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Astronomical and sacred aspects of the surrounding landscape at the archaeological monuments of Sayano-Altai (integral approach)

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Abstract

Over the past five decades in Siberia, archaeologists have not only searched for and excavated new monuments, but also developed new approaches to previously studied archaeological sites – to mounds, calculations, settlements, stone sculptures and petroglyphs. At this time, new types of ancient objects were discovered on the Sayano-Altai mountains – sanctuaries, megaliths, observation astropoints and a giant "zooanthropomorphic sculpture".

Sacred features at archaeological sites and sanctuaries can be identified by studying: 1) the surrounding landscape; 2) orientation and marking of sacred objects and paths to them; 3) pictorial images on stones, rocks, objects (main and secondary compositions); 4) the most revered objects are altars, bonfires, images, structures made of stones and steles, water springs, mountain peaks, important for understanding the main purpose of the ancient sanctuary; 5) ancient knowledge of astronomy, mathematics, geometry, embedded in large and small objects. An integral approach allows you to combine ancient knowledge into a single whole.

Keywords: archaeology, astronomy, ethnography, integration, methods, signs, sanctuary, sacredness, landscape, altar.

Астрономические и сакральные аспекты окружающего ландшафта на археологических памятниках Саяно-Алтая (интегральный подход)

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Аннотация

За последние пять десятилетий в Сибири археологи не только производили поиск и раскопки новых памятников, но также разрабатывали новые подходы к ранее исследованным археологическим объектам – к курганам, выкладкам, поселениям, каменным изваяниям и

петроглифам. В это время на горах Саяно-Алтая были обнаружены новые типы древних объектов – святилища, мегалиты, наблюдательные астропункты и гигантская «зооантропоморфная скульптура».

Сакральные признаки на археологических объектах и святилищах можно выявить изучая: 1) окружающий ландшафт; 2) ориентировку и разметку сакральных объектов и путей к ним; 3) изобразительные образы на камнях, скалах, предметах (главные и второстепенные композиции); 4) наиболее почитаемые объекты – алтари, кострища, изображения, сооружения из камней и стел, водные источники, вершины гор, важные для понимания основного назначения древнего святилища; 5) древние знания по астрономии, математике, геометрии, заложенные в крупные и мелкие объекты. Интегральный подход позволяет объединить древние знания в единое целое.

Ключевые слова: археология, астрономия, этнография, интеграция, методы, признаки, святилище, сакральность, ландшафт, алтарь.

For ethnographers and archaeologists, when describing the life of modern and ancient peoples, one of the main tasks is to reconstruct as fully as possible the levels of real and sacred traditional Knowledge about the Universe around them. Integral studies have been of great importance for the development of methodological, informational and practical methods for processing multifaceted data of various scientific areas (Korusenko, Tikhonov, 2020).

Ancient sanctuaries

Ancient sanctuaries are sacred centers of interaction between the deity, man and the natural landscape. The need to worship various deities of Heaven and Earth, including celestial objects – the Sun, the Moon, constellations, as well as the First Ancestors and Warriors-Heroes, in order to harmonize the annual economic and social cycles of nomads with natural and celestial phenomena, inevitably led to the idea of creating a sanctuary and its central part – the Altar.

The sacred is the communion with the Deity /deities, the touch of divine and cult secrets. This is a high level of generalization of the observed phenomenon, on the one hand, associated with the mystery of divine inspiration, insight, revelation, contemplation and deification, and on the other hand, is important for the practical activity of man. Much of what is now self-evident and ordinary for us for a long time had a sacred meaning: *Mountain* (world, generic, weather indicator), *Tree* (world, life, knowledge, generic), *Water* (living and dead), *Fire* (sacred and hellish), *Heaven* (sacred, hard, airy, good and formidable), etc. On sanctuaries, objects acquire sacred-natural-cultural functions and interact with the sacred landscape and the Cosmos. When interpreting the above sacred functions, ethnographic and semantic parallels are of great importance.

The scientific identification of signs of sacredness involves the integration of many disciplines and directions. Sacred aspects can also be identified by studying: 1) the cult functions and forms of objects built at a certain time, at specially selected points in the landscape; 2) the widespread use of "oppositions" in the construction of objects: top – bottom, east – west, mountain – west, etc.; 3) a complex sacred system of marking between different types of objects, based on ethnography, astronomy, metrology and other scientific branches; 4) the presence of peculiar "roads" connecting objects and often going beyond the boundaries of the monument under study; a kind of ancient "geodetic network".

