

Ethnosemantic foundations of number names in a cross-border toposystem

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One of the urgent problems of the cross-border toponymic system is the ethnosemantic characteristics of the toponyms of the border regions of Kazakhstan with Russia. This sphere affects the development of important economic and political vectors and, therefore, requires a special analysis. That is why the purpose of this article was to study the problematic aspects of the Kazakh transtoponymic system. The toponymic system of the Northern and Western regions bordering Russia was taken as empirical material for the study. According to the border administrative-regional division, some regions of the country, such as the North Kazakhstan, Pavlodar, Kostanay, West Kazakhstan, Aktobe, Atyrau, and Abai regions, border Russia. The article considered the ethnosemantics of numerical names in toponyms of cross-border regions. In particular, toponyms representing a specific numerical concept; toponyms representing a multi-meaning concept; toponyms representing the concept of minority; toponyms with ordinal meaning; a number of commemorative (dedication) toponyms were analysed. The study also managed to reveal the denotative, abstract, sacred semantic properties of toponyms that accompany the name of the number in these groups. Taking this into account, the results obtained in the article should be used in the course of the study, as well as the formation of new toponyms in the field of the cross-border toponymic system.

Keywords: toponymy, number names, ethnosemantics, regions bordering, economic and political vectors.

1. Introduction¹

There is a wide range of problematic issues related to cross-border Kazakh toponymy. Some of these problematic issues involve names that are associated with numerals. Today, it is relevant to determine

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the peculiarities of toponyms associated with the numerical names of cross-border regions. This is explained by the need to study the meaning and role of numerical vocabulary in the etymology of toponyms, which in turn are closely related to the names of numbers. Taking this into account, it can be stated that this research topic is important in scientific doctrine, as it affects the formulation of names based on the semantic meaning of real numbers.

In addition, when studying toponyms, it is important to remember that their basis is only some groups of numerals. Therefore, the question arises regarding the definition of the most used numerals in the cross-border toposystem. This issue is closely related to the functional features of hundreds and thousands of toponyms (Lytvynska and Stetsyk 2024). Based on the above, it should be noted that the main denotative meaning of numerals is reflected in symbolic and ceremonial concepts. Therefore, it is necessary to investigate the meaning of toponyms based on numerals in the Turkic onomastic space. Therefore, the issue of classification of toponyms according to their lexical-semantic meaning is relevant. Having studied the signs of such differentiation, it will be possible to express the frequency of use of toponyms with the names of numbers in specific categories. In addition, for the correct study of the history of the origin of toponyms, an accurate scientific justification is needed, which to a greater extent opposes folk etymology.

Among Kazakh scientists, this issue is considered from different angles, which allows to reveal it as widely as possible. In particular, Tleubekova *et al.* (2020), in their research, studied sacred numbers contained in phraseology. They managed to establish that the most common such numbers are seven, nine, forty, sixty, thousand. The obtained conclusions should be used when describing the names of numbers in the toposystem, which express a set of geographical objects. In turn, Meirbekov (2021) studied the etymology of toponym composition. As a result, they managed to carry out a comparative analysis of the onomastics of the Kazakh language, in the process of breaking the concept of levels of language structuring. The obtained conclusion should be used to reveal the features of linguocreative concepts of speech, as well as their influence on the toposystem.

Mazzaro and González de Anda (2025) studied the linguistic landscape bordering Mexico and the United States. The authors highlighted the influence of socioeconomic level and border proximity on language visibility by claiming that Spanish is more frequently used in areas with lower economic standing and in certain business contexts. Tektigul *et al.* (2021) managed to characterise numbers from a mythological point of view. In this way, the researchers established a connection between the use of combinations of numbers and their influence on the implementation of a specific activity. In the work, it is expedient to apply such a conclusion in the course of studying the historical formation of the toposystem and the influence of external factors on it. A unique character in the regional toposystem

studied by Yeginbayeva *et al.* (2016). Special attention should be paid to the study of Konyratbayeva *et al.* (2021), which analysed the nature of homonyms. The researchers identified their origins and the principles behind their use in numerical combinations.

Considering the above, the aim of the work was to express the ethnosemantic basis of numerical names in the cross-border toposystem. For this purpose, the following tasks were formed in the study: to classify toponyms by character; determine a list of toponyms denoting a specific numerical concept; explore toponyms reflecting a multi-meaning concept; characterise the main toponyms, the meaning of which is related to the concept of small; reveal toponyms in which ordinal numbers are recorded; to characterise the features of commemorative (commemorative) toponyms.

2. Materials and methods

The study is anchored in the ethnolinguistic and ethnosemantic framework, which believes that linguistic forms, particularly toponyms, represent cultural cognition and ethnic worldviews. This paradigm regards number names incorporated into geographic nomenclature as symbolic indicators of collective memory and ethnocultural perception. This framework aligns with the works of Koishybayev (1985) and Kondybay (2004), who emphasised the interdependence of language, cultural myth, and spatial perception in Turkic toponymy.

A qualitative-quantitative descriptive design that combined statistical, comparative-historical, and ethnolinguistic analysis was used in the study. The cross-border areas of Kazakhstan and Russia were specifically chosen for the study because they reflect the areas of historical and linguistic contact between the Slavic (Russian) and Turkic (Kazakh) cultural-linguistic systems. These areas are perfect for determining the ethnosemantic dynamics of numerical toponyms because of the rich onomastic data produced by this contact environment, which reflects historical and intercultural influences.

The empirical data included toponyms with numerical names gathered from seven administrative regions that border Russia: Aktobe, Atyrau, Abai, West Kazakhstan, North Kazakhstan, Pavlodar, and Kostanay (Figure 1). These were taken from archival sources, onomastic dictionaries, and regional cartography materials. About 30% of the more than 150 toponyms in the entire sample have numerical components. The study aimed to uncover the native semantic and cultural reasoning behind number usage; hence, names with Turkic origins were given preference among this subset (almost 85% of the numerical toponyms). Because they mostly represented colonial or administrative name standards rather than the indigenous ethnosemantic tradition, Russian or hybrid formations were not included in the primary analysis.

