Turkic-Chinese lexical parallels within the framework of the phonological model SASYS

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Abstract

Relevance. Considering the constant development of global language contacts and cultural interactions, examining the mechanisms of interaction between the Turkic and Chinese languages is of great importance for identifying the mechanisms of borrowing words and analysing cultural and historical ties between these language groups.

Purpose. The purpose of the study was to examine and identify the features of the processes of mutual influence, assimilation, and development of lexical elements of the Turkic and Chinese languages.

Methodology. The study uses linguistic, comparative, and lexical-semantic methods to analyse etymological pairs and phonological adaptation between the Kyrgyz and Chinese languages.

Results. The study identifies both similarities and differences in the phonetic implementation of single-root lexemes between Chinese and Turkic languages within the SASYS phonetic model. Attention is paid to sound combinations, accents, and phonetic features, establishing patterns in their structure and evolution. The phenomena of phonetic borrowing and adaptation in both languages are identified, and influenced by cultural and historical contexts. Additionally, the study confirms a tendency to simplify sound structures in some Turkic languages compared to more persistent phonetic forms in Chinese.

Conclusions. The analysis determines the origin of various interlanguage and intercultural words. Single-root lexemes passing between Chinese and Turkic languages undergo systematic phonetic changes, adapting sound combinations and accents to conform to the phonetic rules of the recipient language. The results highlight the SASYS phonetic model's...
importance for understanding phonetic evolution and adaptation between these languages, emphasizing their deep historical and cultural ties.

Keywords: interaction of languages; nostratics; etymological identity; sound changes.

Introduction
In the context of globalisation, which is characterised by an intensive exchange of information and cultural practices, the examination of lexical parallels between the Turkic and Chinese languages is becoming an important aspect of linguistic and cultural activities. This area of research represents a key step in understanding the complex processes of linguistic interaction and cultural adaptation that influence the formation of linguistic structures and semantic meanings. Consideration of lexical parallels allows not only the identification of similarities and differences between languages but also the analysis of historical and cultural factors that determine the dynamics of linguistic development. In this context, the investigation of phonetic and semantic features of linguistic units is aimed at deepening the understanding of historical processes related to the mutual influence of Turkic and Chinese cultures. Such an in-depth analysis allows seeing the dynamics of changes in lexical composition and identify the mechanisms that underlie the formation of cultural and linguistic traditions. In addition, the examination of lexical parallels contributes to the development of effective strategies in intercultural communication and education that consider the diversity of linguistic and cultural nuances, contributing to a deeper understanding and respect for the diversity of cultural and linguistic groups.

However, in the context of analysing Turkic-Chinese lexical parallels, some problems require further research. One of the main problems in the field of studying Turkic-Chinese lexical parallels is the insufficient investigation of Kyrgyz-Chinese words from the standpoint of linguogenetics. This means that the mechanisms of the origin and evolution of these words remain insufficiently researched, which makes it difficult to understand their origin and development in the context of linguistic evolution and historical relationships between the Turkic and Chinese languages. Investigating this problem, L. Li et al. [1] analyse the influence of phonological neighbours, that is, similar-sounding words, on vocabulary in the Chinese language, which emphasises the complexity and importance of phonological connections in the analysis of interlanguage parallels. The authors emphasise the lack of attention to the phonetic aspects of Kyrgyz-Chinese words, which makes it difficult to understand their origin and evolution.

X. Liu [2] examines in detail the mechanisms of vocabulary borrowing that arise as a result of language contact and influence. The paper shows that cultural and historical interactions play a critical role in the formation and adaptation of borrowed words. The author emphasises the need for a detailed analysis of the historical and cultural conditions that contributed to language contact. This is especially important for identifying patterns in borrowings and adaptations and determining the impact of historical events on linguistic dynamics. In addition, the paper of C. Wang and Q. Zhang [3] are notable, which analyses in detail the temporal aspects of the activation of phonological and lexical units when writing Chinese words. The authors determined that the activation process includes both lexical and sub-lexical levels with well-defined temporal characteristics. This study highlights the importance of understanding the temporal dynamics of phonological processes in language. Although the authors emphasise the importance of considering the evolution of lexical units, their paper does not include specific analyses of the evolution of Kyrgyz-Chinese words or constructions, which is key in understanding the processes underlying the formation and development of vocabulary in the context of Turkic-Chinese language interactions.

Another important problem is the ambiguity in the interpretation of some lexical units and the interpretation of their meaning in the context of different languages and cultures. D. Massimkhanuly and A. Abidenkyzy [4] explore the influence of ancient Turkic civilisation on traditional Chinese culture. In their analysis, they touch upon many lexical units that could have passed from the Turkic languages to Chinese because of cultural interaction. The results of the study indicate the complexity of interpreting the meanings of these lexical units in various cultural and linguistic contexts. The authors emphasise that such intersections of history and culture can lead to ambiguity in interpretation, which emphasises the importance of considering context and cultural characteristics when analysing lexical parallels between the Turkic and Chinese languages. E. Luef et al. [5] reached the same conclusion. However, despite the important conclusions made by the authors, their study did not conduct a detailed analysis of specific examples of lexical units. They failed to show exactly how the meanings of these units changed and adapted in various cultural and linguistic contexts. Furthermore, the study did not consider the syntactic and morphological features of these words. This omission prevented a more complete understanding of their integration and functioning in the recipient language.

In addition, there is also a problem of insufficient knowledge of Kyrgyz-Chinese words from the standpoint of linguoculturology and areal linguistics. This means that substantial aspects related to cultural and social contexts that influence the formation and use of these words remain insufficiently analysed. L. Gong and S. Uehara [6] examined how action constructions in Chinese demonstrate the typological flexibility of vocabulary, showing that words can change their grammatical and semantic functions depending on the context. The authors emphasise that cultural and social contexts play a key role in the formation and use of these lexical units. In turn, R. Purse et al. [7] analyse phonological variations and their influence on lexical form, paying special attention to how cultural and social factors can cause phonetic changes. The authors show that phonological variability is not static and can change under the influence of social interactions, language contacts, and cultural changes.

