



The Great Salbyk Barrow in Siberia (Archaeoastronomical Aspects of its Studying)

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Abstract

The Great Salbyk Barrow is the best known of the megalithic monuments in Siberia. Archaeologist S.V. Kiselev excavated the Salbyk-barrow, the largest barrow in Khakasia in 1954-1956. The expedition of the State Hermitage Museum researched Salbyk valley in 1992-1998, 2008 and 2010.

A barrow height is more than 20 m and originally it was pyramid-shaped (Fig. 1). Under the mound was a square “fence” (71 x 71 metres) made of huge stone slabs placed vertically and horizontally and weighting some tonnes (the average size was about 5 metres – Fig. 1-2).

The construction of big barrows in Salbyk having multiple functions (funeral, socio-political, religious, astronomical, architectural, and others) probably was based on the astronomical knowledge of their time. The installation of the fence slabs is connected with the main moments of the rising and setting of the Moon and Sun on astronomically significant days. Signs in the form of circles, crescents and other figures situated on significant astronomical direction lines were discovered on the barrow's slabs.

On the basis of the new analyses, the Great Salbyk barrow is dated to the 7th century B.C.

Keywords: archaeoastronomy, megalithical monuments, moon, sun, barrow, petroglyphs, Siberia, Khakasia, Salbyk.

Introduction

The Great Salbyk barrow is the best known of the megalithic monuments in Siberia. The barrow is situated 65 km northward of the town of Abakan in Khakasia (Russia; coordinates of a monument: geographical breadth (northern) – 53 53.4', a longitude (east) – 90 45.1', height above sea level – 540 m). There are more than 50 big and middle-sized barrows, as well as many small ones. The archaeologist S.V. Kiselev excavated the Salbyk barrow in 1954-56 [1].

The expedition of the State Hermitage Museum investigated the Salbyk valley in 1992, 1994, 1996, 1998 and 2008 [2, 3]. The expedition has recently composed a plan of the fence of stone slabs, taken samples for the tree-ring and radiocarbon analysis, conducted the astronomical and topographical analyses, and traced the connection of the barrow with the surrounding landscape.