Data were collected between 2021 and 2023 through a combination of desk-based archival research and field verification using contemporary regional maps. Each toponym was catalogued with its linguistic components, literal meanings, etymological roots, and the geographical characteristics of the location. The resulting database was structured to allow systematic classification of toponyms according to their semantic function and numerical characteristics. Specifically, the corpus was divided into categories reflecting denotative number concepts (e.g., one, two, three); plural or symbolic meaning (e.g., many, thousand); minority or partial concepts (e.g., half, middle); ordinal expressions (e.g., first, second); memorative names combining number and personal reference (e.g., Seksenbay, Toksanbay). This classification enabled both semantic differentiation and comparative interpretation of number-based toponyms across the studied cross-border regions.

The ethnolinguistic method was used during the research. It was necessary to implement a systematic approach to the study of the research topic, namely the description of a wide range of problems caused by the relationship between language and ethnicity. Thus, the ethnolinguistic method was used to identify the semantic and cultural functions of number names, examining how quantitative expressions correlate with ethnocultural concepts such as unity, duality, abundance, and hierarchy. That scientific tool is complex and involves the involvement of additional approaches. During the research, it was combined with comparative-historical, structural, cognitive-communicative methods. Comparative-historical analysis was applied to trace lexical parallels between Kazakh toponyms and other Turkic languages, supporting diachronic interpretations of the roots and morphological structures of number-based names. Structural and cognitive-communicative analysis was employed to determine the syntactic and morphological patterns through which numerals integrate with geographical terms.

The statistical method was used to compile tables and express the numerical features of individual categories of toponyms. Based on it, the main groups of numerals were studied, and their frequency in the cross-border toposystem was expressed. Also, the statistical method was necessary for the study of word units that semantically represent the concept of quantity and also form a productive layer in the regions of Kazakhstan.

The method of comparison was applied to match different types and groups of toponyms based on their numerical properties. In addition, the comparison was used when studying the map of the regions, on which only three toponyms were placed. Based on this method, it was possible to determine which numerical units are most often found among toponyms, comparing them with each other.

The method of analysis in the study was used in the process of classification of numerical toponyms, namely the study of their features within the Kazakh cross-border region. On the basis of

this method, the article managed to reveal the essence of numerical toponyms, as well as to single out several of their types based on the selected feature, namely, the lexical-semantic meaning. The method of synthesis in scientific work made it possible to determine the meaning and role of numerals among the system of symbolic and ritual concepts. Also, this method made it possible to combine the results obtained in the process of analysing the Turkic onomastic space. The synthesis made it possible to determine the nominative and plural meaning of toponyms.

The method of deduction was necessary in the process of expressing the ethnosemantic properties of numerical names within the general structure of the cross-border toposystem. Taking this into account, the deduction involved the study of specific features of toponyms in the Kazakh cross-border region, based on general understanding and knowledge about toponyms and their formation.

Focusing on cross-border regions provided the opportunity to observe how linguistic borders coincide or diverge from ethnic and cultural ones, thus revealing the persistence of Turkic naming traditions despite political and administrative changes. The goal of reconstructing real ethnosemantic models, which represent indigenous categorisation of space rather than imposed nomenclature, theoretically drove the decision to incorporate exclusively Turkic-origin names. While the use of ethnolinguistic and comparative methods assured coherence with previous onomastic research in the Turkic world, the combination of qualitative and quantitative approaches was crucial to combining empirical confirmation with semantic interpretation.

To enhance reliability, each toponym was cross-checked against multiple sources: the *Dictionary of Land and Water Names of Kazakhstan* (Koishybayev 1985), the *Dialectological Dictionary* (2007), and regional cartographic archives. Etymological analysis and linguistic triangulation were used to settle discrepancies. Nevertheless, constraints arose from the lack of recorded oral etymologies and the unfinished standardisation of local map records, especially for microtoponyms unique to local speech.

3. Results and discussion

Toponyms serve not only as geographical markers but also as reflections of the linguistic, cultural, and historical contexts from which they emerge. As Reszegi (2022) notes in her study of metaphorical toponyms, place names encapsulate the cognitive processes underlying spatial conceptualisation. Beyond simple denotation, they convey historical narratives, economic activities, ethnic interactions, and the physical attributes of a region. This perspective is particularly relevant in the context of the Kazakh-Russian border region, where numerical toponyms function as linguistic artefacts that document sociopolitical, economic, and cultural transformations over time (Newman 2024).

This region embodies a complex sociolinguistic landscape shaped by the legacy of the Soviet period, during which linguistic and cultural hierarchies were formally institutionalised. Although Kazakh was kept as a symbol of ethnic identity, it was frequently limited to internal and rural communication under the USSR, while Russian emerged as the primary language of government, education, and scientific debate. This historical layering produced enduring patterns of bilingualism and code-switching, reflected today in both spoken interaction and the hybrid character of regional toponymy (Jordan 2023; Amelina et al. 2024). Thus, the Kazakh-Russian border zone is a special linguistic and cultural interface where patterns of place naming, semantic transformation, and symbolic representation in the regional toposystem are still shaped by the interplay of two language systems.

The interaction of Kazakh and Russian in place-naming conventions highlights broader sociolinguistic processes, such as language shift, cultural hybridity, and the negotiation of identity (Chachu and Omoniyi 2022; Issakova et al. 2020). The incorporation of numerical elements into toponyms serves as a means of encoding historical and cultural meaning into the spatial landscape, reinforcing the role of language in shaping territorial identity. In order to shape social behaviours beyond simple territorial distinctions, Laine (2021) argues that borders serve as tools for classifying people according to their sense of belonging. In the Kazakh cross-border region, where place names are a reflection of historical, cultural, and political influences, this viewpoint is pertinent to the study of numerical toponyms. It further emphasises how linguistic landscapes in border areas function as indicators of identity and territorial connection.

