PRINT: ISSN 0972-0073 ONLINE: ISSN 2456-6802
Anthropologist, 19(2): 557-564 (2015)
DOI: 10.31901/24566802.2015/19.02.26

Time-Space Conceptualization and Numerical Ontology in Kazakh-Turkic Culture

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KEYWORDS Twelve Year Cyclic System. Central Asian Ethnography. Turkic Studies. Oriental Studies.

ABSTRACT Time and space concepts are one of the significant categories in cultural anthropology. Analysis of these concepts may help elucidate a culture's worldview. In this paper the authors demonstrate that the peculiar usage of numbers within a culture form an integral part of that culture's perception of the world. In order to arrive at this conclusion, the authors considered Turkic methods of observing calendrical time – including cyclic systems within their calendar – and space-time understanding as the background to traditional Kazakh culture.

INTRODUCTION

Categories of space and time are one of the main objects of consideration with respect to *a priori* concepts in cultural philosophical researches because they create foundational features of worldview for the entire culture. "The origins of the abstract concepts of space, time, and number are longstanding topics of study, from the dawn of philosophy and experimental psychology to classical developmental psychology and modern cognitive science. Kant argued that representations of number, space, and time provide "a priori" intuitions and concepts that precede and structure all experience" (Dolores 2014). Understanding the space and time concepts of a culture provides opportunity to comprehend significant concepts and beliefs peculiar to that culture, since in each culture these concepts do not correspond to standardized physical measure units of seconds and meters. Each culture identifies its time and space understanding in accordance with its particular worldview features, cultural values, familiarization with the space, economy type, geographical features and the like. From the "New Era" philosophy period philosophers started reconsidering these concepts from a new perspective. "In the Kantian transcendental system time and space rose to the level of *a priori* forms or worldview; in dialectical materialism space and time were considered as general forms of material existence; by contrast, in the traditional Kazakh worldview time and space were perceived as forming part of existence" (Anasova 2006). Identification of time and space is equal to identification of your own place in the system of the universe. Hence it reveals a cultural understanding of the way the world is constructed. The construction itself is based on certain relations in space and time. These relations are usually represented by numbers. Therefore categories of time, space, and numbers are intimately interrelated. "Numerical ontological features are always identified with space and time" (Gabitov 2012: 97). Analysis of time and space were pre-conditioned with attempts to reveal the numerical relation of the universe. Underlying each culture's varying conceptualization of time and space Spengler wrote: "The 'visual' world is the totality of light-resistances, since vision depends on the presence of radiated or reflected light. The Greeks took their stand on this and stayed there. It is the Western world-feeling that has produced the idea of a limitless universe of space — a space of infinite star-systems and distances that far transcends all optical possibilities — and this was a creation of the inner vision, incapable of all actualization through the eye, and, even as an idea, alien to and unachievable by the men of a differently-disposed Culture (Spengler 1926: 171-172). According to Spengler, for Greek people it is unique to comprehend the world in geometrical forms. They perceived the world in terms of objects which can be seen and which surround them. They did not have an understanding of infinite and extended space. It is known that the Greeks did not have the word 'space' as it is now perceived. Crump (1990: 81) also writes: "The conception of the conversion of time is not a human

universal, but varies greatly between different cultures". Hence the essence of this paper is concerned with identifying the categories of conceptualization of time and space in Kazakh culture.

OBSERVATIONS AND DISCUSSION

These concepts were widely investigated by the well-known Kazakh scholars Seydimbek (1996, 1997), Gabitov (2012), Ayazbekova (1999), Anasova (2006) and others. In the textbook titled *Philosophy* (Gabitov 2012: 96), the interrelation of numerical ontology with time and space categories are described as follows: "The regular movement of the Kazakh people across the steppe led to their comprehension of the concept of space. This is because they had to move from one place to the other crossing over thousand kilometers, lasting from several days to several months. This lifestyle led them to their understanding of the concept of space." In addition, all scholars who have studied Kazakh culture have highlighted that for Kazakh culture it is peculiar to perceive the universe in the form of isolated circles with the dot in the very middle of these circles. Jeteyeva and Dzhelbuldin (2014) described types of calendar systems used in traditional Kazakh culture.

