The Wolf of Baikal: the "Lokomotiv" Early Neolithic Cemetery in Siberia (Russia)

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The authors present a synopsis of research on the remarkable early Neolithic cemetery near Lake Baikal known as "The Lokomotiv" which was first discovered by the constructors of the Trans-Siberian Railway in the 1880s. A current campaign of research is beginning to understand the great variety of the burial rites and their contexts. The rites include communal burials, burial in pairs head to toe and decapitation before burial, the position of the skull being sometimes taken by a carved object. Among the earliest graves was one containing a Tundra wolf.

Keywords: Neolithic, burial, cemetry, wolf, Siberia.

The site and its location

The territory around Lake Baikal features mountains, lowlands and plateaux, and includes the watersheds of the Angara, Lena, Selenga, Barguzin, Vitim and other rivers. A favourable climate and a wealth of fauna and flora have attracted people since early times, creating a rich archaeological record, particularly for the period of the Holocene climatic optimum (8000 – 4500 years ago). Over the vast region of Northern Asia, Baikal Siberia is the only area in which several hundreds of burial complexes relating to the later Mesolithic into the Neolithic have been found and investigated. The site described in this article, nicknamed the "Lokomotiv" cemetery, is the largest Neolithic cemetery known from northern Asia, and one of the earliest, being contemporary with many late Mesolithic cemeteries of northern Europe. The burials, covering an area of 50 000 m^2 are situated on the slope of the left bank of the Angara River at the mouth of the Irkut River, at a distance of c. 70 km from Lake Baikal, in the central part of Irkutsk (Figure 1). The first evidence of ochre-painted graves came to light in 1897, when the base of the hill-slope was being cut during the construction of the Trans-Siberian Railway (Ovchinnikov 1904: 67–71). A succession of professional archaeological excavations has since been carried out by the specialists of Irkutsk State University, Medical University and Museum of Regional Studies: five graves in 1927 (Gerasimov 1955: 416–424); 21 graves in 1946–1959 (Khoroshykh 1966: 84–93; Okladnikov 1974: 35–45); and 59 graves in 1980–1997 (Bazaliiskiy 1998: 10–18). In each case, the archaeological excavations were related to a construction project, and consequently the investigations have been carried out on different sites and over small areas, which has had a significant effect on research into

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the cemetery's topography. All the ancient burials located in the eastern and southern parts of the cemetery were destroyed during the construction of the railway, the local residential districts and underground walkways. It is impossible to estimate the number of the destroyed graves, but it must be measured in hundreds. The archaeological excavations which opened the majority of the known burials were carried out in the city park, created in the second half of the 20th century on a site not used for business purposes. At least fifty graves remain unopened in the park up to the present time. Out of 87 burials investigated, reliable archaeological and anthropological evidence is available from only about 71 graves, 70 of which contained human remains (124 individuals) and one of which held the interment of a wolf.

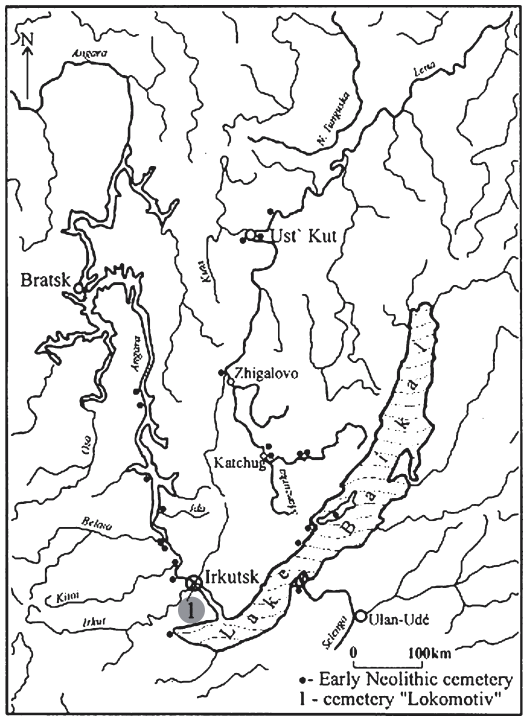

Figure 1. The Baikal region. Location of the cemetery at "Lokomotiv" and other burial complexes of the Early Neolithic Age.