3.1. Classification of numerical toponyms

In the cross-border toposystem, toponyms primarily feature decimal numbers, with a limited use of larger numbers like hundreds and thousands. Numbers such as thirty, forty, sixty, and eighty are commonly used in combination (e.g., thirty lakes, forty rivers), indicating their partial function in the naming system.

Group of word	Examples	Literal means/Dialect	Area of use
Bir- 'one'	<i>Birsuat</i>	A watering hole/river	Kostanay region, Zhitiqara district
	<i>Birqala</i>	A city/dam	West Kazakhstan region, Zhanibek district

	<i>Birkara</i>	One black/hillock	North Kazakhstan region, Ualikhanov district
<i>Eki- 'two'</i>	<i>Ekioipat</i>	Two plains/settlement	North Kazakhstan region, Zhumabayev district
<i>Ush- 'three'</i>	<i>Ushairyk</i>	Tripartite/river	Pavlodar region, Aktogay district
	<i>Ushzhyngyl</i>	Three combers/hill	Pavlodar region, Aktogay district
	<i>Ushqatty</i>	Area where honeysuckle grows/village	Aktobe region, Aiteke bi district
<i>Tort- 'four'</i>	<i>Tortshegen</i>	Four curbs/wintering	West Kazakhstan region, Kaztalov district
	<i>Tortkol</i>	Four lakes/hill	Abai region, Urzhar district
	<i>Tortai</i>	Four moons/settlement	Pavlodar region, Aktogay district
<i>Bes- 'five'</i>	<i>Beskazoba</i>	Five bars/lake	North Kazakhstan region, Mamlyut district
	<i>Bestentek</i>	Five hellions/wintering	West Kazakhstan region, Kaztalov district
	<i>Bestas</i>	Five stones/village	Aktobe region, Aiteke bi district
	<i>Beskaragay</i>	Five pines/settlement	Abai region, Beskaragay district
<i>Alty- 'six'</i>	<i>Altykayrankol</i>	Six shelf-like lakes	North Kazakhstan region, Zhambyl district
	<i>Altykashar</i>	Six sheds/wintering	West Kazakhstan region, Zhanibek district
<i>Zheti- 'seven'</i>	<i>Zhetikeben</i>	Seven stacks/wintering	West Kazakhstan region, Kaztalov district
	<i>Zhetiaral</i>	Seven islands/settlement	East Kazakhstan region, Tarbagatai district
<i>Segiz- 'eight'</i>	<i>Segizsai</i>	Eight ravines/village	West Kazakhstan region, Shingirlau district
<i>Togyz- 'nine'</i>	<i>Togyzkaragai</i>	Nine pines/wintering	West Kazakhstan region, Kaztalov district

	<i>Togyzbalausa</i>	Nine glazes/settlement	North Kazakhstan region, Mamlyut district
	<i>Togizbulak</i>	Nine springs/lake	Abai region, Urzhar district);
<i>Otyz-</i> ‘thirty’	<i>Otyzkeben</i>	Thirty stacks/wintering	West Kazakhstan region, Kaztalov district
<i>Kyryk-</i> ‘forty’	<i>Kyrykbitok</i>	Forty <i>bitok</i> ² wintering	West Kazakhstan region, Kaztalov district
<i>Alpys-</i> ‘sixty’	<i>Alpyssu</i>	Sixty waters/lake	Pavlodar region, Aktogay district
<i>Seksen-</i> ‘eighty’	<i>Seksenbai</i>	Eighty riches/village	West Kazakhstan region, Kaztalov district
<i>Toksan-</i> ‘ninety’	<i>Toksanbay</i>	Ninety men/wintering	West Kazakhstan region, Kaztalov district
<i>Myn-</i> ‘thousand’	<i>Mynkuduk</i>	Thousand wells/wintering	Abai region, Urzhar district

Table 1. Examples of the use of decimal numbers in Kazakh toponyms.

In the cross-border toponymy, words that represent quantitative concepts also form a significant category (Table 2).

Group of word??	Examples	Literal meaning/Regional variant	Area of use
Single, lonely	<i>Zhalgyzapan</i>	Lonely abandoned well/settlement	Atyrau region, Kurmangazy district
	<i>Zhalgyzkaiyn</i>	Lonely birch/lake, swamp	North Kazakhstan region, Zhambyl district
	<i>Zhangyzkudyk</i>	Lonely well/pasture	West Kazakhstan region; Borili district
Unit half	<i>Zhartykol</i>	Half of lake/lake	North Kazakhstan region, Zhambyl district

² *Bitok* is a Kazakh local or dialectal word, often associated with pastures, herding areas, or livestock enclosures.

Unit double	<i>Kosistek</i>	Double spit/village	Aktobe region., Kargaly district
	<i>Kosshukur</i>	Double pit/lake	Aktobe region, Aiteke bi district
	<i>Koserin</i>	Double lip/desert	Pavlodar region, Aktogay district
	<i>Koszgaryk</i>	Double clove/settlement	North Kazakhstan region, Ualikhanov district
Odd	<i>Taktak</i>	Odd plate/mountain	Aktobe region, Aiteke bi district
Middle	<i>Ortakudyk</i>	Middle well/settlement	North Kazakhstan region, Zhumabayev district
	<i>Ortasha</i>	Middle/lake	East Kazakhstan region, Kurchum district
	<i>Orta Ulasty</i>	Middle/lake	East Kazakhstan region, Tarbagatai district
Many	<i>Koptam</i>	Many tombs/grave	Pavlodar region, Aktogay district
	<i>Koptogai</i>	Many woods/settlement	Atyrau region, Kurmangazy district

Table 2. Using decimal numbers to categorize geographical features in Kazakh toponyms.

