slovar’-spravočnik*. Moscow: Academia.
- Brailovskij, Sergej N. 1901. Tazy ili udihe. Opyt istoriko-etnografičeskogo issledovanija [Tazy or Udihe. A historical and ethnographic research]. *Zhivaja starina* 1-4. 129–216, 323–433.
- Cincius, Vera I. 1949. *Sravnitel’naja fonetika tunguso-man’chzhurskih jazykov [Comparative phonetics of the Tungus-Manchu languages]*. Leningrad: Uchpergiz.
- Cincius, Vera I. 1975/77. *Sravnitel’nyj slovar’ tunguso-man’chzhurskih jazykov: materialy k etimologičeskomu slovarju [Tungus-Manchu comparative dictionary. Materials for the etymological dictionary]*. 2 vols. Leningrad: Nauka.
- Emelianov, Alexandr A. 1927. *Severnoje poberezh’je primor’ja. iz poezdki letom 1926 goda [Primorye’s Northern coast. Trip in the summer of 1926]*. Ekonomičeskaja zhizn’ Dal’nego Vostoka.
- Girfanova, Albina Kh. 2001. *Slovar’ udegejskogo jazyka [Udihe dictionary]*. St.Petersburg: Nauka.
- Goldsmith, John A. 1976. *Autosegmental phonology*. Cambridge: Cambridge, MA. (Doctoral dissertation).



- Hölzl, Andreas. 2015. A typology of negation in Tungusic. *Studies in Language* 39(1). 117–157.
- Hölzl, Andreas. 2018. Udi, Udihe, and the language(s) of the Kyakala. *International Journal of Diachronic Linguistics and Linguistic Reconstruction* 15. 111–146.
- Janhunen, Juha. 1999. Tonogenesis in Northeast Asia: Udeghe as a tone language. *Journal de la Société Finno-Ougrienne* 88. 31–38.
- Janhunen, Juha. 2012. The expansion of Tungusic as an ethnic and linguistic process. In Andrej Malchukov & Lindsay J. Whaley (eds.), *Recent advances in Tungusic linguistics* (Turcologica 89), 5–16. Wiesbaden: Harrassowitz.
- Kormushin, Igor V. 1998. *Udyhejskij jazyk [The Udihe language]*. Moscow: Nauka.
- Lar'kin, Viktor G. 1959. *Udegejtsy. istoriko-etnograficheskij ocherk s serediny XIX v. do nashih dnei [The Udihe. Historical and ethnographic essay from the middle of the 19th century to the present day]*. Vladivostok.
- Leontovich, Sergej. 1898. *Kratkij rusško-orochenskij slovar' s grammaticheskoi zametkoj. narod bassejna reki Tumnin, vpadajushchej v Tatarskij proliv, severneje Imperatorskoj gavani [Concise Russian-Orochon dictionary with a grammatical sketch. People of the basin of the Tumnin River, which flows into the Tatar Strait, north of the Imperial Harbor]*. Vladivostok.
- Margaritov, Vasiliy P. 1888. *Ob orochah Imperatorskoj gavani [On the Oroch of the Imperial Harbor]*. St.Petersburg.
- Nadarov, Ivan P. 1887. Severno-ussurijskij kraj (s kartoju) [North Ussuri Krai (with map)]. *Zapiski Imperatorskogo Russkogo Geograficheskogo obshchestva* 17.
- Nikolaeva, Irina. 2000. The vocalic system of Udihe. *Eurasian Studies Yearbook* 72. 114–142.
- Nikolaeva, Irina A. & Maria Tolskaya. 2001. *A grammar of Udihe* (Mouton Grammar Library 22). Berlin: Mouton de Gruyter.
- Perekhval'skaya, Elena. 2001. *The Bikin-river Sprachbund*. Paper presented at Sprache 23. Jahrestagung und Kognition der Deutschen Gesellschaft für Sprachwissenschaft, 2001.02.28-03.02, Leipzig.
- Perekhval'skaya, Elena. 2010. Aspirirovannyje i glottalizovannyje glasnyje v dialektah udegejskogo jazyka [Pharyngealized and laryngealized vowels in Udihe dialects]. *Voprosy jazykoznanija* 6. 60–87.
- Perekhval'skaya, Elena. 2016. Udegejskij jazyk [the Udihe language]. In Vida J. Mihkachenko (ed.), *Language and Society. Encyclopaedia*, 514–521. Moscow: Azbukovnik.
- Pevnov, Aleksandr M. 2012. The problem of the localization of the Manchu-Tungusic homeland. In Andrej Malchukov & Lindsay J. Whaley (eds.), *Recent advances in Tungusic linguistics* (Turcologica 89), 17–40. Wiesbaden: Harrassowitz.