As mentioned, it was peculiar for the Greeks to understand the universe in geometrical forms, in relation to the objects which surrounded them. Their understanding of time, likewise, paid attention to the present tense. For them, linear and chronological-historical time order is not as important as in Western culture. In Western conceptions of time and space, it is peculiar to perceive the universe in terms of linear and infinitely expanding dynamical movement. Future tense carries greater importance than other tenses. Since future has domination over other tenses, it is important to organize your present. Then you will be able to organize your future properly.

As noted, Kazakh and Turkic world perceptions can be given in the form of isolated circles with the dot in the very middle of these circles. The circles do not continue into each other as spirals, but are isolated from each other constructing one level of the whole system. Ayazbekova (1999: 114) described the nomadic understanding of time and space: "The life cycles of the steppe nomads are described in terms of transfromation from one time-space to another time-space form via special rituals and ceremonies. These cyclical periods of transformation were strictly fixed and their corresponding ceremonies of great importance." Weller (2003: 206) in his paper on the Kazakh custom of funerary memorials wrote: "According to data about Central Asia, the nations in Central Asia conducted memorials on the 1st, 3rd, 4th, 7th, 9th, 10th, 30th and 40th days and after a year." Analysing historical data and other religious ceremonies which may have influenced Turkic culture, he concludes that memorial meal cycle of Central Asia had roots in its own soil, rather than being adopted from other religions. Hence this again proves the importance of cyclic periods in the Turkic worldview. If for Greeks the present was important, and for Western people the future, for nomads past time had great significance. The dot in the centre of the circles is the symbol of the point of origins. For a nomad, happiness came through being in close contact with this point of origins without losing their connection to it. If for "sedentary people there was an understanding that everything new is better, for a nomad the life motto was "the older and the more ancient is more trustworthy, reliable and safe" (Nurzhanov 2003: 50). As such we may conclude that the time and space orientation of the steppe nomads significantly differed from contemporary perception.

Space Conception Features in Kazakh Culture

In Kazakh culture both time and space were considered as dynamic, changing phenomena. "Due to their nomadic lifestyle, genealogical time was also connected with space. This is seen, for example, in the following phrases which consider time and space simultaneously: "When there was as commemoration of Saginay in South" *(Arkada Saginaydin asi bolganda)*, "In the times when rich man Medeu's fame was known to all Zhetisu" (*Zhetisuga danki zhailgan Medeu baidin tusinda)*, "In the times when Mangistau's seven men were the main authorities" *(Mangiztaudin zheti kaikisi serilik kurgan zamanda)* and others (Seydimbek 1996: 6). The perception of time and space in this manner expresses general comprehension of number usage. If, then, for Western culture it is typical to accept time as linear and directed toward the future, with chronological and numerical order arranged to suit this linear system, for steppe nomads, infinite numeracy is not peculiar due to their cyclic

worldview. Of course, this does not mean that nomads did not have an understanding of chronology or a perception of historical time. They were familiar with historical time, but did not feel compelled to employ it. In fact, chronological time was used only amongst some authoritative group of people when necessary for administrative purposes. But the majority of nomadic peoples used cyclic time and space and mushel age cycles according to their native worldview.

In addition to that, measuring units also did not require the use of numbers. Contemporary measurement units to measure distance and weight are the two universal systems, metric and (British) imperial. Before adoption of these systems, however, nomads had their own standard units for measuring time and other things. Those standards were established according to the nomadic way of life, economy, and materials used in everyday life. Their standardization was in the fact that these measuring units were understandable for all nomads spread across steppe territory. For example, the following phrases were understandable for any steppe nomad: "place where you can mount a horse" *(at shaptirim zher)*, "place equal to two migrations" *(eki kosh zher)*, "place where you can get by spending one night in your way" *(ara konip zhetetin zher)* and so on.