Number names in the given cross-border regions are mainly involved in composing complex toponyms. From the map of the region, only three toponyms were encountered in relation to the ordinal numbers (first, second, third). As can be seen, units that mean quantity are more common in toponymy than other words. For example, the toponyms that come with numbers one, two are rarely used comparing to toponyms with words meaning 'single,' 'double,' which are twice as common (Table 3).

Number names		Units representing the concept of quantity	
One/First	(4/1)	Single	(6)
Two/Second	(1/3)	Lonely	(1)
Three/Third	(13/1)	Half	(1)
Four	(7)	Double	(21)
Five	(20)	Odd	(1)
Six	(2)	Middle	(1)
Seven	(2)	Many	(5)
Eight	(1)		
Nine	(3)		
Thirty	(1)		

Forty	(1)		
Sixty	(2)		
Eighty	(1)		
Quarter	(1)		
Thousand	(1)		

Table 3. Indicator of units relating to the number in the cross-border toposystem of Kazakhstan.

This phenomenon is probably due to the fact that people measured, recognised and named the surrounding nature, land and water before calling them with specific numerical names.

3.2. Classification and ethnosemantics of numerical toponyms in the Kazakh cross-border region

In addition to their original denotative meaning, numerals also express symbolic and ritual concepts. In general, in the Turkic onomastic space, it is assumed that numeral-based toponyms give rise mainly to nominative and plural meanings. In the course of sorting the collected empirical materials, searching for etymology, it was noticed that the toponyms related to the numbers had a different lexico-semantic meaning (Saparov *et al.* 2017). The following types of numeral-based toponyms can be distinguished:

- toponyms representing a specific numerical concept;
- toponyms representing a plural concept;
- toponyms representing a minority concept;
- toponyms representing a sequence;
- memorative (dedication) toponyms.

As shown above, the frequency of use of toponyms with the names of numbers in these groups is different (Serikova and Baishukurova 2022).

3.3. Toponyms denoting a specific numerical concept

Toponyms denoting a specific numerical concept are named in order to accurately, clearly indicate the number of toponymic objects in the regions. The semantic vitality of numerical names in Kazakh toponymy has been preserved in large part by mythological and religious traditions. Numbers like three, seven, and nine were not just quantitative indicators in ancient Turkic cosmology; they also represented completion, order, and the cyclical harmony of the universe. Seven and nine, for instance,

represented sacred ideas of plurality and perfection, while three was linked to the tripartite division of the world (sky, earth, and underworld). These mythopoetic connotations influenced how people perceived space in general and were frequently expressed in the names of hills, rivers, and communities, transforming geographic identifiers into manifestations of cosmic beliefs (Bugubayeva *et al.* 2015). As a result of this worldview, numerical lexemes became ingrained in cultural memory and were passed down as stable components of the linguistic environment from one generation to the next.

Numbers like seven, forty, and thousand appear frequently in the Kazakh toponymic system, which is indicative of their deep symbolic meaning in both Islamic and Turkic mythology. The number seven represented cosmic harmony and wholeness in ancient Turkic cosmology, and it was frequently associated with the universe's structure, which was thought to be made up of seven spheres or layers. In contrast, the number forty represented persistence and metamorphosis, reflecting ritual cycles like forty-day cleansing or mourning periods that signify shifts between material and spiritual realms. In oral folklore and mythological stories alike, the number thousand served as an exaggerated symbol of prosperity or eternity, implying unfathomable magnificence (Zhetessova *et al.* 2025; Guliyeva and Kopanitsa 2024). These symbolic values were not replaced by Islam but rather assimilated into a new spiritual framework. Seven came to represent divine creation, forty to represent spiritual discipline and prophetic challenges, and a thousand to represent divine infinity and blessing. As a result, the fact that these numbers are frequently found in toponyms like *Zhetiara* ('Seven Islands'), *Kyrykbitok* ('Forty Bitok'), or *Mynkuduk* ('Thousand Wells') shows how the Kazakh toposystem maintains a synthesis of Islamic numerological meanings and ancient cosmological meanings, incorporating sacred symbolism and collective memory into the landscape.

In this context, numbers like seven, nine, and forty could be seen as components of a cognitive paradigm that Kazakh speakers have historically used to categorise and understand their natural surroundings. These numerals serve as symbolic borders that arrange geographic space in accordance with culturally ingrained ideas of hierarchy, completeness, and holiness rather than representing actual quantities. A sense of balance and plurality is reflected in the recurrence of seven and nine, indicating that the geographical characteristics collected under these numbers were thought to form a whole or have particular meaning within the environment. Likewise, forty functions as a threshold marker, frequently denoting change, separation, or holy distinction. Through this kind of symbolic classification, the Kazakh cross-border toposystem goes beyond empirical enumeration and instead encodes a worldview where numbers function as semiotic classification tools, ranking rivers, hills, and settlements according to their cultural and spiritual associations within the collective mind rather than their physical count.

Birsuat ‘watering hole’ is the name of a river located in the Kostanay region, specifically in the Zhitikara district. The toponym consists of two units: *bir* ‘one,’ and *suat*, which translates to ‘watering hole.’ Contrary to the assumption that there are three components—*bir* ‘one’ + *su* ‘water’ + *at* ‘horse’—the correct interpretation is that *bir* refers to “the very first of the estimated number” (Kul-Muhammed 2011: 121). *Suat* is defined as a ‘cattle watering place of the river, stream’ (Kul-Muhammed 2011: 613). Biyarov (2013: 198) further elaborates on *suat*, stating, “It can range from an ordinary well to the banks of large lakes suitable for watering livestock.” Historically, the Kazakh people, who began animal husbandry in ancient times, utilized every edge of lakes for watering, making it convenient for their livestock. Therefore, the hydronym *Birsuat* likely originated from the concept of a river that serves as the sole convenient watering source for cattle. In the Kazakh language, a ‘watering river’ denotes a river with abundant water, where livestock can be watered in multiple locations.