Ancient sanctuaries are mainly a difficult complex of multi-temporal sacred objects, which includes the necessary components of altars, rock paintings, vertical stone objects ("deer" stones,

steles, menhirs, megaliths), a variety of horizontal kerexures, layouts, "rings" and other structures (Kubarev, 1979; Marsadolov, 2001; 2007; et al.). In the construction of new grandiose sacred objects made of stone (for example, such as kereksurs), with a large number of layouts around them, the collective feasible labor of a large number of ordinary nomads was especially necessary.

In general, sanctuaries were one of the main parts of the general sacred "model of the World" of ancient peoples, and it was on sanctuaries that they tried to reproduce its main elements as much as possible (Marsadolov, 1998; 2005; 2007; 2009; 2010a; 2013; 2019; 2020).

Choosing a place for the construction of a religious object in the surrounding landscape

The landscape environment of the cult monuments of Siberia and Eurasia, as well as the reasons for the sacralization of natural objects in antiquity are still poorly understood. The term "sacred landscape" is used in many scientific disciplines - geography, cultural studies, ethnology, archeology, political science, but very often when using this term, *one of the most important components of "sacredness"* is not taken into account - *spirituality*, as a specific place in the surrounding natural landscape for communication / contact with various deities.

Depending on the dominant surrounding landscape, sanctuaries could be built both on mountain slopes and in wide steppe and intermountain valleys. It should be noted that many places of worship are located in open steppe areas or on the surrounding mountain slopes.

When choosing a place for the construction of the sanctuary in ancient times, rather strict requirements imposed on the topography and planigraphy of objects, their connections with certain forms of mountain relief. In ancient times, objects laid at specially selected points and at a certain time. Now it is already possible to identify a number of general patterns for the cult sites of the Sayano-Altai of the II-I millennium BC:

- 1) first (depending on the sacred needs) determined the purpose of the sanctuary and its main objects important for the conduct of the necessary rituals;
- 2) among the mountain landscapes, a suitable valley or intermountain tract with a sacred dominant was chosen - a mountain, a huge stone, a spring, beautiful rock planes for drawings, etc.;
- 3) determined the center of the complex;
- 4) designated places for the main objects and for carrying out ritual actions;
- 5) over time, large sanctuaries were supplemented with new objects or used existing ones (Marsadolov, 2001; 2007; 2012).

As a rule, only intermountain valleys were chosen for ritual purposes, in which there were low viziers in the east and west, and higher mountains in the north and south (Arzhan-1, Sagly – Ulug-Khorum-1 (Fig. 1). Justyd, Adyr-Kan, Tarhata, Turu-Alty, Semisart, Ak-Baur, Biyke, Salbyk, etc.). Especially striking is the similarity of the forms of the landscape on the sanctuaries in Adyr-Kan and Biyka (Fig. 2). In the northern part, the closest to the center of the complexes of these objects, there are almost vertical rock outcrops – boms, convenient for applying petroglyphs. In the southern part, beyond the river there are remote, forested mountains; in the east there are the descending slopes of several mountains, almost converging at one point (Marsadolov, 2007, pp. 215-216, etc.).

The complex of objects in the Adyr-Kan tract was previously located near the ancient nomadic path, now – the Chui tract - one of the main and vital transport roads connecting Altai with the Kuznetsk basin, Khakassia, Tuva, Mongolia and China. A stone statue stands in the

center of the intermountain valley, stretching from east to west. At the initial installation of the stone sculpture, a place was chosen for it for a long time in the vast intermountain valley, since the front part of it was oriented to the point of descent of three natural objects – the eastern mountain covered with forest, overlapping the northern mountain going also to the east and the protruding top of the third, very remote mountain, located exactly in the east, in the azimuth of about 90 degrees (Fig. 3).