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- Protodjakonov, Prokopij. 1888. *Kratkiy russko-orochenskiy slovar'* [Brief Russian-Oroch dictionary]. Kazan.
- Przevalskij, Nikolaj M. 1990 [1870]. *Puteshestvije v ussurijskom kraje, 1867-1869 g.* [Travel in the Ussuri region in 1868-1869]. Vladivostok: Dal'nevostochnoje knizhnoje izdatel'stvo.
- Radchenko, Galina L. 1988. Spornyje voprosy fonetiki udegejskogo jazyka [Controversial questions of the Udihe phonetics]. In Mikhail Simonov (ed.), *Historic and typological studies on Tungus-Manchu languages*, 35–43. Novosibirsk: SO AN SSSR. 
- Schmidt, Peter. 1928. The language of the Oroches. *Acta Universitatis Latviensis* 17. 17–62. 
- Shneider, Evgenij R. 1936. *Kratkiy udeysko-russkij slovar' s prilozhenijem grammaticheskogo ocherka* [Concise Udihe-Russian dictionary with a sketch on grammar]. Moscow, Leningrad: Uchpedgiz.
- Shneider, Evgenij R. 1937. *Materialy po jazyku anyujskih ude* [Materials on the language of the Anuij Udihe] (Nauchno-issledovatel'skaja asociacija Instituta Narodov Severa im. I.G. Smidovicha 11). Moskva-Leningrad.
- Shrenk, Leopold I. 1883. *Ob inorodtsah Amurskogo kraja* [On indigenous people of the Amur Krai]. St.Petersburg: Royal Academy of Sciences. 
- Simonov, Mikhail & Valentina Kialundziuga. 1998. *Slovar' udegejskogo jazyka v 3-h tomah* [Dictionary of Udihe in 3 volumes]. Stenshev.
- Simonov, Mikhail D. 1988. Fonologicheskaja sistema udegejskogo jazyka [Phonological system of Udihe]. In Mikhail Simonov (ed.), *Historic and typological studies on tungus-manchu languages*, 44–88. Novosibirsk: SO AN SSSR.
- Simonov, Valentina T. Kialundziuga, Mikhail D. & Marina M. Khasanova. 1998. *Fol'klor udegejtsev: nimanku, tenungu, ehe* [Udihe folklore: nimanku, tenungu, exe]. Novosibirsk: Nauka.
- Startsev, Alexandr F. 2004. Nekotoryje aspekty problemy etnogeneza udegejtsev [Some aspects of the ethnogenesis of the Udihe]. *Rossija I ATR* 2. 75–86.
- Suliandziga, Rodion V., Daria Kudriashova & Pavel V. Suliandziga. 2003. *Korennyje malochislennyye narody Severa, Sibiri i Dal'nego Vostoka Rossiyskoj Federatsii. Obzor sovremennogo polozhenija* [Indigenous peoples of the North, Siberia and the Far East of the Russian Federation. Overview of the current situation]. Moscow: North Indigenous Peoples Assistance Center.
- Sunik, Orest P. 1968. Udegejskij jazyk [The Udihe language]. In Petr Ja. Skorik (ed.), *Jazyki narodov SSSR*, vol. 5, 149–171. Leningrad: Nauka. 
- Trudgill, Peter. 1985. *On dialect. Social and geographical perspective*. New York: New York University Press.

- Tsumagari, Toshiro. 2012. A note on Udihe phonology from an areal-typological perspective. In Andrej Malchukov & Lindsay J. Whaley (eds.), *Recent advances in Tungusic linguistics* (Turcologica 89), 81–88. Wiesbaden: Harrassowitz.
- Zinder, Lev R. 1948. Eksperimental'noje izuchenije fonetiki severnyh jazykov [An experimental study of the phonetics of the northern languages]. *Izvestija Akademii Nauk SSSR. Otdelenie literatury i jazyka* 7. 579–581.