N. Lin et al. [8] consider differences in Chinese vocabulary using a synergetic linguistic model that treats
language as a complex dynamic system. The authors draw attention to the importance of an integrated approach, including both linguistic and cultural aspects, for understanding lexical variations. M. Mehdijieva [9] examines modern changes in the lexical system of the Turkic languages, focusing on the influence of cultural and social factors. The author emphasises that borrowings from other languages, the adaptation of new words and changes in the meanings of existing words are often caused by social changes such as urbanisation, technological progress, and cultural exchanges.

Thus, the analysis of the papers of these authors allows us to conclude that in the context of examining Kyrgyz-Chinese lexical parallels, there are many unresolved aspects. Therefore, this study was aimed at identifying the mechanisms of borrowing, adaptation, and evolution of lexical units of the Turkic and Chinese languages in the context of cultural and historical interactions. The main objectives of the study included the analysis of Kyrgyz-Chinese etymological pairs, with a general classification of words to identify phonological and semantic similarities and differences between them. Another objective was the examination of single-root lexemes in Kyrgyz and Chinese using the contextual model of SASYS to determine similarities in the phonetic structure and meaning of words. Additionally, the study focused on analysing the phonological features of root morphemes of the Chinese and Kyrgyz languages to establish etymological identity and common roots. Finally, the study aimed to determine the mechanisms of phonological adaptation and evolution of root morphemes during the transition from Kyrgyz to Chinese and vice versa.

Materials and Methods
A linguistic method was used to identify and analyse etymological pairs between the Kyrgyz and Chinese languages. Within the framework of this method, a detailed phonological analysis was conducted, which included several key stages. First of all, a detailed comparison of the vocabulary of both languages was conducted to identify potential etymological pairs. This process involved identifying words with common roots or similar phonetic and semantic characteristics. For each identified example, a phonological analysis was conducted, which included the examination of the sound structure of words in both languages, and the analysis of phonetic changes and adaptations characteristic of these words during the transition from one language to another. Special attention was paid to changes in pronunciation, tonal and intonation variations, and morphological changes associated with the adaptation of words in a new linguistic context. Additionally, the contexts of the use of words in both languages were analysed to understand their semantic meaning and identify possible changes in meaning during adaptation. This included examining the use of words in various communicative situations, analysing their syntactic role and meanings in various contexts, and reviewing cultural and historical factors that could influence the change in meanings.

The comparative method was used to examine single-root lexemes in the Kyrgyz and Chinese languages using the SASYS contextual model. Firstly, data were collected on lexemes in both languages, including words with potentially common roots or similar phonetic structures. Further, each pair of words was subjected to a detailed comparative analysis, which began with a phonetic comparison of the sound structure of the lexemes. This included examining sound correspondences, identifying patterns of phonetic changes, and analysing tonal and intonation variations. Then, the SASYS model was used to analyse the functioning of these lexemes in the Kyrgyz language. In addition, similar structures in the Chinese language, such as SASY, ASASY, ASASYS and their equivalents in other Turkic languages, were examined.

The lexical-semantic method in the context of this study was used to better understand the mechanisms of phonological adaptation and evolution of root morphemes during the transition from Kyrgyz to Chinese and vice versa. For this purpose, a detailed analysis of the meanings and semantics of root morphemes in both languages was conducted, including the examination of semantic contexts associated with the use of these morphemes. Semantic correspondences and differences between the root morphemes of the Kyrgyz and Chinese languages were identified, and changes in the meanings of these morphemes during their adaptation to another language were analysed. In addition, a search for lexical units with similar semantic meanings and sound structures in both languages was conducted to identify patterns and patterns in the phonological evolution of root morphemes. In the context of using this method, it was possible to identify groups of lexical units with semantic analogies and similarity of sound, which allowed identifying the main directions of changes in the sound structure and meaning of words in the process of their adaptation and evolution between the Kyrgyz and Chinese languages. This approach helped to better understand the mechanisms of phonological adaptation and semantic evolution of words in the context of linguistic interaction.

Results
The SASYS phonological model is a word structure characterised by the alternation of consonants and vowels in a certain sequence: consonant (S) – vowel (A) – consonant (S) – vowel (Y) – consonant (S). This model reflects certain phonetic patterns inherent in the Kyrgyz language and may vary in other Turkic languages. In the SASYS model, vowel sounds show signs of consistency, which means their non-foreign pronunciation and the absence of rounding of the lips. Such phonetic properties contribute to the creation of a specific rhythm and melody of words. In other Turkic languages, the model can be modified in the form of structures such as SASUS, SASIS, SYSA, SAASIS, and ASASAS [10]. These modifications allow identifying phonetic and morphological patterns and examining historical and cultural links between languages. The SASYS model is used for in-depth comparative analysis of lexical units, which helps understand the phonological adaptation mechanisms and evolution of words in various linguistic contexts.

A substantial number of words in the Kyrgyz language phonetically correspond to the SASYS formula. These include achiy, satyr, aryz, aryl, and many others. These words not only characterise the phonetic structure of the Kyrgyz language but also indicate etymological identity with similar words in the Turkic and Chinese languages.
The Chinese linguocognitive “spirit” is manifested in the common Turkic word alachyk/alazhyk (Table 1).

