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G.F. Miller's Dictionary "Description of Pagan Peoples Living in Kazan Province, such as Cheremis, Chuvash and Votyaks..." as a Valuable Source for Studying the Tatar Language of the 18th Century (based on LingvoDoc material)

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Abstract. This article presents the results of an analysis of three dictionaries by G.F. Miller, which were created in the 18th century and are hosted on the LingvoDoc platform (lingvodoc.ispras.ru). Miller's manuscript dictionaries from the collection of the Russian State Archive of Ancient Documents (RSAAD) are introduced into scholarly discourse for the first time. The analysis reveals: 1) in the 18th century, all consonant transitions in the Tatar language had already been completed; 2) at this time, some vowels (known as the Volga region vowels) had not yet completed their transition process, and for [*o] and [*u], this process had not even begun; 3) in the 18th century, dialectal zones were already identified in the Tatar language; 4) the 1791 period Cyrillic-script dictionary differs in innovations from modern Tatar language and Latin-script dictionaries; 5) Latin-script dictionaries are closer to the modern Tatar literary language.

Keywords: linguistic platform; LingvoDoc; G. F. Miller; phonetics; archive; dictionary; dialect; Tatar language

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Словарь Г.Ф. Миллера «Описание живущих в Казанской губернии языческих народов, яко то черемис, чуваш и вотяков...» как источник для изучения татарского языка XVIII века (на материале ЛингвоДок)

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Аннотация. В статье представлены результаты анализа трех словарей Г.Ф. Миллера, созданных в XVIII веке и размещенных на платформе ЛингвоДок (lingvodoc.ispras.ru). Впервые в научный оборот вводятся рукописные словари Г.Ф. Миллера из фонда РГАДА. В процессе анализа выявлено: 1) все процессы

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перехода в области согласных в татарском языке в XVIII веке уже завершились; 2) перелом поволжских гласных к этому периоду еще для всех гласных не завершился, а для [*o] и [*u] данный процесс даже не начался; 3) в XVIII веке в татарском языке были уже выделены диалектные зоны; 4) словарь 1791 года на кириллической графике отличается инновациями от современного татарского языка и словарей на латинской графике; 5) словари на латинской графике более близки к современному татарскому литературному языку.

Ключевые слова: лингвистическая платформа; ЛингвоДок; Г.Ф. Миллер; фонетика; архив; словарь; диалект; татарский язык.

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1. Introduction

During the mid-18th century, scientists began to document and gather information on the dialects of the Tatar language. Concurrently, historians such as G.F. Miller, I. Georgi, F.-I. Stralenberg, P. Pallas and others were attempting to identify cultural and material elements and collect lexical material in distinct regions where Tatars resided. The trilingual dictionary of Miller, "Description of the pagan peoples living in Kazan province, such as Cheremis, Chuvash and Votyaks: showing their residence, political institutions..." (St. Petersburg, 1791) is of great scientific importance in this aspect. However, it has not yet received adequate attention in Tatar linguistics.

Gerhard Friedrich (known as Fyodor Ivanovich in Russia) Miller (1705-1783) was born in Westphalian town of Herford, Germany. After graduating from school, he studied humanities at Rinteln University. He focused on history, philosophy as well as classical languages at university. Miller travels to Leipzig, a cultural center in Germany. It was there that he became interested in the idea of traveling to a distant and intriguing country. Many former students, such as the theology student A.I. Osterman, who had dropped out of his studies in Jena, had already made successful careers there [1: 190].

In 1725, Miller arrived in St. Petersburg and became forever linked with Russia. He accepted Russian citizenship in 1748. Miller left memories of the beginning of his service in Russia, stating that "I especially taught instructions in Latin, history, and geography to the upper class of the gymnasium..." [2: 147].

Miller's work began during the period when Peter the Great's ideas for organizing academic expeditions to comprehensively study the territories and languages of the Russian state, particularly its eastern regions, were being implemented. The academic team was tasked with studying the nature and natural resources of the interior regions of Siberia as well as its history and the ethnography of indigenous peoples. Miller, a professor at the St. Petersburg Academy of Sciences, was a member and leader of the academic team during the academicians' journey through Siberia (1733-1743) as part of the Great Northern Expedition.

The scientific organization of the expedition should be noted. It involved students, freelance translators, copyists, and guides who were responsible for searching and processing research material.

On October 18, 1733, Miller arrived in the Kazan province on his way to an expedition to Siberia. He was tasked by the St. Petersburg Academy of Sciences to study the Volga peoples and ancient monuments. Miller collected information about the cultural and daily life of the peoples in the Volga region and the Urals. The author's stay in the province resulted in notes that served as the basis for more serious academic works. One such work is the "Description of three pagan peoples in Kazan province, namely Cheremis, Chuvash and Votyak" [3]. The work was first published in "Monthly

Works..." in 1756, 23 years after the author's visit to the Ural-Volga region and its inhabitants (see Fig. 1).

In the introduction, the author describes his acquaintance with the inhabitants of the Volga region: "In Kazan Province, in addition to Russian peasants who settled there, six other peoples have lived there since ancient times and mostly still reside in the same places. These peoples are referred to by the following titles in Russia: 1) the Tatars reside in both the city of Kazan and the surrounding villages, with a significant population in the Kungur district (now the Perm region), which also includes the Bashkirs living in the Ufa province; 2) the Cheremis, and 3) Chuvash people live on both banks of the Volga River, both above and below the city of Kazan; 4) the Votyaks own most of the land between the Volga and Kama rivers; 5) the Mordva people reside in Nizhny Novgorod province, with some also living in Penza province, which is part of Kazan province; 6) the Permiaks and Permichis lived between Sol-Kamsk and Cherdyn, and are considered one people along with the Zyrians of Ustyug, Sol-Vychegotsky and Yarenovsky" [4].

Structurally, the study consists of eight chapters: "About their Dwellings and Civil Routines", "About their Physical and Mental Qualities", "About their Clothing", "About their Food, Industry, and Trades", "About their Languages, Arts, and Sciences", "About their Natural Law and Concept of God and Divine Affairs", "About their Pagan Law and Rituals", "About their Secular Customs". The test appears to be a comparative and ethnographic description executed in the spirit of European literature about exotic corners of the ecumene which was widely spread during the Age of Enlightenment [4].