Zhangizkuduk, or ‘lonely well,’ refers to a pasture in the Borili district of West Kazakhstan. In literary Kazakh, *zhalgyz* means ‘one’ or ‘sole’ (Kul-Muhammed 2011). *Zhangiz*, a colloquial form of *zhalgyz*, arises from the metathesis of /l/ and /n/. This toponym was created to describe a pasture that features a single well, thus relating to a specific quantitative concept.

Ekioipat ‘two plains’ is the name of a settlement in the Zhumabayev district of North Kazakhstan. This name is the only one mentioned in relation to the number two among transboundary regions. In Kazakh, the toponym *oipat* ‘lowland’ in Kazakh carries two meanings:

- a concave flat earth;
- geographical: flat, lowland land lying below sea level.

The first meaning was the basis in the formation of the toponym *Ekioipat* ‘two plains’ (a settlement located between two lowlands).

Kosshukur, or ‘double pit,’ is the name of a river located in the Aktobe region, specifically in the Aiteke Bi district. It has been established that the term ‘double’ is more prevalent than ‘two’ within the toposystem of the transboundary zone. Statistically, the most frequently used quantitative concept in the Kazakh transtosystem is the unit ‘double.’ The toponym containing ‘double’ predominantly signifies the exact number ‘two’ or ‘twin.’ This is supported by the nominative definition found in the dictionary of land and water names. Therefore, it can be concluded that the hydronym *Kosshukur* reflects this primary numerical significance of double.

Kostanay is the center of the Kostanay region and the name of the city. There are various opinions regarding the etymology and structure of the toponym *Kostanay*. In her analysis of the toponyms in the Kostanay region, Bektasova (1986: 63) notes: “There are various legends about the origin of the

name Kostanay.”³ One such story recounts the following: “Once upon a time, a poor man had twin daughters named Kos and Tanay. He worked from dawn until dusk in a rich man’s household to support his family. One day, a dispute arose between the rich man and the poor man over land. The wealthy man, asserting his dominance, seized the poor man’s land and expelled him from the area. The destitute man traveled along the Tobol River and settled in a ravine. Tragically, his two beautiful daughters, Kos and Tanai, died and were buried by the banks of the Tobol River. Passersby would stop by the grave of these two girls and sometimes linger in the area. Thus, the place where the girls were buried became known as Kostanay” (Bektasova 1986: 63).

The author presents her conclusion regarding the etymology of Kostanay. From a linguistic standpoint, the root of the word appears to trace back to ancient origins. The name is believed to consist of two components: *kos* and *tanay*. *Tanay* may refer to an early dynasty, while *kos* could mean ‘the shepherd’s tent in the field.’ Thus, *Kostanay* can be interpreted as ‘the settlement of the Kazakh dynasty of Tanay’ (Bektasova 1986).

Bektasova (1986) proposes a hypothesis suggesting that the toponym *Kostanay* has two parts: the Turkic *kos/kus*, meaning ‘double’ or ‘pair,’ and *tanay/tanays*, as noted in “The History of Nine Books” (Herodotus 1827: 534). The names of rivers such as Don (Dan), Dunay (Danube) (Dan+Moon), Dniipro (Dan+*apr*), and Dnister (Dan+*astr*) derive from Iranian *danu*, meaning ‘river.’ Meirbekov (2021) notes that the transition from *dan* to *don* occurred no earlier than the XIII-XIV century B.C. Numerous toponyms featuring the Turkic component for ‘double’ (*kos, kus*) exist in the Kostanay region, including Kosagash, Kosoba, and Koskol. There is also a phonetic variant, *Danay* ‘Danube,’ related to the second component, *tanay*. Therefore, *Kostanay* can be interpreted as ‘parallel river,’ especially considering that the Tobol and Ubagan rivers flow through this area (Bektasova 1986).

Biyarov (2013 PAGE) examined typical Kazakh toponyms, stating: “The oikonym Kostanay consists of the parts *Kos* (Double) + *Tana* (Button) + *Ai* (Moon). This likely means ‘clay, swamp, or stagnant water as small as a button.’ It is evident that *Kostanay* functioned as a microtoponym before it became the name of the city.”

In conclusion, the origin of the toponym cannot be asserted without scientific backing. While the significance of folk etymology is acknowledged, it does not fully elucidate the toponym *Kostanay*. A comparison of Bektasova’s analyses (1986; 1989) reveals two distinct perspectives: the first study (Bektasova 1986) offers a more in-depth examination with scientific conclusions, while the second (Bektasova 1989) presents a different viewpoint.

³ Here and below the English translation is by the article’s authors.

Based on the second and third analyses, it is evident that the term *kos* embodies the numerical concepts of ‘double, two, lying side by side.’ Given the diversity of views regarding the toponym Tanay, it requires further examination from both structural and semantic perspectives (Saparov *et al.* 2018).

Kosistek ‘double spit’ refers to a river in the Aktobe region, specifically in the Kargaly district. This hydronym consists of two components: *kos* ‘double’ and *istek* ‘spit.’ It can be argued that ‘double’ serves as a complete synonym for the numeral two. The second part of the hydronym supports this by representing a tangible numerical concept. Researchers and dictionaries present variations of the second part of the hydronym, including *kosyestek* and *kosistek*, which appear side by side. Additionally, the name *Estekbay* is relevant in the Kazakh language; *Istak* is an ancient name for the Bashkirs, combined with *bay*, meaning ‘honorary man’ or ‘rich’ (Zhanuzaq 2010: 300). However, the Kazakh word “Estek” is not commonly used as a noun.