### Table 1. Etymology and semantics of the alachyk/alazhyk lexeme

<table>
<thead>
<tr>
<th>Phonetic variations</th>
<th>Language</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>alachyk / alazhyk</td>
<td>Kumyk, Tatar, Kyrgyz</td>
<td>“hut” or “tent”, “small yurt”.</td>
</tr>
<tr>
<td>alazhuk / yalezhik</td>
<td>Turkish dialects</td>
<td>“felt tent”, “field or garden hut”</td>
</tr>
<tr>
<td>alachuk</td>
<td>Kumyk dialect</td>
<td>“hay barn”</td>
</tr>
<tr>
<td>alachykh / ulachik</td>
<td>Tatar Karachai</td>
<td>“shack”</td>
</tr>
<tr>
<td>alachyk</td>
<td>Khakass</td>
<td>“hut”</td>
</tr>
<tr>
<td>alanchyk</td>
<td>Altai with epenthesis</td>
<td>“hut”</td>
</tr>
<tr>
<td>lashyk</td>
<td>Kazakh</td>
<td>“shack”</td>
</tr>
<tr>
<td>alasyk</td>
<td>Bashkir</td>
<td>“shack”</td>
</tr>
<tr>
<td>ylashyk</td>
<td>Karakalpak</td>
<td>“shack”</td>
</tr>
<tr>
<td>alazhy</td>
<td>Tuvan</td>
<td>“tent”, “tent pole”</td>
</tr>
<tr>
<td>ala / alazhu / alazha</td>
<td>Turkmen</td>
<td>“tent”, “shelter”</td>
</tr>
</tbody>
</table>

*Source:* compiled by the authors based on the analysis of the etymological dictionary of Turkic languages [11].

This word includes the prothetic a- and has many phonetic variations: alachyk in Kumyk, Tatar, and Kyrgyz languages; alazhuk / alashyk in Turkish dialects; alachuk in Kumyk dialect; alanchek in Tatar Karachai; alachyk in Khakass; alanchyk in Altai. It can be assumed that the modern suffixes -chuk and -zhyk have their roots in the older forms -chyk and -zyk. Notably, the forms with the suffix -chu were originally used. It was these forms that could serve as the basis for the emergence of a new -chuk suffix. As a result of this process, the -chuk suffix was formed from -chu. The elision of the initial a- is characteristic of the Kazakh language, as confirmed by similar cases: for example, the Kazakh word lachuga/alachyk [13]. Thus, this lexeme corresponds to ulak/ylak in other Turkic languages.

The meanings of the various variants of the word alachyk/alazhyk vary widely. In Karachai-Balkar, Kyrgyz, and Tatar languages, it means “hut” or “tent”, and in the Turkish dialect – “felt tent”. In other dialects, this word can mean “field or garden hut”. In written monuments and Siberian languages, this word means “nomad tent” and “small felt tent”. In the Tuvan language, this word is used to mean “chum” or “tent poles”, and in Kyrgyz – “small yurt”. In Karachai-Balkar (urban dialect) it means “bark yurt”. In Kyrgyz, Kazakh, Karakalpak, Tatar, and Bashkir languages, it can mean “shack”, and in Karachai-Balkar (urban dialect) and Tatar – “hut”. In the Tatar language, this word can also mean “house” or “booth”. In the Karakalpak language, it can mean “a temporary building made of reeds”. In Turkish dialects, it can mean “gatehouse”, “hut”, or “vineyard house”. In Karachai-Balkar (Turkic dialect), it can mean “summer kitchen in villages”, in Kumyk – “hay barn” or “stable”, in Karachai-Balkar (urban dialect) – “gazebo”, in Tatar dialect – “yard”, in Karachai-Balkar – “cover” or “thicket”, and in Tatar dialect – “waiting room”.

It should be assumed that the words alachyk/alazhyk were formed from the combination of the affix -chu, the word ala, and the diminutive k. According to a study by R. Muhammed and T. Maksutovna [12], the Middle Persian word lachuk is borrowed from the Turkic languages. In addition, the Mongolian alachug is also borrowed from the Turkic languages, where it means “tent”. The Karaite word alachyk, meaning “hut” or “house of brushwood”, can be traced to the hypothetical ancient word aglachykh through agylachykh and agylagchykh, which complicates its explanation and suggests a connection with the word agy, meaning “barn” in various Turkic languages and their dialects. The word alasyk in the Bashkir language may be the result of a merger of the words ala (before) and asyk (open). The first part of the word alachyk can come from the root ala, meaning “motley”, and the second part is a diminutive affix -chu or a concretising affix -chu. The word alazhyk is also associated with the Russian word “lachuga”, which confirms the Turkic origin. Thus, by examining these lexemes, it is possible to trace the complex ways of their phonetic and semantic evolution and the importance of Turkic roots in the formation of similar words in different languages.

Word formation in the Chinese language should also be noted. For example, the words lú and lǘ have the meaning “hut, hovel” and are indicated by only one hieroglyph. There is also the word zhī, meaning “to pitch a tent”. It can also be assumed that the combination of these units led to the formation of the word lùzhīk. It is important to note that in ancient Chinese, the syllable zhī had th.

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In this case, there is a small number of reflexes of this word in other dialects, which differ in their structure. It is believed that the form altun represents the most ancient version of the word. However, it is impossible for a single element, which is present only in some languages, to act as a general term. The initial form is most likely altyn. In the Yakut language, this word means “copper”, whereas in all other Turkic languages, it means “gold” or “golden”. In the oral speech of the Uzbek and Chuvash languages, it is also used to mean “gold coin”, and in Turkish, the word altyn means “lira (Turkish)”. The Yakut altan can be compared with the Mongolian altan, meaning “gold”, and having the general structure of the SASAS formula. There are several hypotheses about the origin of the word altyn/altun, including possible connections with ancient Turkic roots and influences of other languages.

The first hypothesis states that the word altyn is formed from a combination of al (red) and ton (copper). In addition, the Chuvash word tui is associated with the ancient Turkic word ton (copper). Some researchers note the connection between the meanings of “gold” and “red”, pointing to the Yakut expression kysyl komush (gold), which translates as “red copper” [15]. A similar use of the word gyzyl/kyzyl in the meaning of “gold” is observed in Azerbaijani, Turkish, Turkmen, Kyrgyz, and other Turkic languages. These examples highlight the historical association between the colour red and metals such as copper and gold, which may have influenced the formation of the word altyn.