For our study we used materials from Fund No. 1125 of the Russian State Archives of Ancient Documents (RSAAD), specifically Miller's Portfolio 199 containing files 513 g1 and 513 g2 (refer to Fig. 2, 3). Additionally, we consulted the Cyrillic dictionary presented as a separate appendix in the 1791 edition [4: 81–99] (see Fig. 4, 5).

Miller's dictionaries 513 g1 and 513 g2 are written in Latin script. Although the dictionaries share the same lexical material, they differ in their principles of dictionary construction.

Miller's dictionary of 1791 was published in Cyrillic and differs from the other two dictionaries in its graphics, phonetic features, and structure. It presents the material of seven languages spoken by the Volga peoples with translations into Russian. The dictionary section of the work is presented in pages 81–99 of the 1791 edition. "Dictionary in the Tatar, Cheremis, Chuvash, Voshltsky, Mordovian, Perm and Zyryansk languages, with Russian translation" [4: 81] contains over 2650 word-forms in eight languages spoken by the people of the Volga region. The Tatar section alone includes more than 325 word-forms, presented on pages 82, 84, 86, 88, 90, 90, 92, 92, 94, 96, 98 of the dictionary.

The three Miller's Dictionaries were added to the Corpus of Written Monuments of the Tatar Language, available at <https://lingvodoc.ispras.ru/>. This source was used to analyze the material. So far, Miller's Dictionaries have not been researched to study the Tatar language. It is worth noting, that the LingvoDoc platform contains manuscript dictionaries that have not been previously published and explored [5].

The **study's significance** lies in Miller's dictionary material, which serves as a crucial source of information on the history and historical dialectology of the Tatar language. The material is also valuable because Miller documented the expedition's locations of stay: "both in the city of Kazan and the surrounding villages, there should be a significant population in the Kungur district (now the Perm region), which also includes the Bashkirs living in the Ufa province" [4]. By comparing historical materials with modern data, we can identify both archaic and innovative phenomena in the Tatar language.