In literary Kazakh, *istik* is defined as ‘iron with a pointed tip’ (Kul-Muhammed 2011: 298). According to Biyarov (2012), the toponym *Istek* signifies ‘fork’ in the Aktobe dialect. These two definitions indicate that *istik* and *istek* are semantically related, if not identical. Moreover, in the People’s Republic of China, *istek* is found in dialectal phrases, including expressions like ‘pin prick,’ ‘no spit,’ or ‘breastplate burn’ (Dialectological Dictionary 2007). It may be more advantageous to focus on the interpretation of *ist(i)ek*. This term refers to a tool used in livestock and agriculture with a pointed tip. Thus, *Kosist(i)ek* serves as a hydronym denoting two rivers that taper like forks.

Ushairyk ‘tripartite’ is the name of a river in the Pavlodar region, specifically in the Aktogay district. The term *ush* ‘three’ did not originally denote a numerical value. Kondybay (2004) provides insight into its etymology, stating that the Dei-Turkic original form of *ush* is *unt/ungt*. Variants are *unt* – *ush*, *ingt* – *ish*, *ent* – *esh*, and *ant* – *nt*. These variations contribute to a broader range of meanings. It is suggested that the form *ush* < *unt* originally referred to the point of intersection of the central symbol of the Earth and the symbol of the world. Thus, the term *ush* was initially not a numerical label; it later evolved into a numerical indicator during subsequent stages of language development.

Thus, *ushairyk* means ‘the central point which integrates three natural belongings’ (Kondybay 2004: 112). Initially, the concept of three emerged from marking this central intersection; over time, it evolved to represent quantity within toponyms.

Koishybayev (1985: 231) notes that the sema of *ush* in certain toponyms conveys the ancient Turkish meaning related to river-water, *uğüz* (*uguz* > *uyuz* > *uyus*), and is regarded as a form for ‘three.’ According to Zhanuzaq (2008; 2010), in toponyms, *ush* is considered to have numerical significance. In the hydronym *Ushairyk*, the word *ush* ‘three’ may indeed reflect this numerical meaning.

Ayryk means ‘the land that divides’ (Kul-Muhammed 2011). It is derived from *aiyr*, which comes from a verb meaning ‘to divide one whole into two parts, splitting something into two parts.’ Kooshelev (2018) interprets *aiyr* (*airyk*) in relation to *ai* ‘moon:’ *aiyr* – *aiyar* from *ai* – *aδ* – *ad* – *at* – *ai* – *aδ* – *at*, AGAIN?? all of which carry the ancient meaning of ‘to divide, split in two.’

In its verb form *a(r)*, the word *aiyr* [*<ai--(y)r*] has phraseological forms such as *ayra* (*<aiyr+a*) *dyush*, ‘to separate,’ and *aiyra sal* ‘to disunite’ in Turkic and Kazakh. Common derivatives formed from *aiyr*—with the affixes *-y*, *-(y)k*, *-ma*, *-airy*, *airyk/adruk*, and *aiyrma*—are based on its aforementioned meaning (Koshelev 2018). Thus, the connection among the words *ay* – *(y)r* → *aiyr* – *(y)k* → *airyk* is established

Biyarov’s (2012: 71) interpretation of *ayryk* in toponymy aligns with this understanding: “In toponymy, Turkic *aiyr* is a geographical term that refers to the ‘head of a mountain, fork of road, arm of river.’” The term *airyk* (*aiyr+yk*) is used to describe a small branch of a river (Biyarov 2013). According to Konkashpayev’s (1974: 156) analysis, “*ayryk* (divider) is a narrow bed of river that separates one valley from another.” Therefore, the hydronym *Ushairyk* ‘tripartite’ appears to be derived from a river that flows into three tributaries, separated into three small parts.

Bestas ‘five stones’ is the name of a village in the Aktobe region, Aiteke Bi district. In Kazakh toponymy, the numeral *bes* (‘five’) may either retain its literal quantitative meaning or function as an indicator of multiplicity. Zhanuzaq (2008) emphasises that in many Kazakh place names the component *bes* preserves its primary numerical sense. In the case of this *oikonym*, the name most likely refers to a concentration of stones in the surrounding area, which motivated the designation of the settlement.

Altykairankol ‘six shelfy lakes’ is the name of a lake in Zhambyl district, North Kazakhstan. This hydronym is a compound of the elements *alty* ‘six’ + *kayran* ‘shelf’ + *kol* ‘lake.’ In Kazakh, *alty* carries a sacral meaning that is preserved in its phraseological and paremiological layers. According to Nakhanova (2015) in her dictionary of ancient Turkish, *alty* is derived from the root *alt*, meaning ‘bottom.’ For example, *Altykarasu* can be broken down into *alt* ‘bottom’ + *karasu* ‘stretch,’ referring to the bottom of the stretch, while *Altykyz* combines *alt* + *kyz* ‘girl,’ but can also be connected to *kyr* ‘ridge,’ indicating a ‘low ridge.’

The toponym *Altykayrankol* derives its meaning from the concept of quantity, which can be dissected through its component terms. The word *kairan* refers to a ‘flat shelf of the river, lake, and sea’ (Kul-Muhammed 2011: 372). Both *Kairan* and *Kairankol* are classified within the field of onomastics. *Kairan* originates from the ancient Turkish word *kaiyr*, meaning ‘sand.’ Consequently, *kaiyr+an* translates as ‘sandstone land,’ and gradually evolved to mean ‘shallow water’ or ‘crossing’ (Biyarov 2013). This shift in meaning is also evident in the toponym *Kairankol* ‘shallow lake’ (Konyratbayeva *et*

al. 2021). Therefore, the term refers specifically to six shallow lakes that are in close proximity to one another.