The second hypothesis suggests that the word altyn is formed from a combination of the Turkic word al (red), the Chinese word ton (copper), and the Korean ton (brass, copper, precious metal). Researchers who support this hypothesis claim that the word altyn, which has a pre-Turkic origin, originated in the Mongolian language and then spread to other languages. M.M. Alhasan and A.S.S. Al Manei [16] reject the morphosemantic analysis of the word proposed by other researchers, considering it less reasonable. Instead, the authors focus on the historical-linguistic path of the word, arguing that its roots can be found in earlier linguistic layers before its appearance in the Turkic languages. This hypothesis offers a broader geographical and cultural perspective on the origin and distribution of the word altyn, allowing considerations of the influence of Chinese and Korean languages on early Turkic dialects.

According to the third hypothesis, the word altyn is considered generally accepted for the Turkic-Mongolian and Tungusic-Manchurian languages, including the forms and meanings of “gold, copper, tin”, in Evenkom (altan/aldum, altun), Solon (alta/altan), Udin (alta/arta), Ulchi (alt/altan), Nanai (alta) languages. This word is compared to the Manchu aysin, which is believed to have originated from the form altun/altan by the following changing: altun/altan > aysin > aisin. However, M.M. Alhasan and A.S.S. Al Manei [16] do not agree with this comparison and the conclusion about the common origin of these words in these language families, putting forward an alternative hypothesis.

Within the framework of the fourth hypothesis regarding the origin of the Turkic-Mongolian word altyn/altun, linguist S. Hamidi [17] suggested that it could go back to the Arabic word lautun, meaning “brass, yellow copper”. S. Hamidi [17] was not completely sure about this etymology, but it can continue to develop within the framework of the Nostratic macrofamily of the language. According to Nostratic theories, the languages of several families, including Altaic (Turkic, Mongolian, Tungusic-Manchurian) and Semitic (which include Arabic), have a common state of a hypothetical Nostratic proto-language. Thus, the assumption of borrowing the Turkic-Mongolian altun/altyn from the Arabic lautun can be justified by a deeper relationship of these languages at the level of the Nostratic macrofamily, rather than borrowing in a narrower sense. However, this hypothesis needs further substantiation and development with the involvement of additional linguistic data.

B. Lei [18] put forward the fifth hypothesis. According to this hypothesis, the origin of the word altyn is associated with the combination of alty and tiin, which is supposed to have become the ancient name of value or price. However, it should still be noted that the word tiin/tiin/tiyyun “coin” probably has a Chinese origin and consists of the elements te “special” and yin “coin”. Under the influence of the vowel of the second syllable, the vowel sound of the first syllable was assimilated, resulting in closer forms: te + yin = tiin = tiyyun. The form of tiin is marked by the presence of dieresis, that is, the loss of the sound of y. In addition to the previously discussed hypotheses about the etymology of the word altyn, one more assumption can be made about its possible Chinese origin. According to this hypothesis, the word altyn consists of lû/łû with the meaning “to carve, mint, engrave”; tông – ‘copper, bronze”. Thus, altyn can be translated as “hammered copper/brass/bronze” or “hammered from copper/brass/bronze”. Interestingly, the second component probably leads to the emergence of

Table 2. Variations of the pronunciation of the word altyn

<table>
<thead>
<tr>
<th>Pronunciation</th>
<th>Language</th>
</tr>
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<tbody>
<tr>
<td>“altyn”</td>
<td>Turkish, Turkmen, Crimean Tatar, Karaite, Kumyk, Karachai-Balkar, Kazakh, Nogai, Karakalpak, Tatar, Bashkir, Altai, Kyrgyz, and Khakass</td>
</tr>
<tr>
<td>“altun”</td>
<td>the dialect of the Kumyk, Karaite, and Crimean Tatar languages</td>
</tr>
<tr>
<td>“oltin/oltyn”</td>
<td>Uzbek</td>
</tr>
<tr>
<td>“aldyn”</td>
<td>Tuvan</td>
</tr>
<tr>
<td>“altan”</td>
<td>Yakut</td>
</tr>
<tr>
<td>“yltan”</td>
<td>Chuvash</td>
</tr>
<tr>
<td>“aaltin”</td>
<td>dialect of the Turkmen language</td>
</tr>
</tbody>
</table>

Source: compiled by the author based on the analysis of pronunciation variations of the word altyn in different languages and dialects [14].

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words such as tenge (“currency”). This assumption is supported by the similarity with the Hanyu word tōnghūo, meaning “money at the beginning”, which is very similar to the Turkic and Slavic names of currency.

Considering that Chinese culture and language have a more ancient history than Arabic culture and the Arabic language, it is likely that the Arabic word laatun (meaning brass, yellow copper) can go back to an older Hanyu (ancient Chinese) word or terminology related to metallurgy and metalworking. The Chinese civilisation, which originated several millennia before the Arab one, reached a high level of development of crafts, including metallurgy, much earlier, which suggests an earlier appearance of the corresponding vocabulary in the ancient Chinese language. Thus, the Arabic term laatun could have been borrowed from the Chinese language because of cultural and trade contacts between civilisations in ancient times, when China already possessed advanced metallurgical technologies and appropriate terminology. Therefore, a scenario in which the roots of the Arabic word laatun enter the Chinese language and not vice versa is more likely.

In the Kyrgyz language, there is a synharmonic model associated with the equivalents of two Chinese syllables, which are indicated by different hieroglyphs: jiàn/jià with the meaning “during, after”; and jiān – “sequentially, one after the other”. These Chinese syllables in the Kyrgyz language correspond to the word sayyn with the meanings “during, in the interval, after”. It is used in combinations such as ai sayyn (“monthly, after every month”), utkan sayyn (“for the minimum gain”). It should also be noted that in these correspondences, there is a permutation of the interconsonant sounds. The Chinese diphthongs iă/ià in Kyrgyz correspond to the three-sound combination of ayy. That is, in the Kyrgyz language, narrow and wide components are replaced by a wide vowel and a semivowel y, followed by epenthetic y.