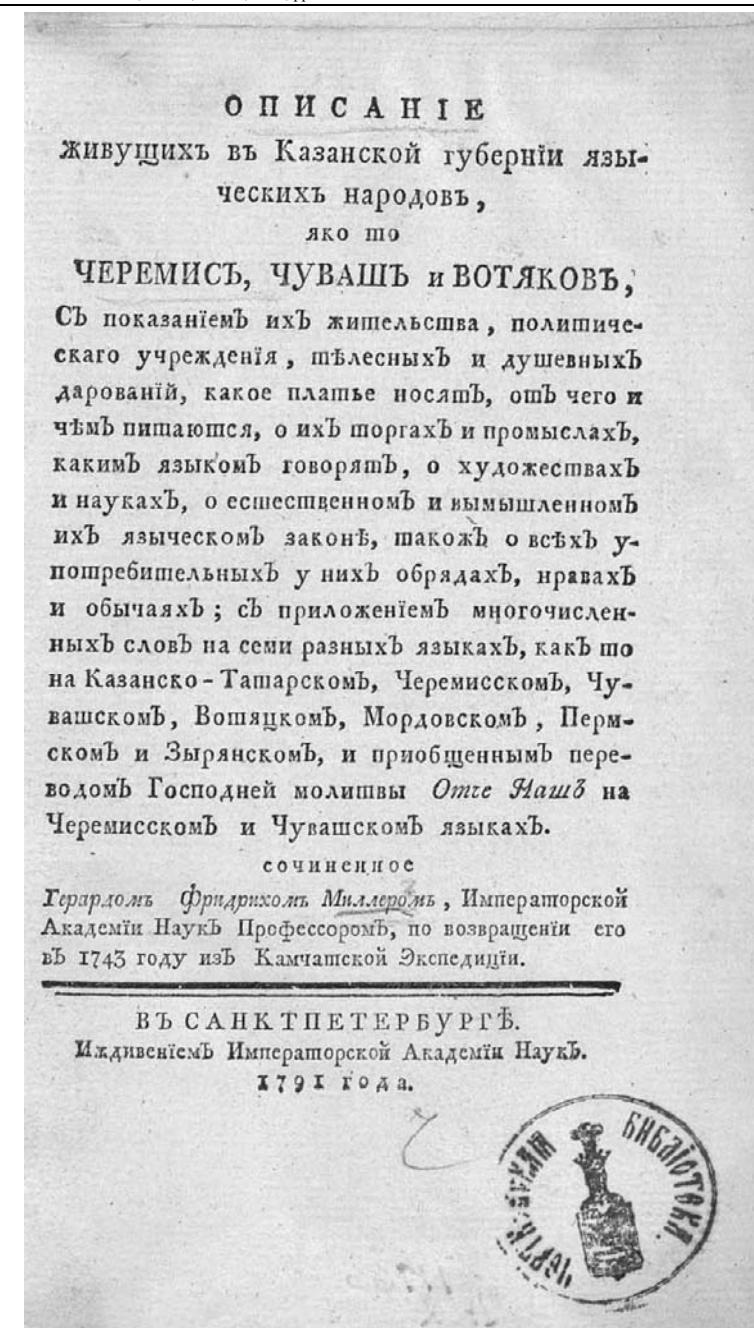


Fig. 1. Miller's Dictionary, 1791

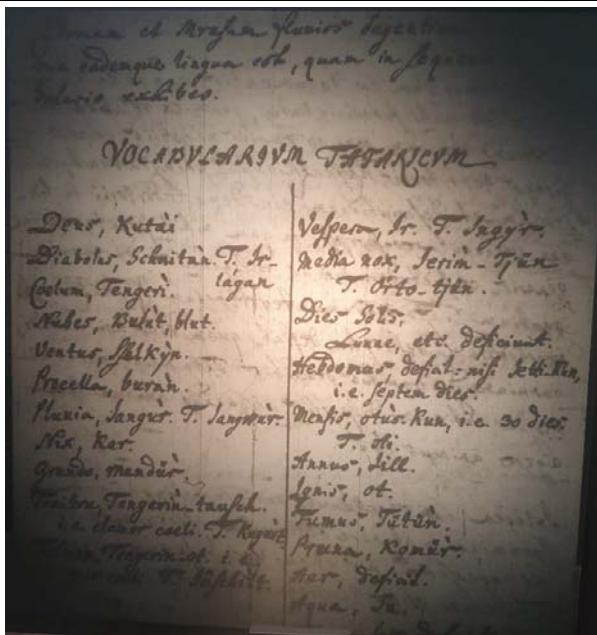


Fig. 2. Miller's Dictionary, 513 g1

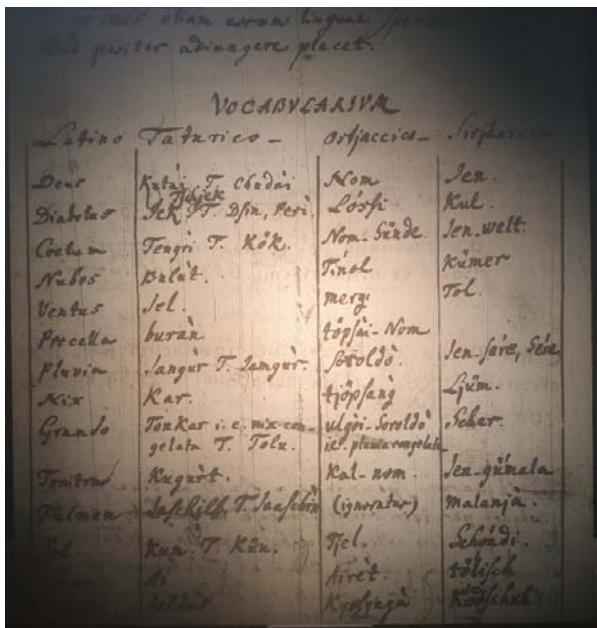


Fig. 3. Miller's Dictionary, 513 g2

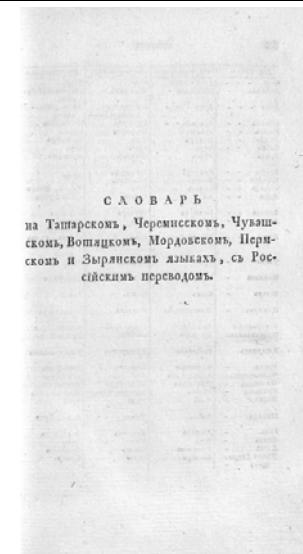


Fig. 4. Miller's Dictionary, 1791

По Русски.	По Татарски.	По Черемиски.	По Чувашки.	По Волгоград.	По Мордовски.	По Пермски.	По Эзильски.
Богъ.	-	Торе Гудам.	Тир.	Ишмары.	Паска.	Коз.	Енз.
Диаболъ.	-	Шайланъ.	Шайланъ, Шу-	Шайланъ.	Комара.	Кула.	Кула.
Небо.	-	Кула.	Линъ.	Коюльчи Иш-	Минчак.	Комара.	Ен-Ени.
Облакъ.	-	Альматъ.	Плюхъ.	Мары.	Пасса.	Комара.	Ен-Велти.
Звонъ.	-	Анназъ.	Пахаланъ.	Пахаланъ.	Писса.	Комара.	Комара, Альбогъ
День.	-	Динтъръ.	Мары.	Сиалъ.	Писса.	Комара.	Чалъ, Талъ.
Сиянь.	-	Каръ.	Лумъ.	Симсемъръ.	Пахата.	Лимъ.	Лимъ.
Годъ.	-	Кусса.	Шаджемъ.	Эрлигъ.	Пахана.	Лимъ.	Лимъ.
Громъ.	-	Кукукъ.	Бюльордъ.	Ассебе.	Пахана.	Чархманъ.	Чархманъ.
Молния.	-	Лашинъ.	Болголакъ.	Тур.	Пургана.	Гомма.	Гомма, Енгомма.
Солнце.	-	Кукушъ.	Кеч.	Красъ, Писекъ.	Пондуль.	Чирхала.	Ен-Чирхала.
Луна.	-	Ай.	Чалъзъ.	Онекъ, Ухъ.	Шибдикъ.	Шонде.	Шонде.
Звѣзда.	-	Иннадъ.	Шадра.	Сбландъръ.	Толесъ.	Толесъ.	Толесъ, Тен-
Денъ.	-	Куна.	Кеч.	Кона.	Кумъ.	Хунъ.	Хунъ.
Ночь.	-	Тинъ.	Юшъ.	Сборъ, Сборъ-	Тѣща.	Боланка.	Боланка.
Утро.	-	Иртъ.	Шеръ.	Кисо-	Иннъ.	Хунъ.	Хунъ.
Полдень.	-	Юрнадъ.	Кечебалъ.	Линъ.	Иннъ.	Ви.	Ви.
Вечеръ.	-	Кессъ.	Кассъ.	Кунаура.	Иннъ.	Ви, Венъ.	Ви.
Полночь.	-	Юрнадъ.	Юшнадъ.	Себресюра.	Иннъ.	Иннъ.	Иннъ.
Воскресенье.	Аннадъ.	Гутч-Аръ.	Гутч-Аръ.	Гарас-Гаръ.	Иннъ.	Иннъ.	Иннъ.
Понедѣлъникъ.	Аннадъ.	Гутч-Аръ.	Гутч-Аръ.	Гутч-Аръ.	Иннъ.	Иннъ.	Иннъ.
Вторникъ.	Сейнадъ.	Кушумашъ.	Ушар-Конъ.	Ушар-Конъ.	Иннъ.	Иннъ.	Иннъ.
Среда.	Чиршадъ.	Индречъ.	Сонъ-Конъ.	Иннъ.	Иннъ.	Иннъ.	Иннъ.
Четвергъ.	Иннадъ.	Ин-Аръ.	Кен-Конъ.	Иннъ.	Иннъ.	Иннъ.	Иннъ.
Пятница.	Улчадъ.	Кутъ-Аръ.	Аръ-Конъ.	Иннъ.	Иннъ.	Иннъ.	Иннъ.
Суббота.	Шинадъ.	Шумагъ-Кетъ.	Шиннъ-Конъ.	Иннъ.	Иннъ.	Иннъ.	Иннъ.
Недѣль.	Ай.	Аръ.	Аръ.	Иннъ.	Иннъ.	Иннъ.	Иннъ.
Мѣсяцъ.	-	Иннъ.	Джанъ-Эръ.	Джанъ-Эръ.	Иннъ.	Иннъ.	Иннъ.
Рѣка.	-	Джанъ.	Иннадъ.	Селдіакъ.	Иннъ.	Иннъ.	Иннъ.
Сорока.	-	Она.	Туаль.	Балъ.	Аръ, Аръзъ.	Гель.	Гель.
Духъ.	-	Топлонъ.	Синъ.	Топлонъ.	Топъ.	Топъ.	Топъ.
Уфа (гора).	Комаръ.	Сокъ.	Куваръ.	Сокъ.	Куваръ.	Куваръ.	Куваръ.