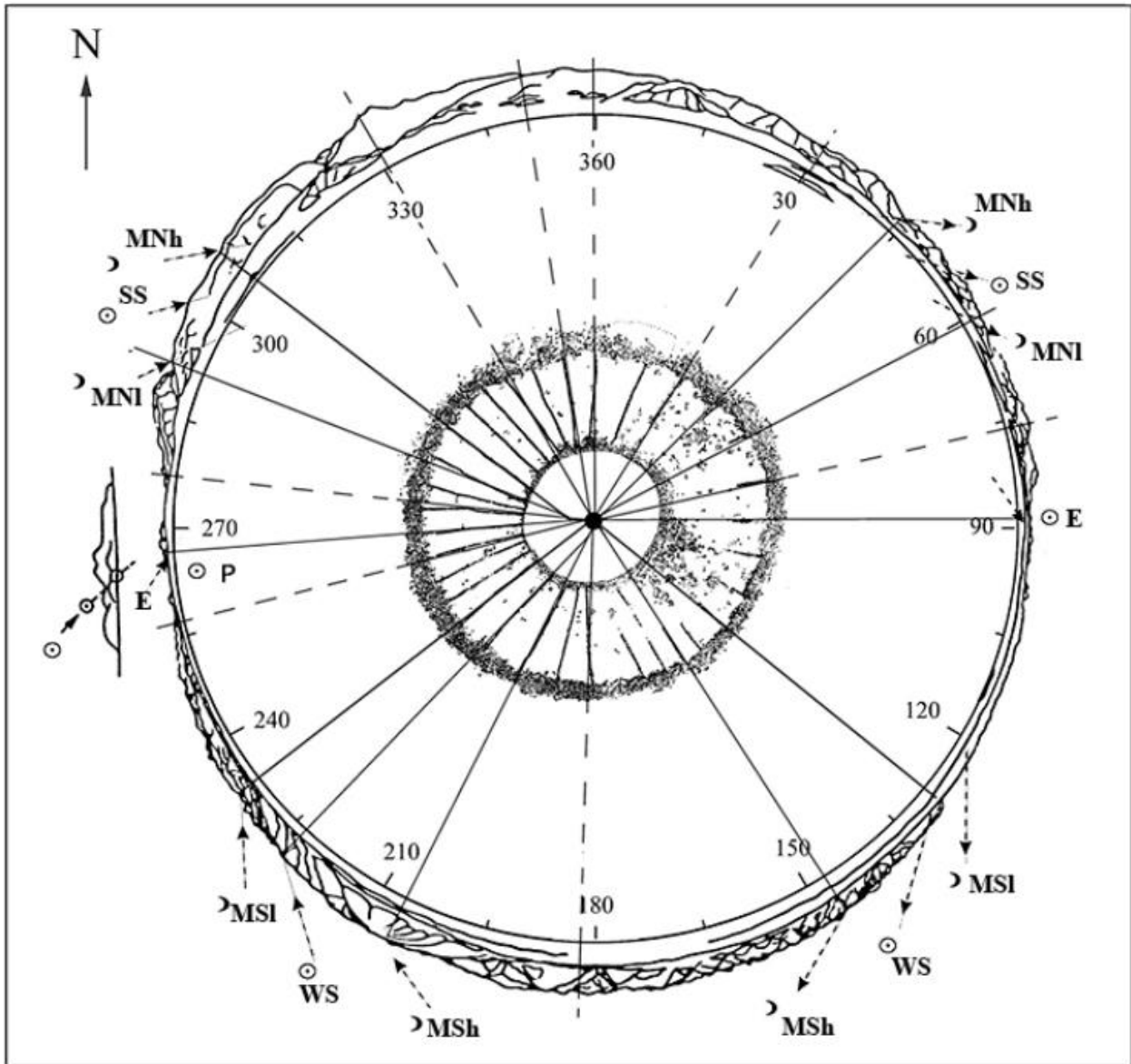


Figure 1. South Tuva, Sagly, circular panorama from the center of kereksur Ulug-Khorum. Legend: arrows up (rise), arrows down (set) of the Sun and the Moon on astronomically important days. Sun: WS – winter solstice; SS – summer solstice; E is the equinox (spring and autumn). Moon: MN – northern rise/set of the Moon, MS – southern rise/set of the Moon, h – high, l – low (for example, MNI – northern rise/set of the “low” Moon). Calculations for the astronomical directions of the Sun and the Moon were performed for 750 BC. Based on the materials of the expedition of L.S. Marsadolov, the calculations of V.L. Gorshkov.



Figure 2. General patterns in the choice of places for sanctuaries in Altai: 1, 3 – Central Altai, Adyr-kan tract near the Chui stone; 2, 4 – Northern Altai, Tract Biyke: 1, 2 – eastern sides of the valleys; 3, 4 – are their western sides. Based on the materials of the expeditions of L.S. Marsadolov.