Likewise, the concept of space for the steppe nomads was related to their seasonal migrations. Nomads had to change their place of living four times throughout the four seasons of the year with the measuring unit for space calculated according to the speed and distance a horse could travel. Hence when a nomad used phrases for measuring space within his speech everyone understood that he used the horse's riding speed as a measuring unit, even if, in contrast to the phrases above, he did not mention the horse explicitly in his speech. For example, "place where you can get in one day" *(bir kunshilik zher)*, place where you can get after one night stay on your way *(bir konip zheter)*. Consequently in Kazakh culture the conception of space was accepted in relation to the horizon and the distance one could travel on a horse. Getting to the horizon requires movement, movement requires time. Therefore getting to the horizon (space) was related to the passing of time. This means the steppe nomadic perception of time-space was converse to the Greek understanding of static geometrical time and space. In the Greek perception space was accepted in static immobilized form. Because of this, time was considered separately from space. Due to peculiarities of the steppe nomadic way of life, both these categories were intimately interrelated as dynamic phenomena. Such dynamic phenomena require numerical relation. Understanding of the essence of the formula S=vt was pre-conditioned with the survival of the nomad in this wide space. "S" in this formula accords to the space concept of a nomad. "V" accords to a horse's ride speed, whereas "t" accords to the time of sunrise and sunset. Considering both categories unitarily required unique measuring units. But unlike contemporary methods of measurement, space was measured according to the speed of a horse, not by the metrical or imperial system, and thus did not require the usage of numbers. Time, however, was measured with the number of days and required the employment of numbers.

Time Conception Features and Calendar Systems Used in Kazakh Culture

The category of time is intimately interrelated with space, but it requires individual analysis as well, because time can be grouped into several types. All these types are related with numbers. Therefore analysis of the time category makes it possible to understand numerical ontology. Since the function of the category of time is to systematize a person's life, it covers a wide range of issues, such as dividing a person's life and post-mortem periods, awareness of historical time, identification of fragmentary time, features of planning household activities, and so on. All of these concepts in traditional culture were different from contemporary standard forms. They were not taught according to school programs, but were established as the result of long historical everyday necessities. Hence for cultural anthropologists, understanding the system of establishment of these elements is of high importance.

Analysis of data about ancient Turkic methods of marking the calendar showed that the oldest data on Turkic methods of observing chronology was given in the work of Bichurin. As such, Bichurin (1851), thus regarded as one of the initial researchers of the Turkic ethnos, recorded the following data about the proto-Turkic ethnic group known as Hunnas: "In the definite day of the first month of the new year Hunnas

annually gather in the horde of the Chanyui, the ruler of Hunnas. In the fifth month they gather in the mount Lun-Chi in order to make a sacrifice for their ancestors. They divide the month into *Sui* and *Si*. They plan all their activities according to the location of the moon and stars. When the moon is full, they go into battle. When the moon wanes, they retreat (p. 16). According to this data, it can be concluded that the nomadic Hunnas used the month to keep calendar. It is noteworthy that the Turkic people believed that the Sun was born and died daily so that the Sun which appeared on any given new day was not the same Sun which had appeared on any previous days. So when they say that two suns had passed *(eki kun otti)*, they meant that two different suns passed their life. There was no understanding of a 24-hour period. The counting of days was conducted according to the number of day-times. Night did not have much significance. Nights were only highlighted where there was necessity to point to a definite event which happened at night time.