Grave goods

The grave goods accompanying the burials were rich and varied and included fishing and hunting tools, domestic artefacts, adornments, sculptures, half-finished products and raw materials. The most numerous objects are shanks of composite fishhooks made of agalmatolite and slate (Figure 2); some burials contain up to 150 of these. The second most abundant category of goods are the incisors of the marmot (*Marmota sibirica Radde*), which may have been used for decorating clothing and headgear. Arrow-points made of flint and shale are less frequent than the composite fishhook shanks. Some burials have up to 30 of them. Besides the above-mentioned items, the graves also had ground-stone adzes, knives of jade and clay slate, scrapers, pestles, ground flat points of nephrite and slate, various abrasives, compound hafted tools, various points and pick-axes of bone and antler, harpoons, spoons, needle-cases with needles, and a great number of half-finished products. Examples of the raw materials include stone, bone and antler, the jaws of beaver, fox, and small predators as well as canine teeth of bear, wolf, beaver, fox, musk deer and other animals. Ceramics have only been found in three graves. Adornments are represented by numerous pendants made from the grooved fangs of the wild boar and from deer canines, calcite rings, a horn diadem, and beads of pyrophyllite and pearl.

Figure 2. Fishing hook.

Small art objects include carved sculptures of elk heads of bone and antler (Figure 3), ground slate fish-lures, large sculptures of fish made from elk shoulder blades, and very stylised anthropomorphic sculptures in bone. The grave goods have survived in good condition, as has the human bone.

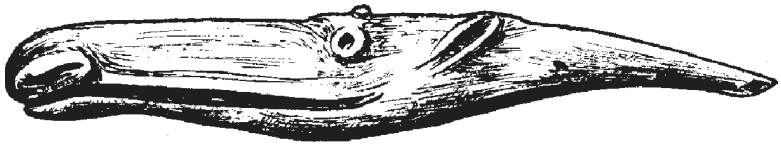

Figure 3. Sculpture of the elk's head. Antler.

Human bone

Six children, twenty-one men and sixteen women (Table 1) were found in the graves containing single individuals (research on sex and age was carried out by anthropologist N. N. Mamonova, of the Institute of Ethnography at the Russian Academy of Sciences). This group contains a small number of children (9.3% and 2.8%) and a large number of men of mature age (23.3%); the ratio of men and women is approximately 6: 4.3. In grave L–35, the adult male had a trepanation of the skull, which caused his death. The average lifespan of the deceased at this site was 30 – 32 years (Mamonova & Bazaliisky 1991:101). Archaeological evidence (the grave goods) together with the results of bone chemistry analyses indicate that fish was predominant in the diet. This North-Mongolian population belongs to the undifferentiated Mongoloid craniological type (Debets 1951).

Mortuary practice

The ancient necropolis consists of burials dug into the earth, with no structures over or inside the graves. Grave pits were excavated into a deep level of the reddish-brown loam that corresponds to the Holocene climatic optimum. The burials were placed in oval or, more rarely, rectangular pits 0.3 to 2.2 m deep. The length of the pits varied from 1.6 to 2.2 m (for adult burials) and the width from 0.4 to 1.2 m. The human bones and grave goods at the bottom of the burial pits are surrounded by ochre.

Forty-three graves (61.4%) contained single individuals, 15 (21.4%) contained two people; five (7.1%) were triple burials; and seven graves (10%) were group inhumations of 4–8 persons. Overall, 97.6% of the burials occurred in a supine position, while orientation of the head was to the north-east in 60.2% of the graves, and to the south-west in 13.8%. In most cases, grave goods were concentrated in satchels behind the head and some other places. The distribution of the grave goods is extremely irregular. Three male graves contained 200 – 300 objects each, while two female graves had 191 and 121 pieces respectively. No grave goods at all were recorded in some male and female graves, and infants' graves contained no goods either. The average number of objects in the graves was from 10 to 80 objects.

Table 1. The cemetery at Lokomotiv. Sex-age structure of the individual graves.

sex	**children**		**male**				**female**			
age	Inf I	Inf II	jv	ad	mat	sen	jv	ad	mat	sen
numbers	4	2	2	8	10	1	–	8	7	1

Inf I – 0–8 years, Inf II – 9–15 years, jv – 16–20 years, ad – 21–35 years, mat – 35–50 years, sen – 50+ years

Single graves

Out of forty-three graves containing a single individual, forty-one contained supine inhumations, one had a skeleton in a prone position, and one in a flexed position. The prone specimen was a youth, while the one in a flexed position was an adult male. An orientation of the deceased to the north-east was recorded in 31 (72%) of the single graves, to the north-west in seven graves, to the south-west in one grave (with orientation unknown in four cases).