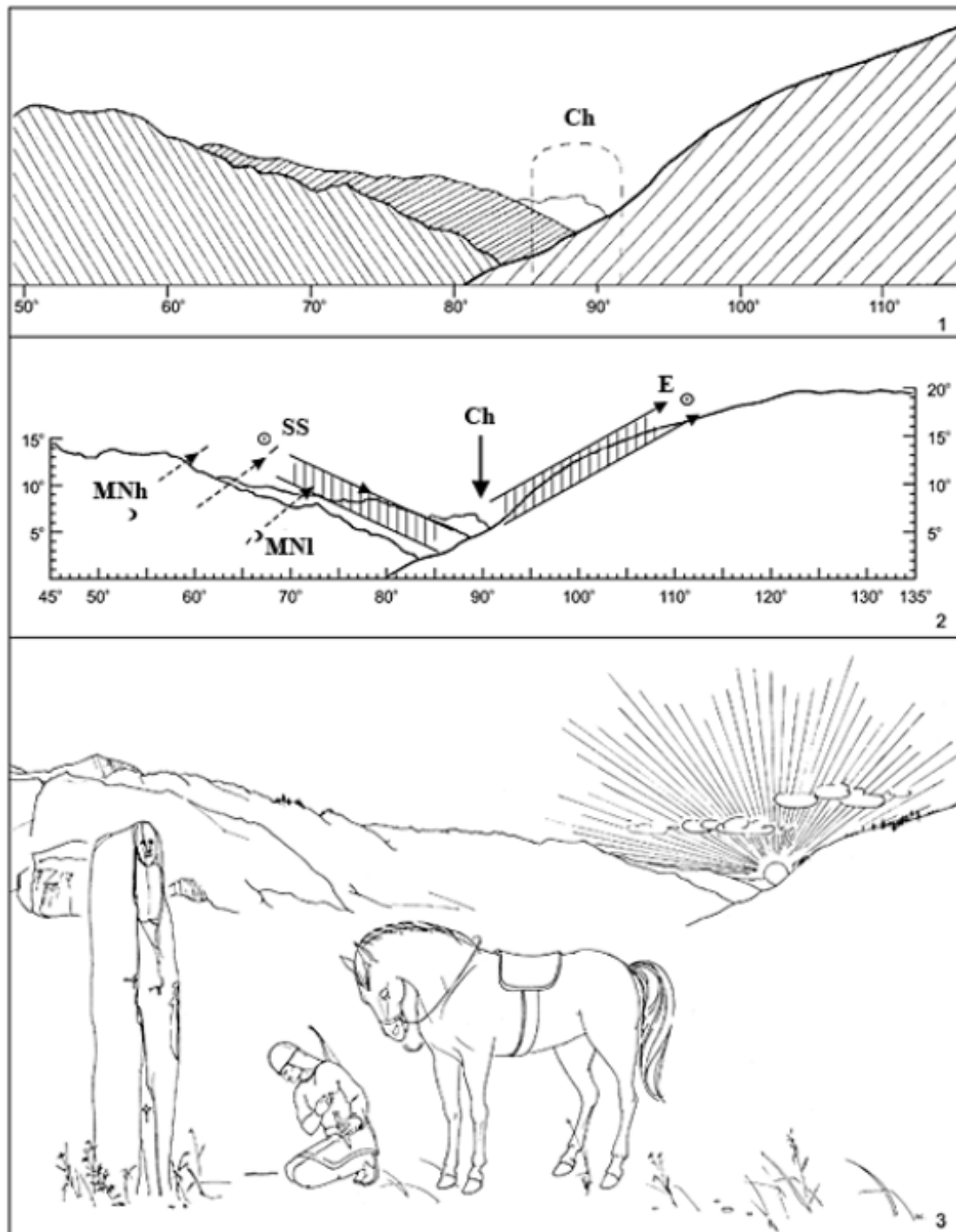


Figure 3. Adyr-kan tract: 1 – the eastern part of the surrounding landscape (some mountains are conveyed by different hatching, the dotted line shows the orientation of the Chui stone, abbreviated – Ch); 2 – astronomical calculations from the place of installation of the Ch on the eastern part of the tract (the place of convergence of three mountain slopes, the upper part of the Ch is oriented to this point of convergence, which is shown by the arrow (Sunrise: E – on the days of the spring and autumn equinoxes, SS – on the day of the summer solstice, MNh and MNI – Sunrises of the high and low northern Moon); 3 – reconstruction of the worship of the statue on the days of the equinox. According to the materials of the expedition of L.S. Marsadolov.