The other information concerning the Turkic calendar has been analyzed recently by Kljashtorny (2006) on the basis of the Orkhon inscriptions. The first thing which was noticed by scholars in this stele was the chronology system consisting of 12 animals. It is noted in the inscription that the year of rabbit accords with the 571st year. It is an interesting fact that in later inscriptions dating back to the 8th century this same system was used in a more advanced way, noting the exact month and day of the event. This type of calendar had official governmental status and consisted of twelve animals. The prominent medieval scholar al-Biruni thoroughly investigated the various types of chronologies in use among multiple nations, not only those in Central Asia, but all other cultures with which he was able to familiarize himself. Although he himself did not speak in a Turkic dialect and was not so familiar with Turkic languages, he offered important details related to the names of Turkic months and years. He gave a table with several lists, including one without any comments. The list without comments accords with the name of the animals in the 12-year cyclic system: *Sijkan* – Mouse, *Od* – Ox, *Pars* – Tiger, Tafshikhan - Rabbit, Lu – Snail, Yylan – Snake, Yont - Horse, Kui - Sheep, Pechin – Monkey, Taghuk – Hen, It – dog, Tunguz – Swine (al-Biruni 1983: 83). This list, recorded in the 11th century before Mahmud Kashgari's work, corresponds perfectly to the names of the animals still used today. They probably refereed to dates in terms such as 'the first month of the year of the monkey', 'the third month in the year of the horse, and so on. The same type of calendar was also mentioned in the work of Mahmud al-Kashgari, *Diwanu i-Lugat at-Turk* (Kazakh translation 1998-Arabic *Compendium of the Turkic Languages*) which was likewise written in the 11th century, and in the work of Tileukabiluli the well-known Kazakh traditional healer who lived in 15th century (Kozhalymov 2010). He described these twelve animals in this order: agile mouse, noble cow, horrendous tiger, timid hare, spry snake, jumper horse, tortuous snail, shepherd sheep, monkey-monkey, barking dog, screaming hen, grunting swine (p. 35). In this system, one animal permissible to eat is followed by one forbidden in alternating turn. This means that the Turkic people used a cyclic calendar based on the sun for a year, which was *zhil* or *iil*, and a lunar calendar for the month, *'ai'* (which means the moon). This type of calendar was related to a person's age as well. Each twelve years of a person's age was titled as one *mushel* age and was believed to have specific features in each *mushel* period. In recent times, after the Gregorian calendar was adopted, people learned, according to Begmanov (2010: 123), how to express years according to twelve-year chronicle system in the following way:

The year of your birth by Gregorian calendar should be divided by 12. If no remainder is left, then you are born in the year of monkey. If there is a remainder, the remainders accord to the following order: if a remainder of one, it is the year of the hen, two is the dog, three is the swine, four is the mouse, five is the cow, six the tiger, seven the hare, eight the snail, nine the snake, ten the horse, and eleven the sheep. For example, 1961:12=163, with a remainder of five. A remainder of five is the year of the cow.

In addition, it was mentioned in a Chinese source that during reign of Sui (581-618 AD), in the sixth year of the Emperor Kai Huan, in the first month, in 7th day of Gen, the Chinese calendar was spread among the Turks. It was a Chinese tradition that Chinese emperors gave their calendar and princess as gifts to the ruler when they extended their power to contiguous countries. So it means that the Turkic people used a 12-year cyclic calendar in parallel with the Chinese calendar. Bazin (1986) stated that the Turkic

people adopted the Chinese calendar between the sixth to eighth centuries. The Chinese calendar had some similarities with the traditional Turkic chronological method. They both divided a month into two parts and they both started the beginning of the month from the new moon. 60 meant one cycle. "And it is interesting to find that during the centuries some of the Chinese calendars divided *k'o* into 100 fen (364) while others divided them into sixty. These were thus even like our minutes and the *k'o* were like our quarters" (Needham 1986:202). Usage of this calendar for administrative purposes helped to keep an exact calendar with a precise quantity of days and months.