Fig. 5. Miller's Dictionary, 1791, pages 82 and 83

The purpose of this article is to present the results of an analysis of Tatar dictionary material, identifying the dialectal features recorded by Miller in the 18th century in various Tatar territories. The material consists of three of Miller's dictionaries, which have not been the subject of special research until now and are now available on the LingvoDoc platform.

To achieve our goal, we completed the following tasks:

- prepared a comprehensive description of three Miller's dictionaries;
- transcribed them into modern Tatar language and created a glossary;
- translated the dictionary entries into Russian;
- added three editions of the Dictionary (513 g1, 513 g2, 1791) to the LingvoDoc platform's database;
- searched for and created etymological links between words in the three dictionaries, including modern Tatar literary language and dialects;
- conducted phonetic analysis using LingvoDoc tools to identify commonalities and differences in the dictionaries using a data processing and analysis program;
- analyzed cognates of the dictionaries using the LingvoDoc program to establish the nature of these similarities and differences.

The study examines the grapho-phonetic features of the Tatar material found in Miller's dictionaries.

2. Discussion

Using the LingvoDoc platform's program for phonetic data processing and analysis, we obtained a comprehensive description of Miller's Dictionaries phonetic system. The program used Latin transcription. The following results were obtained from the processed dictionary material:

- 1) phonological systems of vowel and consonant sounds (refer to Fig. 6, 7, 8);
- 2) phoneme combination tables (refer to Fig. 9, 10, 11).

Результаты анализа (444 проанализированные текстовые объекты):

ФОНЕТИЧЕСКИЙ АНАЛИЗ

Словарь татарского языка Г.Ф. Миллера 1756 – CSV (Excel) данные

Согласные звуки:

m	n					
p	b	t	d	c	k	g
					q	q
				ʃ		
s	z	ʃ				
			x			
w				h		
		j				
r						
l						

Гласные звуки:

i	y	ı	u
e	ø	o	
a	ä		

Fig. 6. Miller's Dictionary, 513 g1

Результаты анализа (353 проанализированные текстовые объекты):

ФОНЕТИЧЕСКИЙ АНАЛИЗ

Словарь татарского языка Г.Ф. Миллера 1759 – CSV (Excel) данные

Согласные звуки:

m	n					
p	b	t	d	c	k	g
					q	q
				ʃ		
s	z	ʃ				
f			x			
				h		
r					j	
l						

Гласные звуки:

i	y	ı	u
e	ø	o	
a	ä		

Fig. 7. Miller's Dictionary, 513 g2

Результаты анализа (306 проанализированные текстовые объекты):

ФОНЕТИЧЕСКИЙ АНАЛИЗ

Словарь татарского языка Г.Ф. Миллера 1791 – CSV (Excel) данные

Согласные звуки:

m	m ^j					
p	b	b ^j	t	t ^j	d	d ^j
					ʃ	
s	s ^j		z	z ^j	ʃ	ʒ
f	v				x	
r					j	j ^j
l	l ^j					

Гласные звуки:

i	ı	u
e	o	
a		

Fig. 8. Miller's Dictionary, 1791

The inventory of phonemes and allophones reveals a general pattern in the transmission of consonant sounds. Differences are only noticeable in the graphic design of certain consonants such as *ng* [*ŋ* – *ń*], *tsch* [*ch* – *č*], and *sch* [*sh* – *š*] in the Latin versions of the dictionary.

The vowels present a complex picture, with [ö], [ü], and [i] missing in the Cyrillic variant. However, all vowels of the Tatar language are included in the Latin-script dictionaries.

After analyzing the materials of three dictionaries using the LingvoDoc tools, a number of features were identified.

2.1 General features of the Dictionaries:

2.1.1 Archaic features in the field of vowels, including the preservation of the archaic, proto-Turkic reflex [*o] and [*u] (Tables 1 and 2).

Miller's dictionaries record the regular use of the graphemes o and u in accordance with the literary graphemes u and o. This is consistent with the data presented in L.T. Makhmutova's monograph, which indicates that the Kypchak process of vowel movement *u > o, *o > u, *ü > ö, *ö > ü has not been completed in Mishar dialects [6: 34].

2.1.2 In terms of consonants, Miller's Dictionaries are generally the same (Tables 3-5).

Reliable rows:

[b] – [b] – [b] – [b]	[s] – [s] – [s] – [s]
[t] – [t] – [t] – [t]	[j] – [j] – [j] – [j]
[k] – [k] – [k] – [k]	[j] – [j] – [j] – [dʒ]
[m] – [m] – [m] – [m]	[n] – [n] – [n] – [n]
[ʃ] – [ʃ] – [ʃ] – [ʃ]	[r] – [r] – [r] – [r]
[l] – [l] – [l] – [l]	