Within the framework of the Kazakh cross-border toposystem, oronyms—names for elevated landforms such as mountains, hills, or ridges—form a smaller yet conceptually important segment of the system (Doszhan 2023, Brait et al. 2025).

Although less frequent than hydronyms or oikonyms, these oronyms illustrate how the naming of topographical features follows similar symbolic and numerical logic. For example, *Bestas* ‘Five Stones’ and *Tortkoltau* ‘Four Hills’ illustrate how numerical elements categorize rocky or mountainous elevations based on symbolic grouping or completeness. The numbers in these names serve as both descriptors and markers of cosmological order: in Turkic mythology, the number five signifies wholeness and protective balance, while four typically denotes geographic stability and the cardinal directions. These instances demonstrate that, although relatively rare, number-based oronyms possess significant semantic value, transforming the physical landscape into a repository of cultural memory and religious hierarchy.

3.4. Toponyms representing the plural concept

In the toposystem, many number names express the plurality of geographical objects, rather than the specific numerical (denotative) meaning. Among the numbers, the units seven, nine, forty, sixty, thousand, many are the most often. “The order and meaning of these numbers in the composition of the toponym are combined with the regularity of phraseological expressions in Kazakh speech or language. The names that come with numbers in this group, in their character, in any language cannot reflect the exact number name but only have a plural sign” (Koishybayev 1985: 186).

Otyzkeben ‘thirty stacks’ is the name of the wintering in Kaztalov district, West Kazakhstan region. In the composition of the oikonym *otyz* ‘thirty’ is used not for calculation purposes, but in a general quantitative sense.

Otyzkeben (‘thirty stacks’) is the name of a wintering settlement in the Kaztalov district of the West Kazakhstan region. In this oikonym, the numeral *otyz* (‘thirty’) is not used in its exact counting function but rather conveys a general quantitative meaning. The second component, *keben*, represents a regional dialectal feature. According to the Dialectological Dictionary (2007), *keben* denotes hay dumps in the Atyrau and West Kazakhstan regions, while in the Kyzylorda region it refers to hay piles weighing approximately five to six tons. Hence, *Otyzkeben* is an oikonym like *Shomala*, which means settlement, located near piles (*shom shom*) of hay. There are also names like *zhetikeben* and *togyzkeben* in the Kazakh transtoposystem.

Alpyssu ‘sixty waters’ is the name of a lake located in the Pavlodar region, Aktogay district. In the study of toponymy, it has been noted that terms like ‘hundreds’ and ‘thousands’ often express plurality rather than serve as precise numerical indicators. This suggests that the Kazakh people did not aim to communicate a specific large quantity when naming geographical features. Instead, their intention likely was to highlight a unique characteristic of the particular object and to convey the distinct identity of that region. Thus, in the hydronym *Alpyssu*, the term ‘sixty’ means that the lake is fed by numerous sources.

Koptam ‘many tombs’ is the name of a cemetery in the same Pavlodar region, Aktogay district. Within the Kazakh toposystem, the term ‘many’ conveys its fundamental denotative meaning of ‘abundant’ or ‘significant.’

This interpretation also applies to the necronym *Koptam*. The second part of the name, *tam* ‘tomb,’ holds various meanings within the nuances of the local language (Dialectological dictionary 2007):

- a house made of handmade clay, brick (mostly in the southern regions);
- a grave, a cemetery (in the Western Regions);
- many, a lot of (in the Kyzylorda region).

Moreover, in the dictionary of Konkashpayev, the unit *tam* in the toponym *Kostam* is registered as having the meaning of ‘grave construction’ (Konyratbayeva *et al.* 2021). Then it can be said that the word *tam* in the necronym *Koptam* means grave and means that there are many tombs in that region.

3.5. Toponyms denoting the concepts of small

It is observed that the number names in onomastic spaces, along with the expression of plural concepts, also participate in the interpretation of a small, small-sized character of a geographical object. Among them are *ush* (three), *bes* (five) number names and *zharty* (half), *orta* (middle) names that express the concept of quantity. The concepts of numerals *ush* (three), *bes* (five) as small, few are somewhat preserved in phraseology. E.g., *ush kundik pani* ‘three-day world’ (i.e. ‘short life’), *bes kun zhalgan* ‘five days fake’ (i.e. ‘little time’). Toponyms that come with *zharty* ‘half,’ *orta* ‘middle,’ numerical concepts are few in the Kazakh cross-border toposystem.

Zhartykol (‘half of lake’) is the name of a lake in Zhambyl District, North Kazakhstan region. A hydronym is formed by the union of words. *Zharty* ‘half’ + *kol* ‘lake.’ In the ancient Turkic language *jartim* ‘a half, part,’ *bir jartim bodun* ‘one part, one part of the people’ (Borovkova *et al.* 2016). In the modern Kazakh language ‘half, half part of the whole’ (Kul-Muhammed 2011). In toponymy it is

involved in the naming of ‘incomplete, half objects’ (Biyarov 2013). That is, it may represent the shape of a lake that became small, or it may describe a lake that has been divided in two.

Ortakudyk ‘middle well’ is the name of a settlement in Zhumabayev district, North Kazakhstan region. It is an *oikonym* formed from the union of words *orta* ‘medium’ + *kudyk* ‘well.’ The word *orta* ‘middle’ is found in all the Turkic languages; as to its different meanings, they are listed by Koshelev (2018). A few of them are:

1. ‘Middle’ in all the Turkic languages, except Uigur;
2. ‘interval’ in Karakalpak, Kbal, Khak;
3. ‘Wednesday’ in Turkish and Azeri;
4. ‘place of activity’ in Turkish;
5. ‘center’ in Kazakh.