This phenomenon manifests itself against the background of otic transformations when borrowing substantial vocabulary in the Kyrgyz language. In the Kyrgyz language, there are some explicit borrowings from the Hanyu (ancient Chinese) language, represented by two-syllabic words with a transparent formal semantic structure. Among them, the words contained in its composition can be distinguished by syllables dating back to the Hanyu mēn (“to stew meat”), mèn (“tightly close”), and mên/mèn (“to stew meat”). These Chinese roots are present in the first part of such Kyrgyz words as manty (a kind of dumplings made of dough with a steamed filling) and moncho (a dish of stewed meat and vegetables). Thus, these Kyrgyz words conduct direct borrowing from the Hanyu language both in planned form (preservation of the initial syllable man-/-mon-) and in semantic terms (designation of the method of cooking by stewing). This indicates the deep cultural influence of China on the Kyrgyz language and way of life.

The word manty, meaning “steamed pies”, is a very common culinary name. It occurs in various background variations: manty, mantu, manchy, manta, mantuy. The first part of the word has a clear translation from Chinese “simmer, stew, infuse” and refers to cooking steamed dishes. The second part also goes back to the Chinese -tou – word-forming suffix of the names of nouns denoting rounded objects. Thus, the word manty translates as “steamed rounded products”. The word manty/mantu is widespread in not only Turkic but also in other languages of Central and East Asia. All its forms originated in the Chinese word mantou, meaning “bread, steamed bread”. Considering the phonetic specifics of the Chinese language with the presence of rounded, non-rounded, wide, and narrow vowels, when the law of synharmonism influenced borrowing in the Kyrgyz language, this word. As a result, it took the form of manty, obeying the formula of SASY – a kind of a more developed model of SASYS. Thus, the word manty/mantu is spreading in the central and eastern regions of Asia, the cultural influence of China, and the borrowing of culinary vocabulary. Therewith, adaptation is applied in the Kyrgyz language by the rules of vowel harmony. Also, a parallel between Chinese and Turkic languages, such as Uzbek and Kyrgyz, is the similarity of the syllables zhān and zhān with the Uzbek word zhang (“war, battle”) and Kyrgyz zhan (“war, battle”). This similarity can also be traced in derivative terms related to military subjects. Thus, the Chinese word zhānshī (“warrior, fighter, soldier”) finds a correspondence in Uzbek zhanghi and Kyrgyz dialect (in some southern dialects) zhakhchi, meaning “fighter, warrior, soldier” [19]. Such parallels point to the possible borrowing of relevant vocabulary related to the military sphere from Chinese into Uzbek and Kyrgyz.

The word mamy also fits this formula. This word comes from ancient times, when the ancestors of modern Chinese (Hanzu) and Kyrgyz actively interacted and contacted each other. Structurally, the word “mamy” consists of two syllables, each of which has its own semantic load and corresponds to the morphemes of ascension in Chinese (Hanyu). The first syllable mā is associated with the concept of “horse”, and the second syllable mō means, “to bind, strengthen”. When examining this word, it became clear that the vowel sound at the beginning of the first syllable, dominating in combinations with syllables, changed the diphthong of the second syllable, removing the features of coarseness from it and turning it into a wide vowel that does not belong to the front row, as required by the SASY formula (consonant-vowel-consonant-vowel). Notably, in modern dictionaries of the Chinese language (Hanyu), the syllable combination mā + mō is missing since the denotation (designated object) of the word mamy is associated with a nomadic lifestyle, which is no longer practised by the sedentary population of modern China [20]. Thus, this word gradually fell out of active use in the Chinese language but remained in the Kyrgyz language, which has closer historical ties with the nomadic culture.

The considered formula SASY (consonant-vowel-consonant-vowel) is not limited only to syllabic combinations in adapting to the conjunctural features of the Kyrgyz language. It is not uncommon for monosyllabic Chinese roots with diphthongs to also change to match the patterns. An example is the polysemous syllable diān/tiān (“ancient written source”) in Chinese (Hanyu). When using this syllable in the Kyrgyz language, an interesting background process occurs related to the iă diphthong. The components of this diphthong change their characteristic appearance, that is, the wide and narrow components are rearranged: iă turns into ayy [21]. This rearrangement of the diphthong elements allows adapting the monosyllabic
Chinese root to the natural features of the Kyrgyz language, bringing it into line with the SASY formula. Thus, the formula not only adapts syllabic combinations but can also modify the structure of monosyllabic roots containing diphthongs to adapt them to the phonetics of the Kyrgyz language.

The development of the Chinese syllable can be traced in more detail using the example of the syllable diăn/tiān. In addition to the previously mentioned permutations of the components of the diphthong i, additional sound is included. In one of the examples in the Kyrgyz language, the sound y is inserted: dayn, daynda/-dayndoo, and daynduu. In this case, the word corresponds to the formula of SASSA. However, there are other examples of the reflection of the Chinese syllable “iă” in the Kyrgyz language, where the components of the diphthong are random, and the sounds y, i, and a are included before them. For example: tyyanaktu-/tyyanakttoo, tyyanaktu. Here the word already corresponds to the SISAS formula. Thus, it can be concluded about the philological connection between the Chinese syllable diăn/tiān and the Kyrgyz roots dayn/tyyan/tayan. These roots have different consonants (“d-/t-”) and epenthetic vowels in Kyrgyz equivalents. This indicates flexibility in the transition of the Chinese syllable to the context of the Kyrgyz language, in which the general semantic meaning is preserved, but the contextual form of words changes.