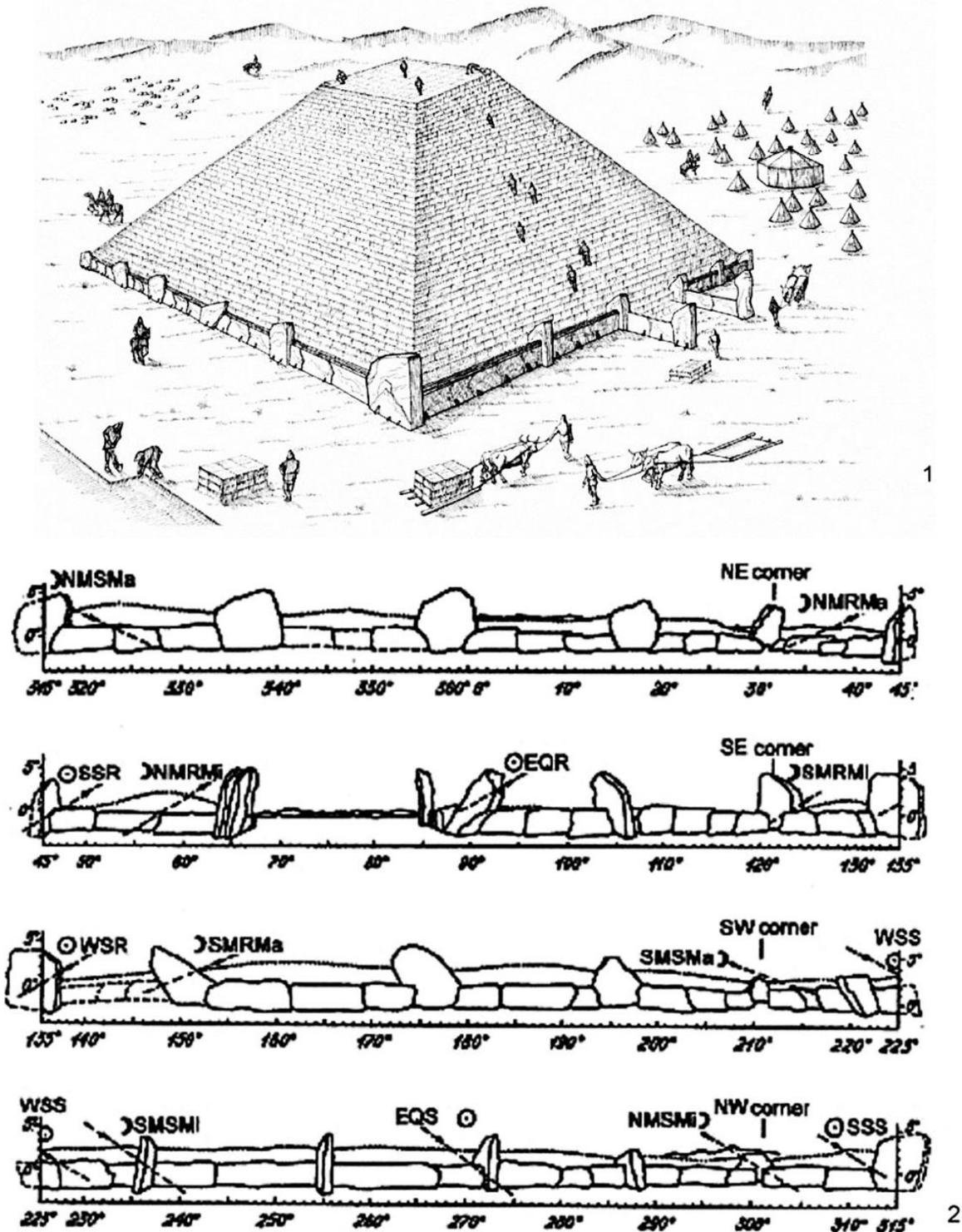


Figure 1. Salbyk: 1 – reconstruction of the barrow; 2 – the rising and setting of the Moon and Sun on astronomically significant days (abbreviated – **Sun:** SSR - Summer Solstice, rise; SSS - Summer Solstice, set; WSR = Winter Solstice, rise; WSS = Winter Solstice, set; EQR - equinox, sunrise; EQS - equinox, sunset. **Moon:** N = Nord; S = south; MS = Moonset; MR = Moonrise; Ma = major standstill; Mi = Minor standstill: NMRMa - northern moonrise, major standstill; NMSMa - northern moonset, major standstill; NMRMi - northern moonrise, minor standstill; NMSMi - northern moonset, minor standstill; SMRMa - southern moonrise, major standstill; SMSMa - southern moonset, major standstill; SMRMI - southern moonrise, minor standstill; SMSMi - southern moonset, minor standstill).

The barrow height is more than 20 m and originally it was pyramid-shaped (Fig. 1, 1) . Under the mound was a square “fence” (71 x 71 metres) made of huge stone slabs placed vertically and horizontally and weighting some tonnes (the average size was about 5 metres). Inside the fence, a square pit-grave had been dug, and there were seven persons buried in timber on its bottom. It seems probable that the chief of an alliance of tribes and his favourites were buried in the grave. The construction of big barrows in Salbyk probably was based on the astronomical knowledge of that time. The installation of the fence slabs is connected with the main positions of the rising and setting of the moon and sun on astronomically significant days. On the basis of the new analyses, the barrow is dated to the 7th century B.C.

Construction of the barrow

The process of building the great barrow in Salbyk, which is very complex due to its construction and the burial ritual, can be reconstructed in the following way. Probably not a whole year was spent for the construction of the monument. Hundreds of persons took part in the building of the burial monument temple.

In the mountain valley, a point for the barrow centre was chosen very carefully. The point had to satisfy certain requirements:

- 1) It had to be on the highest place between mountains.
- 2) It had to be surrounded by mountains lower to the west and east than to the north and south.
- 3) It had to be conveniently situated for astronomical observations.

It should be mentioned that such a place had probably been found in an earlier period and kept its meaning in later epochs. Near the Great Salbyk barrow there is the Bronze Age ritual centre with stone sculpture of the Okunevskaya culture, sites of the Early Tagar period, etc. After construction of the Salbyk barrow, the cemetery near it of the Tashtyk culture continued to function for a long time.

The burial construction consisted of three parts: a corridor (dromos), an extension near a door, and a burial chamber. In the central part of the barrow, but closer to the western wall of the fence, a structure consisting of earth and logs was found. It looked like a reduced pyramid; its height was about 2 m and its upper platform was 8 x 8 m [4, 5]. The pyramid was at first sight snow white because its slopes were covered with a thick layer of birch bark (sometimes 15 layers). In addition, the upper logs of larch were rolled up in birch bark. Thus, a larch seemed to be a birch.