Распределение гласных:

	i	y	ı	u	e	ø	o	a	ä
#_____:	+	+		+	+	+	+	+	+
+ГУБ_:	+	+	+	+	+	+	+	+	+
+ЗУБ_:	+	+	+	+	+	+	+	+	+
+ПАЛ_:	+	+		+	+	+	+	+	+
+ЗЯЗ_:	+	+	+	+	+	+	+	+	+
+ЛАР_:									
_+ГУБ:	+	+	+	+	+	+	+	+	+
_+ЗУБ:	+	+	+	+	+	+	+	+	+
_+ПАЛ:	+		+			+	+		+
_+ЗЯЗ:	+	+	+	+	+	+	+	+	+
_+ЛАР:									

Распределение согласных:

	m	n	p	b	t	d	c	k	g	q	ʃ	s	z	f	x	h	j	r	l
#_____:	+		+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
+ПЕР_:	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
+ЦНТ_:	+	+	+		+		+	+	+	+						+	+	+	+
+ЗАД_:	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
+ОГУ_:	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
_+ПЕР:	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
_+ЦНТ:	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
_+ЗАД:	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
_+ОГУ:	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+

Fig. 9. Miller's Dictionary, 513 g1

2.2 Differences in G.F. Miller's Dictionaries

2.2.1 Correspondences by initial vowel.

The lexemes in the 513 g2 dictionary retain the archaic Old Turkic [*e]. In contrast, the 513 g1 and 1791 dictionaries exhibit a Volga region vowel change, corresponding to the vowel [i] found in modern Tatar language (Table 6).

2.2.2 The 513 g2 and 1791 dictionaries retain the Old Turkic reflex [u], while the 513 g1 dictionary coincides with Modern Tatar on this feature (Table 7).

2.2.3 All three dictionaries coincide in terms of initial vowels of the second syllable. The analysis based on the LingvoDoc tool produces the following reliable rows:

[e] – [e] – [e] – [e]	[ɨ] – [u] – [u] – [u]	[a] – [a] – [a] – [a]
[e] – [i] – [i] – [e]	[ɨ] – [ɨ] – [u] – [a]	[e] – [u] – [u] – [e]

2.2.4 Only dictionary 513 g1 records a feature on [i] ~ [u] that is not identified in the other two dictionaries (Table 8).

The analysis shows that the program combines different linguistic phenomena into one table. This includes: a) a graphic reflection of archaic labial vowel harmony, such as *олтурдым* (olturdym) meaning 'I sat down', *одун* (odun) meaning 'firewood' and b) a dialectal feature in the transmission of the lexeme *сары* (saru) meaning 'yellow' and *йылы* (yylu) meaning 'warm'. This innovation is noted in the works of Tatar dialectologists with the observation that "the correspondence of y ~ u is found only in the Vyatsky dialects (in Bisermen, the subdialect of Kryashen). The Zakazan dialect exhibits a dialectal peculiarity in the limited words *сары* – *сары*, *кыру* *көн* – *коры* *көн*, *тұлумады* – *тұлумады* (*saru* – *sary*, *kyru* *kən* – *kory* *kən*, *tulmady* – *tulmady*) [7: 146].

Распределение гласных:

	i	y	ı	u	e	ø	o	a	ä
#_____:	+	+	+	+	+	+	+	+	+
+ГУБ_:	+	+	+	+	+	+	+	+	+
+ЗУБ_:	+	+	+	+	+	+	+	+	+
+ПАЛ_:	+	+		+	+	+	+	+	+
+ЗЯЗ_:	+	+	+	+	+	+	+	+	+
+ЛАР_:									
_+ГУБ:	+	+	+	+	+	+	+	+	+
_+ЗУБ:	+	+	+	+	+	+	+	+	+
_+ПАЛ:	+		+			+	+		+
_+ЗЯЗ:	+	+	+	+	+	+	+	+	+
_+ЛАР:									

Распределение согласных:

	m	n	p	b	t	d	c	k	g	q	ʃ	s	z	f	x	h	j	r	l
#_____:	+		+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
+ПЕР_:	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
+ЦНТ_:	+	+		+		+	+	+	+	+						+	+	+	+
+ЗАД_:	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
+ОГУ_:	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
_+ПЕР:	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
_+ЦНТ:	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
_+ЗАД:	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
_+ОГУ:	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+

Fig. 10. Miller's Dictionary, 513 g2

Распределение гласных:

	i	ɪ	u	e	o	a
#_____:	+	+	+	+	+	
+ГУБ_:	+	+	+	+	+	+
+ЗУБ_:	+	+	+	+	+	+
+ПАЛ_:	+	+	+	+		
+ЗЯЗ_:	+	+	+	+	+	+
+ЛАР_:						
-+ГУБ:	+	+	+	+	+	+
-+ЗУБ:	+	+	+	+	+	+
-+ПАЛ:	+	+	+			
-+ЗЯЗ:	+	+	+	+	+	+
-+ЛАР:						

Распределение согласных:

	m	m̥	n	n̥	p	b	b̥	t	t̥	d	d̥	k	k̥	g	g̥	f	s	s̥	z	z̥	ʃ	ʒ	v	x	j	j̥	r	r̥	l	l̥
#_____:	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+		
+ПЕР_:	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+		
+ЦНТ_:																														
+ЗАД_:	+	+	+																											
+ОГУ_:	+	+	+																											
+ПВР_:	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+		
-+ЦНТ:	+	+																												
-+ЗАД:	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+		
-+ОГУ:	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+		

Fig. 11. Miller's Dictionary, 1791

Table 1. The correspondence [o] ~ [u]

[u]	[o]	[u]	[o]
унбер	'одиннадцать'	унбер	'одиннадцать'
унике	'двенадцать'	унике	'двенадцать'
утыз	'тридцать'	утыз	'тридцать'
утын	'бревно'	утын утын	'древа дрова'
утырдым	'сел'	утырдым	'сел'
		утыз көн	'тридцать дней'
		утыргыч	'стул'
		утырыр	'сидет'
[o]	[o]	[o]	[o]
on-bir	'одиннадцать'	on-bir	'одиннадцать'
on-iky on-ike	'двенадцать двенадцать'	on-eki	'двенадцать'
otos otus	'тридцать тридцать'	otus	'тридцать'
otun	'бревно'	odun otun	'древа дрова'
[utyrdym]	'сел'	olturadym	'сел'
		otus kun	'тридцать дней'
		oturgusch	'стул'
		olturar	'сидет'
[u]	[o]	[u]	[o]
унбер	'одиннадцать'	Онъ Беръ	'одиннадцать'
унике	'двенадцать'	Онъ Ика	'двенадцать'
утыз	'тридцать'	Отъ-усъ	'тридцать'
утын	'древа'	Отанъ	'древа'