Despite the fact that there no one left who still remembers the traditional calendar system used before the Gregorian system, the Kazakh ethnographer Babalykuly (Begmanov 2010: 131) said in an interview that before the Gregorian system, the Kazakh months used to consist of 29-30 days. Leap-year was called *Kabise* year and was balanced with one additional day every fourth year. This leads to the speculation that the Kazakh people were influenced by the Persian calendar. Because this method of observing the calendar and the title *Kabise* originates in the Persian calendar system. "Every one of the Persian months is 30 days… This month they called *Kabisa* (intercalary month)" (Biruni 1983: 53-54). The months were named in their ordinal order in the annual cycle. He also gave a list of Turkic month names with the following comments: "I have not been able to learn how long these months are, nor what they mean, nor of what kind they are" and listed following list: *ulugh ay* – major month, *kuchuk ay* – minor month, *birinj ay* - first month, *ikinj ay* – second month, *altunj ay* – sixth month, *beshinj ay* – fifth month, *sekizinj ay* – eights month, *tokuzunj ay* – ninth month, *onunj ay* - tenth month, *turtunj ay* – fourth month, *uchunj ay* – third month, *jetinj ay* – seventh month. Analyzing this list, it is assumed that he was not familiar with Turkic and he just gave the list as he learned it, because it can be seen from the given list that the order of the months was exchanged. There were no special names for months but only the numeration of them. Samoylovich (2005) wrote that the Turks did not have names for days or months. He stated that the names for days used today came from the Nestorian, Russian Orthodox, and Islamic religions. Even Mahmud al-Kashgari (Kazakh Translation 1998) wrote that Turks did not have names for days before conversion to Islam. This can be explained in the following way. Before conversion to Islam, the Turkic people used to divide the month into two parts. The first part of the month was named the new part and the second phase the old part. This accords with the data mentioned by Bichurin who noted that Hunnas divided the month into *Sui* and *Si*. This type of division was mentioned in the Orkhon–Yenisei steles. So it is logical that the Turkic people did not have weeks or days of the week as in the Chinese traditional calendar. The Turkic calendar had twelve months in a year. It is typical for the stele inscriptions, when referring to the months, to state them without saying specific names for months or days. However, referring to Samoylovich's statement that the Turkic people adopted the seven-day week from Christianity, we can assume that they had to be familiar with the division of the month into a seven-day week from at least the beginning of the fourth century, since Christianity penetrated east Turkestan even before the formation of the Uighur kingdom of Turfan. As East Turkestan had very close links with Central Asia, Christian missionaries (including apparently Sogdians) made their entrance into Central Asia in the fourth and fifth centuries. Consequently, when the Turkic kahanate was established they had to know about the seven-day week. Hence we think that the Turkic people were probably already familiar with a seven-day week, but they did not have names for them, only saying their number like the 'first day', 'second day' and so on. Of course, there is no doubt that by the ninth century they had names for both the days of the week and the months of the year. But this tradition came to Turkic culture after conversion to Islam.

Traditional Methods of Keeping Chronology in Kazakh Culture

In order to give the age of a main hero in an epic it referenced another prominent event which occurred in his time or referred to another event in the life of a prominent person in order to identify the time. Amongst other methods, this was the most prevalent type. For example, phrases would be used such as "when the death of Bogenbay hero was commemorated" *(Bogenbay batyrga as berilgende)*, "when their wedding was celebrated" *(Olardin toyi bolganda)* and

so on. However, this type of chronology isolates the text, particularly in cases where the main character or the hero mentioned is not mentioned in other inscriptions.

The earliest type of chronology was used with the ruling time of the ancestors of the Qahan Rulers. For example, in the stela of Orkhon inscriptions sentences occur like 'in the time of this or that ruler'. This type of chronology is mentioned by the Kazakh ethnographer Seydimbek (1997:200) as one of the contemporary ways of marking time amongst the Kazakhs. He gave the following examples: "It was the time when Shubirtpali Agybay hero was a friend with Kenesary khan" *("Shubirtpali Agybai batyrdin Kenesary khanmen uzenglies bolip zhurgen kezi")*, or "It was most likely the time when our seventh great-grandfather Naimanbay hero worked in the reign of Tauke khan" *(Zhetinshi akemiz naimantai batyrdin Tauke kahn kuzirinda zhurgen kezi bolsa kerek)*. This is considered by scholars to be an initial form of a linear system of chronology.

The other method of keeping chronology is a distinctly linear chronology. Although there are no documents which prove the existence of the linear chronological system, the fact that the exact quantity of years are given in the Orkhon inscriptions proves that the Turkic people were familiar with the linear system of counting and used it as well. For example, it is recorded that it was exactly 50 years that the Turkic people were under the subordination of the Tan'g Empire; in the Mogol Shrine Usu inscriptions 50 years of Uighur (Toguz-Oguz) subordination to the second Turkic Qahante is mentioned; in the Terkhin inscriptions the period of the Turkic Qaghanate (200 years) is noted, along with the period of the Uighur rulers from Iaglagar, which was 80 years from the date when the inscription was written. Evidence of mentioning historical data spanning from 10 to 100s of years proves that the Turkic people had a specific fixed linear chronology and a historical tradition related with this chronology.