Under the pyramid there was a square pit—5 x 5 m and its bottom was 1.8 m deep. Its walls were lined with vertical logs. In the bottom of the pit there was a wooden framework with 4 rows of larch logs cut like bars. The chamber was 4 x 4 m; its height was about 2 m. It was covered by six rows of massive logs with a thick layer of birch bark. The bottom of the framework and the space between its walls and the logs covering the pit’s walls were full of solid red, water-resistant clay. S.V. Kiselev established that the bottom was covered with birch bark under the clay. Six layers of crossed logs formed a roof under the framework, but they could not withstand the great pressure of the earth and had fallen into the chamber.

In the chamber, the remnants of seven persons were found—men and women. An old warrior was buried in the centre, some of whose bones were broken. A large clay vessel was found in fragments. Near the middle part of the western wall of the framework, on the bottom, a miniature bronze knife was also found.

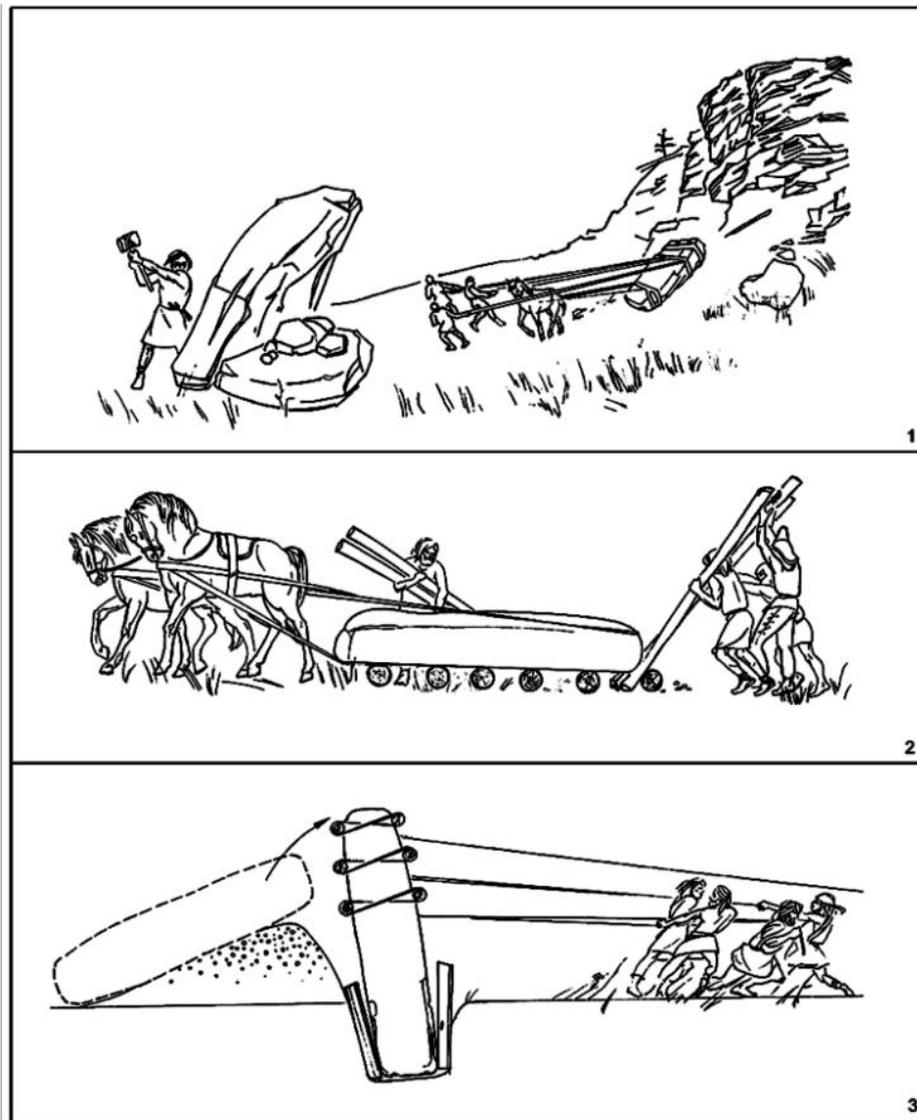


Figure 2. Salbyk: 1 – reconstruction of extraction and initial processing of stone slabs in Kyzyl-Khaya; 2 – one of ways of transportation of the slab; 3 – reconstruction of process of installation of vertical the stone slab.