Table 2. The correspondence [u] ~ [o]

[o]	[u]
ком	'песок'
болан	'лось'
бодай	'пшеница'
тоз	'соль'
болак	'источник'
коры	'сухой'
колын колынчак	'жеребёнок'
солы	'овёс'
[u]	[u]
kumak kum	'песок песок'
bulan	'лось'
budai	'пшеница'
tuz	'соль'
bulak	'источник'
kuru kulak	'сухой ухо'
uluntschak kulu	'жеребёнок'
sula	'овёс'

Table 3. Reliable range [b]—[b]—[b]—[b]

[b]	[b]		
баш башмак	'голова башмаки'	besch bashmak basch	'пять башмаки '
бозау	'телёнок'	busau busuu	'телёнок телёнок'
болан	'лось'	bulan	'лось'
бальк	'рыба'	balyk	'рыба'
бодай	'пшеница'	buktai	'пшеница'
буғен	'сегодня'	bugun	'сегодня'
[b]	[b]		
basch besch	'голова пять'	Besch Bash Basmakъ	'пять голова '
bozou	'телёнок'	Buzau	'телёнок'
bulan	'лось'	Bulanъ	'лось'
balyk	'рыба'	Baljkъ	'рыба'
budai	'пшеница'	Budai	'пшеница'
bugun	'сегодня'	Bugunъ	'сегодня'

Table 4. Reliable range [t]—[t]—[t]—[t]

[t]	[t]		
таш	'камень'	tasch	'камень'
тимер	'железо'	temir	'железо'
тел	'язык'	til	'язык'
тиен	'белка'	tiin tijin	'белка белка'
тоз	'соль'	tust	'соль'
тук	'сытый'	tok	'сытый'
[t]	[t]		
tasch	'камень'	Ташъ Тушакъ	'камень постель'
temir	'железо'	Темуръ	'железо'
til	'язык'	Тельъ	'язык'
tijin	'белка'	Танде Тонъ Тіенъ	'утром шуба белка'
tuz	'соль'	Tусъ	'соль'
		Токъ Таукъ Тагакъ	'сытый курица '

2.2.5 There is a specific difference in the correspondence [s] ~ [z] with only the 513 g2 dictionary retaining [s] (Table 9).

The consonantal [s] ~ [z] deafening noted by Miller is still observed in the dialects of the Zakazan Kryashens and Lower Kama region [6: 68].

2.2.6 The dictionaries under consideration show a general sequence of consonantal transfer, but the Cyrillic dictionary (1791) presents innovations that appear in many positions. Let us look at the most significant of them.

2.2.6.1 The correspondence between [j] ~ [dʒ]. Miller's dictionary records the variation in transmission between [j] and [dʒ] (Table 10).

In Tatar Literary Language, the [j] sound is preserved before the ancient back vowels. The use of the [zh] sound is a phonetic identification feature of the Middle dialect of the Tatar language. It is observed in subdialects such as Menzelinsky, Kasimov, Zakazan, Nagorny, and in the Tatar subdialects of the Urals. The use of the [zh] sound in the Tatar language is an ancient phenomenon [8: 62; 7: 30, 43, 70].

Table 5. Reliable range [k]—[k]—[k]—[k]

[k]	[k]
кояш	'солнце'
ком	'песок'
кургаш каракургаш	'свинец свинец'
куык	'пузырь'
кутак, ир-атнын...	'мужской детородный...
казан	'котёл'
[k]	[k]
kun	'солнце'
kumak kum	'песок песок'
kara-korgoldschin	'свинец'
kuuk	'пузырь'
kodok kutak	'мужской половой о...'
kazan	'котёл'
kýñ kun	'солнце солнце'
kumak kum	'песок песок'
korgaschin	'свинец'
kok	'пузырь'
kutak	'мужской половой о...'
kazan	'котёл'

Table 6. Correspondence [e]-[i]

[i]	[e]
иртэн	'утром'
ишек	'дверь'
исейдем	'насытился'
исerde	'напился'
[i]	[i]
irte erten	'утром'
ischik	'дверь'
isÿedm	'насытился'
itschedm itscher i...	'напился
erten erte ertiä	'утро
eshik	'дверь'
(itmiak)	'хлеб'
ирта	'утро'
Ишекъ	'дверь'
Итмякъ	'хлеб'

Table 7. Preservation of the archaic [u]-[o]

[o]	[u]
борын	'нос'
бозау	'телёнок'
[u]	[u]
mordu	'нос'
bozou	'телёнок'
burun murun	'нос нос'
busau busuu	'телёнок

Table 8. The correspondence [i] ~ [u]

[i]	[i]
(беркесен берсе кен	'послезавтра'
	birsy kün basa kun 'послезавтра'
сары туфрак сары	'жёлтая почва'
утырдым	'сел'
сарык	'овца'
	jily 'тёплый'
[u]	[a]
biürsugun birsi-kun	'послезавтра'
saru-balýk	'осётр'
saru dobrjak saru	'жёлтая почва'
olturadym	'сел'
odun otun	'древа дрова'
jilu julu	'тёплый тёплый'
Birzakun' Bekra	'послезавтра осётр'
Otan' Saarak'	'древа овца'

Table 9. The correspondence [s] ~ [z]

[z]	[s]
бозау	'телёнок'
кузы	'ягнёнок'
кузыл	'красный'
[z]	[z]
bozou	'телёнок'
koozy	'ягнёнок'
kozyll	'красный'
	(Бузай)

Table 10. The correspondence [j] ~ [dʒ]

[j]	[j]
янтыр	'дождь'
яшен	'молния'
йомырка	'яйцо'
яшел	'зелёный'
ярканат	'летучая мышь'
якты	'светлый'
ярты кен ярты тен	'полдень полночь'
якшэмбе	'воскресенье'
еш	'лес'
йерер	'ходит'
[j]	[j]
jangur jangwur	'дождь дождь'
jaschilt	'молния'
jamurtka	'яйцо'
jaschil	'зелёный'
jarganat	'летучая мышь'
jeruky jaryk	'светлый'
jilu julu	'тёплый'
[j]	[j]
ел	'год'
юл	'дорога'
елап торам елыйм	'плачал плачу'
[j]	[j]
jill	'год'
jel jol	'ветер дорога'
jetmysch jette jet...	'семьдесят семь'
jurjak	'сердце'

This peculiarity is clearly presented in the Atlas of Tatar folk subdialects (<https://atlas.antat.ru/atlas/maps.html?mapnom=33>) [9] (refer to Fig. 12).