All mentioned types of chronology were noted by Kliashtorny. However this comprehensive approach was not undertaken after him as the main object of research. Other Russian Orientalists such as Gordilevskii, Bartold and the German scientist Thomsen investigated the etymology of numbers and their linguistic peculiarities. Bang discovered the peculiar system of counting of the Turkic people. But the calendar system and chronological method of the Turkic people were not considered as a main object of research. Samoylovich (2005) did investigations concerning the 12-year cyclic system and the names of the months. Concerning the nearest Kazakh methods of observing a chronological method it should be noted again that in the traditional Kazakh calendar, the days of the month consist of only 29-30 days. This calendar was based on the phases of the Moon and the location of the stars. The day preceding the 22nd of March was considered the beginning of the New year *(Nauryz)* due to the Vernal Equinox. But it must be taken into consideration that celebration of the New Year on an exact date came later from Iran. Its quick adoption by the Turkic peoples can be explained by their commonness and similarity. In the Chinese historical work *Chu Shu* written in 557-581 it is recorded that the Turkic people used to mark the beginning of the year by when the grass turned green in spring (Bazin). Hence the word *zhas*, which means age, is a synonym with the word 'green'. It means that the age of a man was identified with each new season of grass turning green. Even today there can be found such phrases as: "He has lived 80 springs" (Ol 80-koktemin toilauda), which means he is 80 years old. The word spring in Kazakh, *koktem*, has the same root with 'green' – *'kwok'*.

The traditional division of the month is based on *togys*. This is based on the Constellation Pleiades or Seven Sisters. When the Moon crosses over Pleiades it is the period of *togys*. During *togys* Pleiades stays on the backside of the Moon and people cannot see it. When the Moon crosses it, it again becomes visible for people. During this period negative weather changes can be observed. *Togys* continues three days. The first day starts the process of *togys*, the next days it "settles down", in the third day it finishes. The weather returns to normal. The period between the first and second phases of *togys* is called "*togys* month" (Begmanov 2010: 312). One *togys* month continues for 27 days, 7 hours, 43 minutes. There are thirteen *togys* months in a year. There are certain phrases used with this method of observing the calendar: "Pleiades stays on the earth for forty days", "dawn of Pleiades", "If Pleiades does not settle, then the weather will not be warm." In general, we can say that in this system there was not an exact

calendrical cycle which consisted of exact days within each month.

Since the main source of livelihood for the Kazakhs is pastoral nomadism, set phrases are also related with this lifestyle. Here we offer a list of phrases for identifying the fragmentary time measurement in accordance with the contemporary standard time measure: *bir sat* (in a moment) - 1 second, *sut pisirim uakyt* (milk-heating time) – 5-10 min., *bie sauym uakyt* (filly- milking time) – 1.5 hours, *et pisirym uakyt* (meat-cooking time) – 2.5-3 hours and so on.

CONCLUSION

It may be concluded that numerical ontology has a direct relationship with time and space categories. Both numerical concepts and concepts of time and space are established in accordance with features of a national worldview. Despite the numerous and diverse influences of contiguous cultures, Turkic cultures adopted only those calendar systems and time-space conceptions which accorded with traditional understandings of the world's construction.

Given research shows how important and specific might be conception of time and space. These were the core basics to adapt yourself, your culture to the system of universe. They serve as directions and pre-condition to survive, to build your world outlook. Even though today all cultures are experiencing globalization processes and time and space conceptions are turning to be universal, for cultural anthropologist it is essential to know the initial time and space conceptions of a culture under research. Since understanding of these roots and basic conceptions would help anthropologist understand better the whole system to which this or that culture relies.

RECOMMENDATIONS

1. Further analysis should be carried out concerning perception of time and space conceptions taking into account ecological, geographical and cultural features of Kazakh culture. Even though this method of analysis is not pretending to be universal, later it might be applied for analysis of other nomadic cultures which can have many common features with Kazakh nomadic style of life.
2. This work covered very ancient forms of time and space conceptions. In future it would be more valuable if these conceptions were analyzed from other historical approach. For instance, after establishment of the Soviet Union it took place shifting process of traditional time and space conceptions to standardized one. It would be of high importance if those conceptual transformations were analyzed.
3. New field researches would be useful source for indication of changes in perception of time and space conceptions in rural areas with less impact from mass-media means. Field research could include interviews with old-aged people who still remember some interesting data concerning time and space conceptions before establishment of systematic educational system during the Soviet times.

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