The word shagyl in the Kyrgyz language can also be considered, meaning “gravel, crushed stone”. It has an alternative form shagyl, used in southwestern dialects. Notably, the Kyrgyz word shagyl resembles the Chinese lexeme shālì “gravel”. The Chinese word consists of two parts: shā (sand, gravel) and lì (grain). When analysing Kyrgyz and Chinese graphics, permutation can be noted. Firstly, there is a rearrangement of consonants and vowels: lì in the Chinese word corresponds to yl/l in Kyrgyz. Secondly, the Kyrgyz word has an epenthetic (added) consonant g.

In Chinese, the syllable shā has the meaning “stupid”. When this syllable is combined with the syllable guā, meaning “pumpkin”, the word shāguā is formed, which translates as “fool”. As for the Kyrgyz language, there is a word shāk, which has the following meanings: “stupid, foolish”. In this case, it is possible to trace how the background structure of these language standards is converted. In the Kyrgyz word shāk, the formula SASYS is traced, where the first vowel, a corresponds to the vowel in the first word of the Chinese word shā. However, the most remarkable thing is that in the Kyrgyz word, the diphthong uā is transformed from the second syllable of the Chinese word guā into yy. Thus, the Chinese vowel sound a in the first syllable forced the diphthong uā to transform into yy in the Kyrgyz language. This linguistic phenomenon may indicate historical interactions between the Kyrgyz and Chinese languages, resulting in changes in phonetic changes and vocabulary borrowing.

In the Kyrgyz language, the word tantyk has the following meanings: “chatterbox, rattle”. This Kyrgyz word is compared with täntiān, meaning, “to chat”. Here, similar semantics are associated with pointless chatter or empty words. Analysis that is more detailed established that the syllable tān in Chinese means “to talk, to converse”. In this case, phonetic correspondences are also observed between the Kyrgyz tantyk and the Chinese täntiān, namely between the syllables -tyk and tiān. Interlanguage alternation -k/-n is also observed in other examples. The Kyrgyz words sok-/soguu, sogush, sokot correspond to the Chinese -qiān. In addition, the Kyrgyz chyk-/chyguu correlates with the Chinese -qiān. Thus, it can be assumed that throughout the historical development of the Kyrgyz and Chinese languages, the exchange of vocabulary was accompanied by phonetic transformations, including the alternation of consonants -k/-n in the final syllables of words.

A possible connection between the Kyrgyz word kashyk and the Chinese syllables kōu and shāo/shuō should also be considered. In the Kyrgyz language, the word kashyk has the following meanings: spoon, frying pan. Derived forms indicate different types of spoons and pans, and actions related to their use (for example, kashykta-/kashykto – take a spoon, kashyktashyp ichkile – eat from one bowl). In Chinese, the syllable kōu and shāo/shuō are notable. It can be assumed that the Kyrgyz word kashyk bears a distant resemblance to the combination of these Chinese syllables, both semantically and contextually. The structure of the Kyrgyz word follows the SASYS model (consonant-vowel-consonant-vowel-consonant), which corresponds to the background structure of Chinese syllables. However, this connection is not obvious and raises some doubts. Phonetic transformations from Chinese syllables to a Kyrgyz word are quite complex and do not have clear parallels in other examples.

When analysing the phonetic correspondences between Kyrgyz Zhamba and Chinese jīnbi, a certain linguistic phenomenon can be detected. In the Kyrgyz language, one can observe the phenomenon of regressive assimilation at the junction of syllables. For example, the sound -n, under the influence of the following sound -b with labial articulation, turns into a labial sound -m. When analyzing anthroponyms such as Jaanbai/Jaambai, the sound of the first root is also assimilated to the initial labial sound -b. This results in the loss of its original characteristics. Thus, it can be assumed that during the historical development of the Kyrgyz language and its interaction with Chinese, words denoting gold bars or coins were borrowed, and contextual adaptation, including regressive assimilation of consonants, was introduced.

In the Kyrgyz language, there is a word kayyn, which refers to the concept of “kinship by marriage”. The phonetic structure of this Kyrgyz word corresponds to the SASYS model (consonant-vowel-consonant-vowel-consonant). In addition, -yn is compared with the Chinese yīn. The first syllable kay- in the Kyrgyz word kayyn can be correlated with the Chinese syllable kē, which indicates respect for relatives. Notably, a change in the sound of the anterior-lingual e in the Chinese syllable occurred, which has turned into the vowel sound a in the Kyrgyz language. This change is caused by the influence of the sound y in the second syllable of the Kyrgyz word. Thus, it can be assumed that the Kyrgyz word kayyn is formed from kē + yīn, which was transformed under the influence of assimilation of sounds.

Another example of a possible linguistic connection between Kyrgyz and Chinese is in the word kapchygay, meaning “gorge”. At first glance, the initial two syllables of this Kyrgyz word (kap/-chyg-) correspond to the SASY
model (consonant-vowel-consonant-vowel). Moreover, there are parallels with Chinese syllables: kòu + zhi + gò. However, it should be noted that the last syllable -gay in the Kyrgyz word does not fully correspond to the SASYS model. In addition, the Kyrgyz word kapchygay has a parallel in the Kazakh language – kapshagay, which also means “gorge”. This indicates a wider distribution of these tokens in the Turkic regions. Thus, in the Turkic languages many lexemes are of Chinese origin and adapt to the phonological model SASYS. This model, characterised by alternating consonants and vowels in a certain sequence, allows tracing the borrowings and phonetic adaptation of words from Chinese into Turkic languages. Examples of such words show how Chinese lexemes, integrating into Turkic language systems, retain their basic sound structure but simultaneously undergo phonetic changes corresponding to the phonological rules and peculiarities of each specific Turkic language. This testifies to the deep historical and cultural relationship between the Chinese and Turkic peoples, reflected in the language. Thus, the analysis of these borrowings through the prism of the SASYS model helps to better understand the processes of linguistic interaction and evolution, and to identify patterns in the adaptation and preservation of Chinese roots in the Turkic languages.