2.2.6.2 The next feature requiring attention is the correspondence [s] ~ [ch] (Table 11). This phonetic phenomenon, recorded in Miller's dictionary, can be correlated with the subdialects of the Urals of the Middle dialect of the Tatar language.

This peculiarity is clearly presented in the Atlas of Tatar folk subdialects (<https://atlas.antat.ru/atlas/maps.html?mapnom=41>) [9] (refer to Fig. 13).

Dialectologists note that the correspondence [s] ~ [ch] is particularly evident in the Tatar subdialects of the Urals. For instance, in the Krasnoufimsky subdialect себен – чебен (seben – cheben) 'fly', сэй – чэй (séy – chéy) 'tea', салғы – чалғы (salgy – chalgy) 'scythe', сабата – чабата (sabata – chabata) 'lapti', бесән – печән (besen – pechen) 'hay', бысы – пычкы (bysky – pychky) 'saw', сыйырткы – чыйырткы (sybyrtky – chybyrtky) 'whip', баргас – баргач (bargas – bargach) 'coming' [7: 304]. In Safakulsky subdialects sound [s] is systematically used instead of literary [ch]: сэй – чэй (say – chéy) 'tea', салғы – чалғы (salgy – chalgy) 'scythe', сикерткә – чикерткә (sikertkä – chikertkä) 'grasshopper', систа – чиста (sista – chista) 'clean', килгәс – килгәч (kilgäs – kilgäc) 'coming' [7: 384].

In the Mamadysh, Laishev, Kasimov, and Zlatoust subdialects, as well as in the subdialects of Zakazan Kryashens, there have been isolated cases of [s] ~ [ch] correspondence recorded: *калас – калач* (kalas – kalach) ‘kalach’, *кумәс – күмәч* (kouməs – kouməch) ‘bread’, *кескенә – кечкенә* (keskenə – kechkenə) ‘small’, *эссә – эчсә* (essə – echsə) ‘if he/she drinks’, *умас – умач* (umas – umach) ‘dumplings’, *кесерәк – кечерәк* (keserək – kecherək) ‘smaller’ [7: 30, 44, 88].

Table. 11. The correspondence [s] ~ [ch]

	[ch]	[tʃ]	
(ач ачкты)	‘голодный’	atsch asch	‘голодный’
		tschatsch	‘ волосы’
(атаяу)	‘холм’	sitschen	‘сено’
		kitschi tau	‘холм’
[ʃ]		[ss]	
(aschtap ashtady)	‘голодный’	Ассы	‘голодный’
bitschen	‘сено’	Чассь	
kitschu-tau	‘холм’	(Псиенъ)	‘сено’

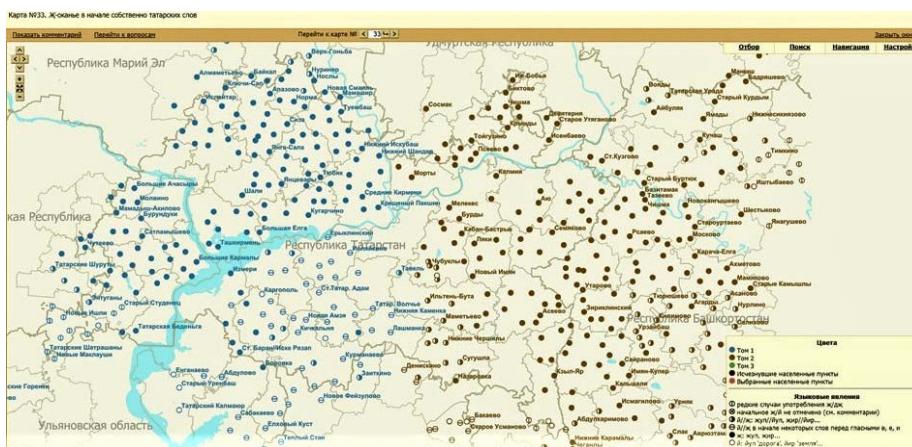


Fig. 12. Atlas of Tatar folk subdialects

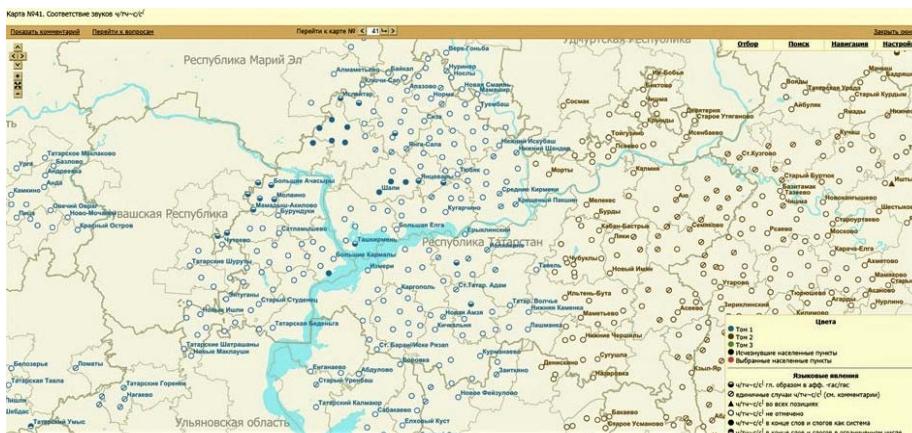


Fig. 13. Atlas of Tatar folk subdialects

Nurieva F.Sh., Galiullina G.R., Yusupov A.F. Miller's Dictionary "Description of Pagan Peoples Living in Kazan Province, such as Cheremis, Chuvash and Votyaks..." as a Valuable Source for Studying the Tatar Language of the 18th Century (based on LingvoDoc material). *Trudy ISP RAN/Proc. ISP RAS*, vol. 35, issue 6, 2023, pp. 265–282

2.2.6.3 Violation of vowel harmony in the second syllable: *катинъ | катинъ – куль* (katin' | katin') – (kul') ‘wife|servant’; *балчикъ* (balchik) ‘clay’; *итакъ* (itak) ‘boots’; *аигерь* (aiger) ‘stallion’; *алтинъ* (altin) ‘gold’; *джидымышъ | джиде* (dzhidmysh| dzhide) ‘seventy|seven’.