Judging by astronomical calculations, on days close to the equinox, the Sun rose at the point of intersection of the three mountains, which could be realized by ancient nomads and serve as one of the reasons for worshipping a stone statue installed at a sacredly important point (Fig. 3, 3). It

is interesting to note that on the days approaching the summer solstice, the Sun rose up the slope of the northeastern mountain, and on the days after the winter solstice, it descended down the slope of the southeastern mountain.

If on the Chui sanctuary the central stone sculpture was oriented facing east, then on the Biyke burial ground the astronomically significant side of the horizon was the west. Perhaps this is due to the fact that the Chui sanctuary served for rituals for living people and was associated with the Sunrise, and the Biike tract, first of all, was used for the burial of the dead, so the western side prevailed here, where the Sun set / died (Tishkin, Marsadolov, 2010; Marsadolov, 2007).

Everyone is well aware of the "rock gardens" in Japan, their analogues in China and Korea are much less known, and almost no one previously assumed that the same, but probably much earlier in time objects exist in Altai in Semisarta, in the Leningrad region (Marsadolov, 2001; 2004; 2013) and in other regions. Separately lying, different in color stones, differing in shape and purpose of the layout, mounds, stone sculptures, rock paintings, astronomical observation points often formed on the sanctuaries a defined, complexly organized system reflecting the sacred relationship of man with the surrounding natural environment and the Cosmos. Sometimes complex markings between objects of different sizes make it possible to see in them peculiar predecessors of the now widely known Asian "rock gardens" (Marsadolov, 2004, pp. 72-73).

At the sanctuary in Semisart, paths of stones led successively from one object to another: from the sacred spring "Arzhan" with crystal clear and healing water in *the south* - to the sub-square hearth in the center of the tract - further to the altar complex with rock paintings on the top of the mountain in the north. The mountains surrounding this protected area on three sides are somewhat reminiscent of the walls of fences in monasteries or parks, where there were similar corners for religious, philosophical and scientific reflections, rituals and training. Often the walls in monasteries had different heights, slopes, colors and masonry, which corresponds to the mountains of various appearances. On the sanctuaries, "constant work" carried out to search for deeper and deeper connections of objects with the surrounding sacred landscape.

One of the main requirements when choosing a location for a sanctuary, especially on mountains or their slopes, was the presence on top of a rock ledge with a smooth surface for applying rock paintings, as well as the availability of convenient approaches to them for ritual actions (Marsadolov, 1989; 2001; 2012; 2013). It should be noted that the pictorial images on stones, rocks, objects are well studied in the scientific works of many archaeologists, but so far among the numerous and diverse petroglyphs, the main and secondary drawings in complex sacred compositions have not been sufficiently analyzed.

Natural giant prototypes of the "Sun-swallowing beast" made of stone were found by the Sayano-Altai Archaeological Expedition of the State Hermitage Museum (hereinafter referred to as the SAAE GE) in 1993 on Mount Charming (Marsadolov, 1998). The northern end of the most massive rock outcrop at the top of Charming Mountain resembles the head of a fish, beast or bird with an open mouth/beak and even a dedicated "eye"-protrusion. When observed from the center of a rounded pit on top of one of the mountain remains, it was found that the lowest point of Sunset of the winter Sun was on the "beast's rump" (Fig. 4). After the winter solstice (December 22–23), the trajectories of Sunset gradually shifted to the north, higher and higher along the beast's body. On the day of the vernal equinox (March 22), the Sun passed through the "mouth of the beast".