Discussion

An analysis of the study results shows that many words in the Turkic languages originate from Chinese and obey the phonological model of SASYS, which is characterised by alternating consonants and vowels with certain pronunciation features. When borrowing Chinese words, they adapt to the phonological norms of the Turkic languages through assimilation, epenthesis, and vowel synharmonism, while maintaining the basic sound structure. The analysis of these borrowings through the SASYS model allowed the identification of phonological and morphological changes and the tracing of the historical and cultural ties between the Chinese and Turkic peoples, which indicates the historical interaction reflected in the language.

Firstly, the study established that the SASYS phonological model is key to understanding the sound structure and rhythmic-melodic organisation of words in Kyrgyz and other Turkic languages. This model, characterised by the alternation of consonants and vowels, especially with non-translingual and non-voiced vowels, gives words a specific rhythm and melody. The same conclusions can be traced in the papers of other authors. For example, S. Baturay [22] focuses on the fact that phonological patterns play a key role in vocabulary organisation. It is necessary to agree with the author’s statement that certain phonological structures or patterns not only facilitate memorising and reproducing words but also affect their distribution and use in the language. J. Archibald [23], in turn, emphasises the importance of grammatical rules in the formation of phonological systems. The study demonstrates that grammatical aspects, such as morphology and syntax, play an important role in determining phonological patterns and that these rules contribute to the systematisation of sound structures in language.

This is consistent with the results of the analysis of the SASYS model obtained during the study, where regular alternation of consonants and vowels creates predictable and stable phonological forms. However, it is still worth noting that J. Archibald [23] attaches somewhat excessive importance to grammatical aspects while underestimating phonetic patterns such as rhythm and melody, which are important characteristics, including the SASYS model.

The study also identified many words in Kyrgyz and other Turkic languages that have roots going back to Chinese and obey the SASYS model. Examples of such words are “alachyk”, “altn”, “manti”, “mamy”, “dayyn”, “shagyl”, “shakyy”, “tantlyk”, “kashyk”, “zhady”, “zhamby”, “kayyn”, “kapchygay”. S. Hasanli [24] also analyses the evolution of terms in Turkic languages. The author focuses on the fact that the processes of borrowing and adapting terms are subject to certain lexical and semantic laws, which contributed to the creation of a rich and diverse scientific terminology, which should be agreed with. However, the researcher emphasises that the Arabic and Persian languages, which substantially enriched the lexicon, influenced the formation of the vocabulary of the Turkic languages. In this case, one cannot fully agree with this statement since the results of the study showed that a substantial part of the vocabulary of the Turkic languages also has Chinese roots, which indicates the variety of sources of influence on the formation of Turkic scientific terminology and the enrichment of the lexical fund.

The analysis of the results also showed that when borrowed from Chinese, words adapt to the phonological rules of the Turkic languages, using various contextual changes such as assimilation, epenthesis, and vowel synharmonism. This allows for preserving the basic sound structure of borrowed words but simultaneously brings them into line with the phonetic norms of the borrowing Turkic language. The same results can be traced in the study of the authors M.C.S. Shathifa and A.S. Ali [25]. Analysing the paper on phonological phenomena in Arabic and Tamil, the authors emphasise that the adaptation of borrowed words is conducted through various phonological processes, such as assimilation and epenthesis, to preserve the syllabic structure of the original and bring it in line with the phonetic norms of the borrowing language.

In the context of the Turkic languages, this is confirmed by the adaptation of Chinese loanwords through similar processes, which was confirmed during the study. A. Ndunguru [26] came to the same conclusions, showing that in Matengo, words borrowed from Swahili also undergo phonological adaptation, including vowel synharmonism and other changes to integrate into the phonetic system of Matengo. In addition, new hypotheses were proposed about the origin of a number of words in the Turkic languages, in particular Kyrgyz, from ancient Chinese roots. According to new hypotheses, these words were formed by combining ancient Chinese syllables and morphemes associated with certain concepts. When borrowed, in the Turkic languages, they changed by the rules of vowel harmony. T. Jacobs [27] discusses the importance of phonological diversity in the process of speech perception. In this paper, the emphasis is on the fact that the sound form of a word is a key aspect of its perception, which should be agreed with.
When examining the origin of words from ancient Chinese roots, it is important to consider their phonetic features since they can have a substantial impact on the understanding and meaning of words in different languages. Analysing the results of the study by Y. Kang [28], one can agree on the need for phonological adaptation of loanwords. The author examines various aspects of phonology in the borrowing of words, including the adaptation of sounds, the processes of simplification of the sound structure and assimilation. Attention is also drawn to changes in pronunciation and use of sounds under the influence of language and the mechanisms by which borrowed words fit into the phonological system of the recipient language.

Another result of the study is that a large number of borrowings from Chinese in Turkic countries indicates the preservation of historical and cultural ties between Chinese and Turkic peoples, which are reflected in the linguistic material. Such borrowings not only reflect cultural influences but also allow for a better understanding of the interaction between these cultures at the historical and linguistic levels and their mutual influence on the lexical and phonological composition of languages. In this context, the paper of E. Ibrahimov [29] is notable. It explores the historical development of language policies in the Turkic world, including examples of the adoption and implementation of language laws, the standardisation of languages and the strengthening of the use of Turkic languages as official languages in various fields of public life. In addition, to analysing historical processes, the authors emphasise the influence of the Chinese language and culture on the Turkic peoples.