According to Tatar dialectologists, the feature is widespread “in the Perm subdialect of the Middle Dialect in the Kungu, Shaubi subgroup. For example, *акрин – акрын* (akrin – akryn) ‘slow’, *ишиану – ышану* (ishianu – yshanu) ‘to believe’, *тастимал – тастымал* (tastimal – tastymal) ‘hand towel’, *утлик – утлык* (utlik – utlik) ‘firebox’, and *башилик – башлык* (bashlik – bashlik) ‘headwear’ [7: 183].

The Sergach and Chistopolsky subdialects of the Tatar language provide isolated examples of the correspondence of back vowels to front vowels. For instance, *абзий – абзый* (abziy – abziy) ‘older person’, *кина – кыина* (kina – kyina) ‘beat’ [6: 51], in the Vyatka subdialect: *китыр – кимер* (kityr – kiter) ‘give me’, *тәмны – тәмле* (tamny – tamle) ‘delicious’, *мескенкаем – мескенкәем* (meskenkaem – meskenkəem) ‘poor one’ [7: 148].

3. Results of the Study

Electronic corpora make it possible to fully reflect the language processes in different subsystems of the language. Thus, we will be able to predict in time the further development of the structure and possible changes in the norms of the codified Tatar language.

After analyzing phonetic and phonological transcriptions and calculating regular word correspondences in three etymologically related dictionaries, we discovered the etymological-phonetic closeness of lexemes.

Using a special comparative-historical program based on phonetic and etymological criteria, we determined that the dictionaries have varying degrees of distance from modern Tatar language (refer to Fig. 14).

Fig. 14 shows that according to phonetic-etymological criteria the distance from the manuscript dictionaries in the Latin script (513 g1, 513 g2) to the modern Tatar language is closer than between the 1791 Cyrillic dictionary.

4. Conclusion

The analysis of Miller's dictionaries on the LingvoDoc platform revealed the following:

- 1) The transition processes in consonant area of the Tatar language were completed by the 18th century.
- 2) The vowel change in the 18th century has not yet been completed for all vowels, and for [o] and [u], this process had not yet begun.
- 3) In the 18th century, dialectal zones were already identified in the Tatar language. Miller's dictionary of 1791 already represents the dialectal features of the Ural subdialects, including the correspondence [s] ~ [ch] and the correspondence [ʃ] ~ [dʒ]. Additionally, there were unusual violations of row harmony.
- 4) Based on the obtained data, certain phonetic processes can be dated.
- 5) The analysis revealed that the Cyrillic version differs from modern Tatar language and the Latin versions of the dictionaries. It underwent innovative changes that brought the dictionaries closer to the Tatar subdialects of the Urals, especially the Perm subdialect. The Latin versions of the manuscript dictionaries show similarity to modern Tatar language in terms of the graphical and phonetic features presented.

The LingvoDoc platform provides access to corpora and concordances of Miller's dictionaries, enabling users to verify the findings using complete materials that are often unavailable in library collections.

Минимальное связующее дерево (встраивание относительного расстояния в 3d)

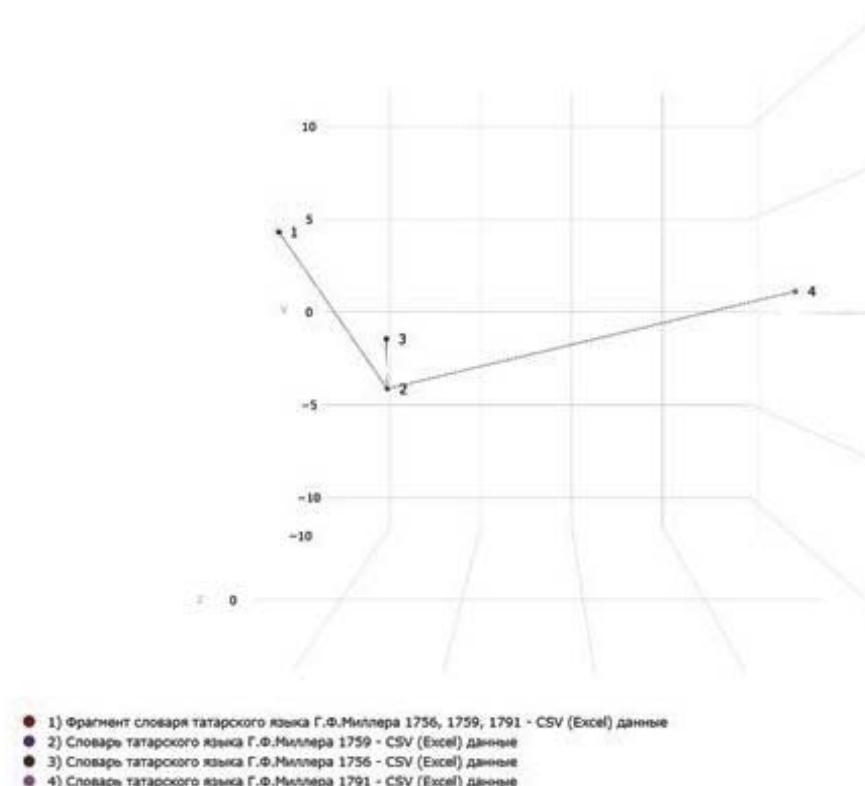


Fig. 14. Etymological Distance Tree

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