The common meaning across the Turkic languages refers to the concept of ‘middle’ or ‘half.’ In modern Kazakh, this notion is expressed by the lexical unit *orta*, which functions as an attributive modifier in compound place names. According to Kul-Muhammed (2011), its semantic range includes the idea of something being ‘incomplete, not reaching a certain size,’ or ‘not full.’ In this sense, the term denotes a reduced or intermediate quantitative state of an object. Konkashpayev (1974) records the toponym *Ortakuduk*, which translates as ‘middle well.’ The *oikonym* *Ortakudyk* thus reflects the idea of a well with a reduced or intermediate water level.

3.6. Toponyms containing ordinal numbers

In the Kazakh cross-border toposystem, ordinal nouns are found, although they are infrequent: *Birinshi* ‘First’ (a wintering village, West Kazakhstan region, Zhanibek district), *Ekinshi* ‘Second’ (a swamp area, North Kazakhstan region, Kyzylzhar district), *Ekinshi Karabie* ‘Second black mare’ (a swamp area, North Kazakhstan region, Zhumabayev district), *Ushinshi* ‘Third’ (a swamp area, North Kazakhstan region, Zhumabayev district).

In general, the use of ordinal numbers in toponymy is a tradition that exists in the onomastic world space (Raiym kyzy 2022, Hoff and Barboza 2025). This tradition is particularly active in the process of nominating street names in the United States, and even called an ‘American principle.’ The onomastic map of the United States is mostly numbered. “Most of the streets that lie horizontally have special numbers. Such a systematic increase in street names from bottom to top has a positive effect on the movement and orientation of people. For example, in order to reach street No. 201, where the Indiana University School of Education (School of Education) is located in Bloomington, walking along

a numbered street allows to quickly navigate and find the street” (Konyratbayeva and Sagadieva 2018). In the Kazakh onomastic space, the designation of an ordinal number along a geographical object took place during the Soviet era. “There is a tendency to sometimes use an ordinal number, marking homogeneous natural objects, settlements, when the name is missing in the toponym formation” (Biyarov 2013).

Toponyms of ordinal numbers in the Kazakh cross-border toposystem indicate the order of geographical objects in the region. To exemplify this, an analysis of the onyms *Ekinshi* (second) and *Ushinshi* (third) in the North Kazakhstan region is given below.

1. *Ekinshi* ‘second:’ the name of the swamp in the Kyzylzhar District of the North Kazakhstan region *eki* ‘two’ + *-(i)nshi* (an affix for forming an ordinal number). It does not participate in the expression of the exact number of objects but shows the sequence.
2. *Ushinshi* ‘third’: the name of the swamp in Zhumabayev district, North Kazakhstan region, from *ush* ‘three’ + *-(i)nshi*. In the Northern region, there are many swampy and wet places. Onyms third and second were created out of a series of swampy places.

3.7. Memorative (dedication) toponyms

‘Memorative’—from a Indo-European root *men-/mon-* meaning ‘thinking’ and later in Latin as *memor*—is a concept used in the meaning of ‘memory, keep in mind, not forget.’ The purpose of memorative toponyms is to name a particular geographical object with the names of a person (honoured, reputable people’s names or for superstitious reasons) related to that region. The layer of memorative toponyms, including anthroponyms, is particularly widespread in the Turkic toposystem (Bayekeyeva *et al.* 2021).

The Kazakh cross-border toposystem is dominated by the activity of memorative names (Kongyratbay 2023, Turdubayeva 2024). This phenomenon is a special characteristic of the Turkic toponymy in general. There is a process of transonymisation in the memorative toponyms, changing from a specific human name (anthroponym) to a land and water name (anthropotoponym). In the Kazakh onomastic space, numbers also take part in this process. Such types of transtoposystem as *Alpysbay* ‘Sixty men’ and the following can be found in topography:

1. *Seksenbay* ‘Eighty men:’ the name of a village in the West Kazakhstan region, Kaztalov District. In the Kazakh tradition, it can be said that there are two different ways of forming this anthroponym: most often this name is given to a child born when the father reaches the age of eighty; the name is given to the baby from a superstition to have a long life. Over time, the name was given to the village in honour of the man (Zhanuzaq 2010).

2. *Toksanbay* ‘Ninety men:’ the name of the wintering in the West Kazakhstan region, Kaztalov district. It is a named used for a ‘baby was born when his father was ninety years old, along with a wish to a child to live ninety years’ (Zhanuzaq 2010). The reason for the transition to toponym is the same as with the name *Seksenbay*.

4. Conclusions

In conclusion, the Kazakh cross-border toposystem has a rich layer of number names. Most of them are in the names of settlements (oikonyms), lakes, swamps (hydronyms), rare mountains (oronyms), graves (necronyms). In other words, the first part of the onyms, which led to the creation of a complex toponym, was formed from the names of numbers in the Kazakh language, and the second part was formed mainly from lexical units, such as watering hole, well, lake, water, shelf, watershed, basin, lowland, ravine, grave. Any of the complex toponyms associated with the names of numbers contributes to the description of the natural and geographical features of the northern, western and eastern borders of Kazakhstan.

In addition, the study established that the differentiation of various empirical materials involved the selection of toponyms associated with numbers. As a result, all of them are characterised by different lexical-semantic meanings. Also, in the study, it was possible to single out several types of toponyms, namely, those that describe a certain number; reveal a multi-meaning concept; explore the concept of minority; characterise the sequence. Taking this into account, it should be noted that most of the names of numbers considered in the work do not reveal a numerical value but rather a multiplicity of geographical objects.

On the basis of the analysis carried out in the research, it was established that in the Kazakh cross-border toposystem, commemorative names prevailed. This conclusion was obtained with consideration of the peculiarities of Turkic toponymy, in which the process of transonymisation is implemented from a specific name of a person to the name of an object. Therefore, in future scientific works, it is expedient to study the issues related to the dynamics of the formation of new numerical names in the modern cross-border Kazakh toposystem.

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