It should be agreed with the authors that this influence contributed to the borrowing of root morphemes from the Chinese language, which had a substantial impact on the lexical and phonological composition of the Turkic languages. Therewith, D. Massimkhanuly and A. Abidenkyzy [4] analyse the historical processes and contacts between the Turkic and Chinese peoples, based on this, they conclude the impact of Turkic culture on Chinese culture. They claim that the ancient Turkic civilisation substantially influenced the formation of some aspects of traditional Chinese culture. However, according to the conducted research, it is impossible to agree with the conclusions of the authors. On the contrary, the analysis showed that the Chinese language and culture had a substantial impact on the Turkic languages. The analysis of linguistic and cultural elements indicates that China played a more important and active role in shaping the linguistic and cultural environment in this region.

Thus, analysing borrowings through the prism of the SASYS model, one can see how Chinese roots have adapted and preserved in the Turkic languages. The model helped to identify patterns in the process of adapting Chinese words to the Turkic phonological system, considering the peculiarities of vowel pronunciation and stress in words. This approach allowed for a better understanding of the mechanisms of borrowing and assimilation of words and discovering trends and general rules in the acceptance and retention of Chinese roots in Turkic languages.

Conclusions
The study used the SASYS phonological model to identify substantial connections between the Turkic and Chinese languages at the level of lexical structures. The results obtained during the study show that many borrowings from the Chinese language in the Turkic languages obey the SASYS model, which confirms the unique phonetic and phonological features of these languages.

In particular, it was established that many words in Kyrgyz and other Turkic languages have roots going back to Chinese and obey the phonetic model of SASYS, which is characterised by alternating consonants and vowels. This model of phonological structure allows borrowed words to be easily integrated into Turkic languages while maintaining their basic sound identity. Examples of such words are alachyk (hut), alyn (gold), manty (steamed pies), mamy (aunt), dayyn (ready), shagyl (gravel), shakky (wounded), tantyk (stubborn), kazhyk (spoon), zhady (memory), zhamby (silver coin), kayyn (kinship by marriage), kapchygay (gorge). These words demonstrate a complex process of phonological adaptation, including such changes as assimilation, epenthesis, and vowel synharmonism, which allows them to correspond to the phonetic norms of the borrowing Turkic languages. This adaptation process not only preserved the basic sound structure of borrowed words but also ensured their integration into the lexical systems of the Turkic languages, which emphasises the importance of historical and cultural interactions between Chinese and Turkic peoples. For example, the word alachyk in the Turkic languages means a hut, retaining a similar meaning in Chinese, which indicates direct borrowing and phonetic adaptation. The word alyn (gold) has not only retained its meaning but also its phonetic structure, which emphasises the stability of the SASYS model. Similarly, the words manty (steamed pies) and kapchygay (gorge) reflect the same process of borrowing and adaptation, confirming the importance of phonetic models in lexical integration.

In the course of this study, new hypotheses were proposed about the origin of several words in the Turkic languages, especially in Kyrgyz, which go back to ancient Chinese roots. According to these hypotheses, these words arose because of a combination of ancient Chinese syllables and morphemes associated with specific concepts and were adapted into Turkic languages considering phonetic trends such as vowel synharmonism. When borrowing, the words underwent phonetic changes, preserving the basic sound structure while adapting to the phonological rules of the Turkic languages. This explains why words such as alachyk (hut), alyn (gold), manty (steamed pies) follow the phonetic model of SASYS, characterised by alternating consonants and vowels.

These new hypotheses of the origin of interlanguage borrowings emphasise the deep historical and cultural ties between the Chinese and Turkic peoples. Lexical integration based on phonetic models such as SASYS demonstrates not only the stability and flexibility of language systems but also their ability to adapt and enrich each other. These hypotheses explain the complex processes of linguistic interaction and borrowing, showing how cultural contacts contribute to the formation and evolution of languages. Thus, the study emphasises the importance of phonological adaptation in preserving and
transforming borrowed words and strengthening interlanguage and intercultural relations.

Further research in the field of Turkic-Chinese lexical parallels can be aimed at expanding the corpus of data and a more detailed analysis of the phonological and morphological features of borrowings. Special attention should be paid to the analysis of semantic changes in borrowing and the further evolution of these lexical units in the Turkic languages.

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None.

References


Тюрксько-китайські лексичні паралелі в рамках фонологічної моделі SASYS

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Анотація.

Актуальність. Зважаючи на постійний розвиток глобальних мовних контактів та культурних взаємодій, вивчення механізмів взаємодії між тюркськими та китайською мовами має велике значення для виявлення механізмів запозичення слів та аналізу культурно-історичних зв'язків між цими мовними групами.

Мета. Метою дослідження є вивчення та виявлення особливостей процесів взаємовпливу, асиміляції та розвитку лексичних елементів тюркських і китайської мов.

Методологія. У дослідженні використано лінгвістичний, зіставний та лексико-семантичний методи для аналізу етимологічних пар та фонологічної адаптації між киргизькою та китайською мовами.

Результати. У дослідженні виявлено як подібності, так і відмінності у фонетичній реалізації однокореневих лексем між китайською та тюркськими мовами в межах фонетичної моделі SASYS. Увагу приділено звукооподібницям, наголосам і фонетичним особливостям, встановленню закономірностей у їхній структурі та еволюції. Виявлено явища фонетичних запозичень та адаптації в обох мовах, а також вплив культурно-історичного контексту. Крім того, дослідження підтверджує тенденцію до спрощення звукових структур у деяких тюркських мовах порівняно з більш стійкими фонетичними формами в китайській мові.

Висновки. Аналіз визначає походження різних міжмовних та міжкультурних слів. Однокореневі лексеми, переходячи між китайською та тюркськими мовами, зазнають систематичних фонетичних змін, адаптуючи звукооподіблення та наголос відповідно до фонетичних правил мови-реципієнта. Результати підкреслюють важливість фонетичної моделі SASYS для розуміння фонетичної еволюції та адаптації між цими мовами, підкреслюючи їхні глибокі історичні та культурні зв'язки.

Ключові слова: взаємодія мов; ностратика; етимологічна ідентичність; звукові зміни.