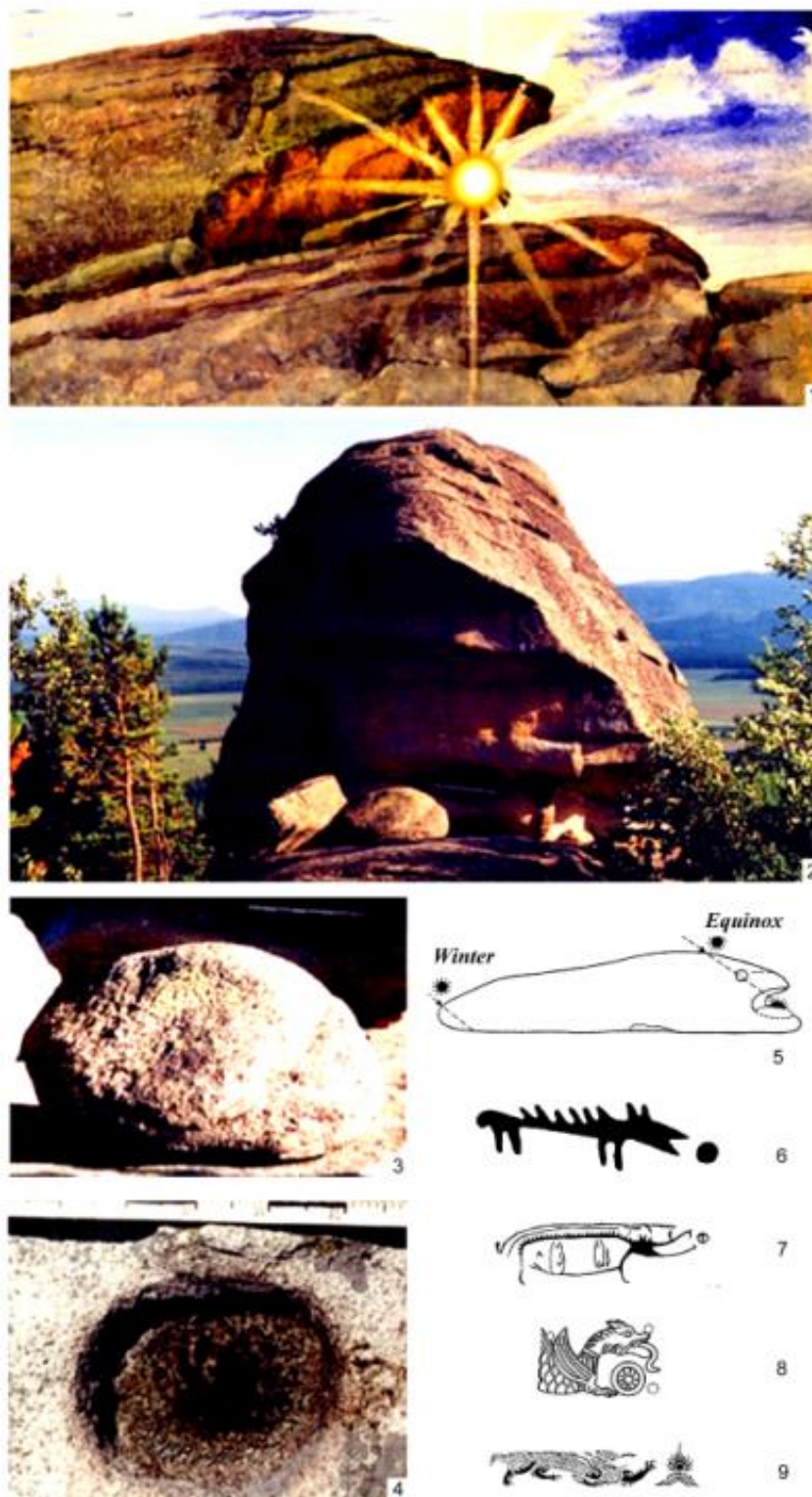


Figure 4. Western Altai, Charming Mountain: 1 – drawing-reconstruction of the Sunset passing through the "mouth of the beastfish" on the days of the spring and autumn equinoxes; 2 – a view of the front of the rock ledge in the form of a wide-open "mouth of a fish"; 3 – a large rounded stone-boulder ("altar?"); 4 – a rounded hole-hole, knocked out on the lower plane of the rock; 5 – the astroriSunc of The Enchanting Mountain in the form of a "fish/beast", through which the Sun sets on the days of the equinoxes (E) and the winter solstice (W); 6-9 – images of a Sun-swallowing beast or a mythological animal: 6 – Arbi, 7 – Shishkino, 8 – Novgorod, 9 – China. Based on materials by L.S. Marsadolov (1-5), A.I. Mazin (6), A.P. Okladnikov (7), V.P. Darkevich (8), G.E. Grum-Grzhimailo (9).