The dromos began with an entrance near the middle stele of the western wall of the fence and went close to the western slope of the pyramid. There was a narrow hole into the chamber, which appeared to be filled with pieces of wood. The walls of the corridor (width 2-3 m) were covered with logs, and the upper parts of these were covered with a thin ceiling made of hewn planks. Both walls and the corridor’s ceiling were decorated with a layer of birch bark.

The fence was made of massive blocks of sandstone placed in a standing position; the largest of these weigh about 30 tonnes. The fence’s blocks were put in narrow deep trenches, their width being less than 0.6 m. The depth of the trenches varied—from 0.8 to 2 m, depending on the height of the blocks, which were placed in such way that they were on about the same level above ground, with heights of 1.8 to 2 m. The entrance from the barrow’s eastern side was rather complex. From the two middle steles, the long slabs were perpendicular to the line of the wall, resting on two steles placed towards to the east of 5 m. From the eastern side, “the entrance” between the steles was covered with a roof of small slabs placed very carefully, with a small deviation inside the barrow.

During the clearing of the western wall, the remnants of the much destroyed burials of two persons were found in the SW and NE angles. In the process of studying the fence, near the large angle of the south-eastern stele, the destroyed burial of a child was found. In the angle formed by a block of the southern fence and the angle of the SW stele, the burial of an adult man with tied, bent legs was discovered. These were probably sacrifices that had been made in the most significant places of the barrow.

The transportation of blocks for the fence must have been very hard work. The barrow was erected in the steppe valley and the nearest deposits of Devonian sandstone are situated on the Kyzyl-Khaya mountain, 16 km south-westward from it (Fig. 2). The remnants of ancient quarries were found there. The blocks were quarried from the rock, probably with the assistance of wooden wedges, and were transported to the place of the barrow construction, perhaps in winter on wooden rollers. During the clearing of the barrow's lower part, many larch logs, often dry from forest fires, were discovered. The logs had been moved by ropes, judging from marks on their ends.

Astronomical aspects

Preliminary results of astronomical researches are submitted below (the author and the astronomers V.L. Gorshkov and V.B. Kaptsgug of the Pulkovo Observatory, St. Petersburg).



Figure 3. Salbyk. Petroglyphs on one of stone plates.

Astronomical observations had probably taken place there before the construction of the stone fence. The installation of the fence slabs is connected with the main positions of the rising and setting of the moon and sun on astronomically significant days (Fig. 1, 2). Signs in the form of circles, crescents and other figures were discovered on the barrow's slabs. The investigation revealed that the solar directions were connected with vertical stone slabs, the moon directions – with corners of a barrow, but the entrance was oriented on sunrise in days of an equinox.

On one of the slabs from the barrow, a complicated composition is drawn. In the higher part of the slab the sky is represented: a bird, the sun, stars, a person with vizier in his hand. In the middle part of the slab, a male warrior stands with a foot on the head of a fallen person, nearby is a moon-woman and also a man. In the lower part of the slab, there are unclear figures of perhaps a horse and a beast (Fig. 3). It is possible that on this slab the sequence of the funeral ritual is represented, which corresponds to the archaeological material from the excavations.

In Salbyk, some of great barrows have “chains” of vertically standing slabs as well as horizontally placed “slab-altars” near the mound. Outside the barrow were found vertical stones of intermediate size, aligned to astronomically significant directions. A sculptural representation of a lying tiger was also found. The detailed study of the stone slabs of the fence revealed the significance of a colour spectrum — from light to dark tones and conversely.

The “chain” of barrows in the Salbyk valley is oriented on a line northwest to southeast, the line of the extreme positions for moonrise and moonset. The location of barrows in Salbyk is principally distinguished from the orientation of barrows behind the Saian range. Near the Arzhan settlement in Tuva, the great barrows (6th-5th centuries BC) were erected on a line north-east to south-west and oriented to the sun — to the high point of sunrise on the day of the summer solstice and the low point of sunset on the day of the winter solstice. Thereby, the orientation of the barrow's chains serves the important additional (religious) criterion for two earlier-chosen large areas of the archaeological sites.

Conclusions

The construction of big barrows in Salbyk having multiple functions (funeral, socio-political, religious, astronomical, architectural, and others) probably was based on the astronomical knowledge of their time. The Great Salbyk barrow, by its monumental construction, can be put in the same group as the famous Stonehenge in England, but by the volume of consumed labour, it probably significantly exceeds Stonehenge.

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