"A fish or beast swallowed the Sun," and then darkness quickly fell. Later, this hypothesis was confirmed both in the study of two other sanctuaries – Ak-Baur and Monasteries in the Western Altai, and pictorial (Fig. 4, 6-9), folklore and ethnographic materials from different regions of Eurasia (Marsadolov, 2010b; Okladnikov, 1959; Okladnikov, Mazin, 1976).

Orientation of objects

When considering social, ideological and chronological problems, it is important to establish not only the time of functioning of individual mounds, temple mounds and the burial ground as a whole, but also to determine the direction of formation in space of a "chain" of a number of mounds, which can give new data on the microchronology of objects and things found in them, as well as more reasonable conclusions on the social organization of ancient nomads and "models of the world" in different regions. Previously, archaeologists almost did not try to explain the initial orientation of the lines of "chains" of objects.

On the Salbyk kurgan field, several "chains" of mounds can be traced, oriented along the lines of the SE-NW. In the course of detailed paleoastronomic studies of the SAAE GE in the 1990s on large mounds of Sayano-Altai, an attempt made to explain the features of the orientation of these objects. The location of the mounds in Salbyk is fundamentally different from the planigraphy of objects beyond the Sayan Range. If in Salbyk the "chain" of mounds is oriented along the line SE – NW – the line of Sunrise and Sunset of the Moon (Fig. 5, 6), then in Tuva near the village of Arzhan large mounds (VI-V centuries BC) are oriented along the Sun, in the opposite direction - along the line OF SW – SV – at a high Sunrise point on the day of the summer solstice and a low point of Sunset on the day of the winter solstice (Fig. 5, 3). The mounds of the Pazyryk culture of Altai, as a rule, are located in a "chain" oriented along the south-north line, and the southern mound is the earliest (Fig. 5, 9; Pazyryk-2, Tuekta-1; Rudenko, 1953; Marsadolov, 2000; 2019) If the mounds of Tuva and Altai have a round shape of a stone mound and crepid, then in Khakassia there is a sub-square fence of horizontal slabs and vertical steles.

Marking of sacred objects and approaches/ paths to them

The ancient nomads of Eurasia had temporary and permanent sights, which can additionally be divided into: *natural* (peaks and westerns of mountains, rock ledges, depressions, etc.) and *artificial* (steles, sculptures, boulders, slabs), which served as pointers of sacred paths.

An important role played by widely used measures of length associated with the proportions of the human body, which are part of the ancient sacred knowledge, which is reflected in many archaeological sites of Southern Siberia and Kazakhstan (Marsadolov, 1998; 2001; 2005; 2007; 2010a; 2016).

In the sanctuaries on the mountains, several lines of objects "fan-shaped" converged at one point - on the main "altar". In the wide valleys, there were many more such sacred lines. They not only pointed the way to the main "altar", statue or stele, but also went beyond the sanctuary, forming complex connections and ancient "sacred geodetic grids" with other cult centers and the surrounding nature (Justyd, Sagly, Tarhata, Turu-Alty, Semisart, Ak-Baur, etc.; Marsadolov, 2001; 2007; 2010a).

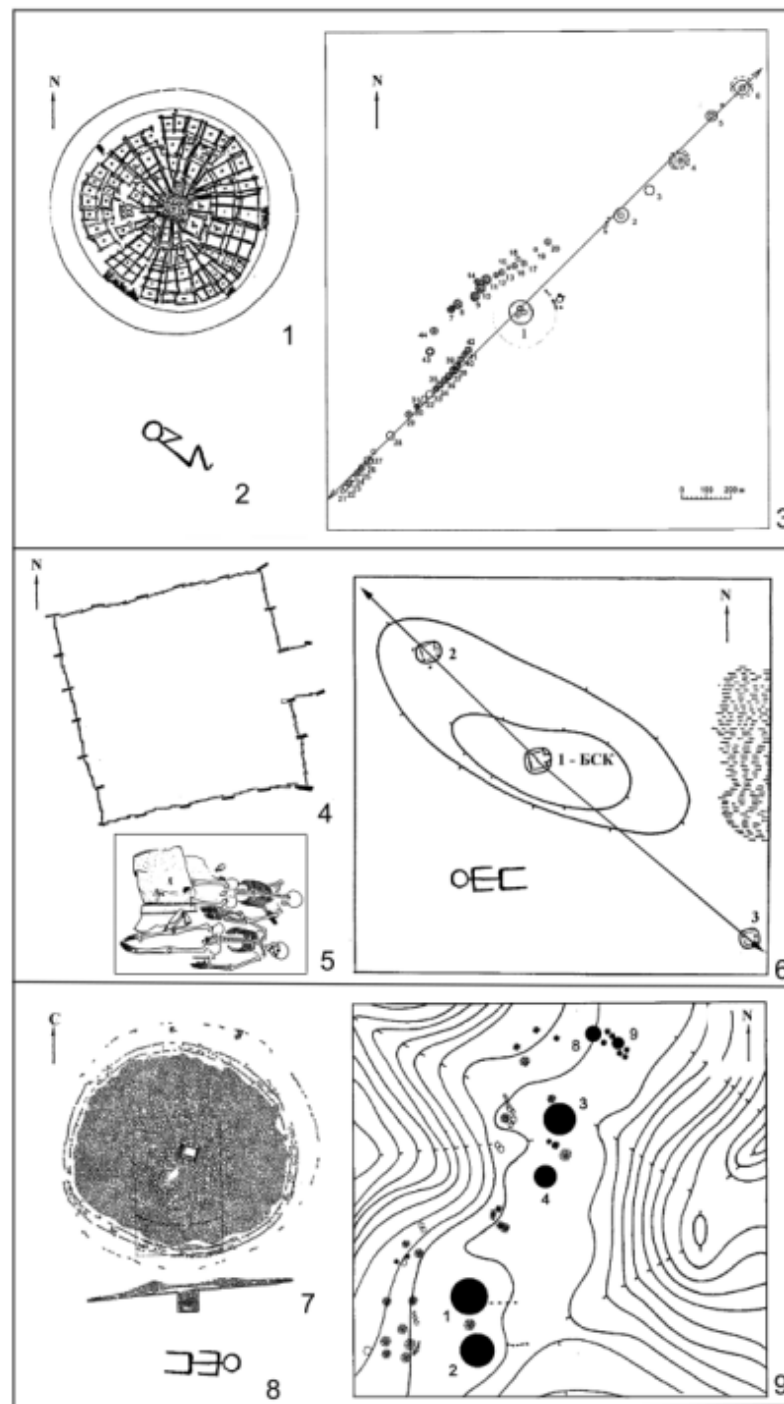


Figure 5. Regional differences in partial "models of the world" of nomads, reflected in the orientation of the mounds and people buried in them: 1 – Tuva, the plan of wooden structures and the burial of horses in the mound arzhan-1 (reminiscent of the symbol of the Sun); 2, 5, 8 – orientation of those buried in mounds; 3 – arzhan-IV burial mound (orientation of the "chain" of mounds along the Sun, along the line of Sunrise of the summer high Sun on the Neb and Sunset of the low winter Sun on the SW); 4 – Khakassia, plan of Salbyk mound No. 1; 5 – robbery of two people (priests/shamans); 6 - part of the kurgan field in Salbyk (orientation along the high Moon of the corners of the mound and the "chain" of objects); 7 – Altai, plan of tuekta-1 mound; 8 – orientation of the Pazyryks, head to the East; 9 – Altai, plan of the tract and mounds in Pazyryk (orientation along the line S-Yu, from the warm south to the eternal cold silence in the north). Based on materials by M.P. Gryaznov (1), S.V. Kiselyov (6), S.I. Rudenko (7, 9) and L.S. Marsadolov (2-5, 8-9).

Conclusion

The overall integration of archaeology, ethnography and astroarchaeology with other scientific disciplines will contribute to a deeper study of monuments and objects of world and regional cultural heritage. On many cult monuments of Southern Siberia, a fairly clear correlation of the centers of objects with the most significant astronomical directions associated with Sunrises or Sunsets of the Sun and the Moon with the surrounding mountains has been revealed. The complexity of the arrangement of various objects on ancient sanctuaries testifies to the large amount of planigraphic, metrological and astronomical knowledge invested in the marking and construction of different types of objects. It is now possible to identify the "sacred spirituality" and the main functions of sanctuaries associated with Heaven, Luminaries, Mountain, Water, Fire on archaeological sites by the remaining materialized traces of ancient cults, integrating a complex of modern methods of related scientific branches – ethnography, astronomy, cultural studies, geography, geophysics, geometry, toponymy, osteology, semiotics and other areas. The amount of knowledge gained about the functioning and renewal of religious centers will contribute to the study of the general "picture of the world" of the ancient nomads of Eurasia.

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