In four of the graves, three women (one mature and two adult) and one mature male had no skull. In place of the man's skull, there were numerous grave goods. In place of the mature woman's skull, there was a bone sculpture of an elk head and a decorated bone point. In the other two women's graves the place where the skull should have been was empty. There was no evidence of any later disturbance of the graves when these skulls might have been removed. The numbers of grave goods in the burials without skulls varied greatly: there were 260 items in the mature male grave, 17 items in the mature female grave, 18 items in one adult female grave, and no implements in the other adult female grave.

Double burials

In the graves containing two individuals, the skeletons were supine in all cases. In fourteen out of fifteen of the graves, both burials had been carried out simultaneously, but in one case they had been placed in the grave at different times. In nine graves the interred individuals in a grave had the same orientation of the head – to the north-east in six graves, to the west in one grave, and to the north-west in one grave. All but one body was supine, the remaining one on the right side with bent legs. In the other six examples the two individuals were head to toe, and the graves were orientated in different directions (Figure 4). The first group comprised four double burials of two men, two burials of a man and woman, two burials of an adult woman with an infant, and one burial of a mature male with an infant. The distribution of the grave goods in this group is non-uniform, just as in the individual graves. In one of the double male burials, 320 grave goods were recovered, while in one of the burials of a woman with a child only some other human vertebrae were found.

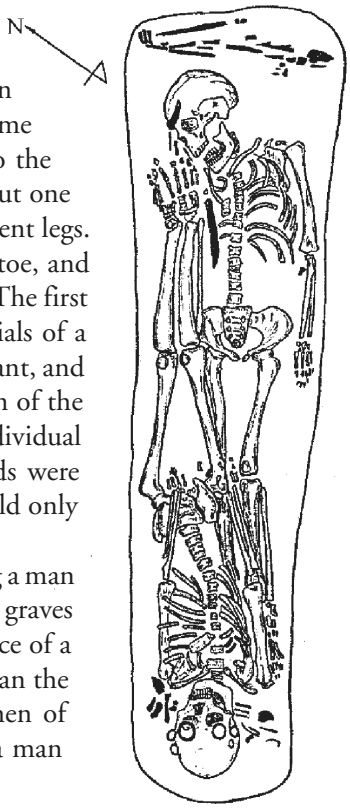

Figure 4. "Lokomotiv". Grave R–6.

A second group of double burials included some containing a man and a woman, while one grave contained two women. In the graves with opposite positioning of the two individuals, the presence of a man and a woman dominates, with the man always older than the woman. One exception is grave L–38, in which two women of different ages were buried. In grave R–6, a joint-burial of a man and a woman (Figure 5), both skulls were found to be wearing headgear. The woman's skull has pendants of grooved wild boar's teeth, and the man's was decorated with calcite rings

Figure 5. Lokomotiv R–6. Double burial – general view: male (left), female (right)

(Figure 6). In other graves such rings were found in the temple region of the head, which proves they were fastened to headwear. Rings were also found in the eye-sockets. The most probable reason for this was the eyes of the buried man were covered with headwear or the rings moved from the upper part of the skull. In other graves of this period, rings were not found in the eye-sockets of buried humans. The majority of the deceased are positioned with their head towards the north (Table 2). In grave L–3 the male skeleton had no skull. The grave goods in all the burials belong to particular individuals, and there is an average of 20 to 80 objects per grave. In double burial L–3, the number of goods near the male skeleton exceeded the number of goods near the female, while grave R–6 showed an opposite ratio.

Figure 6. Lokomotiv R–6. Double burial – close up of the male skull.

Table 2. The cemetery at Lokomotiv. Sex-age structure and orientation in double joint burials with opposite positions of the deceased.

	Grave code	_–2	_–3	L–3	R–6	L–1	L–38
Orientation	North orientation	male ad N	male sen N	male NW	female ad NE	male mat N	female mat N
	South orientation	female jv-ad S	female mat S	female SE	male mat SW	female ad S	female ad S

Triple burials

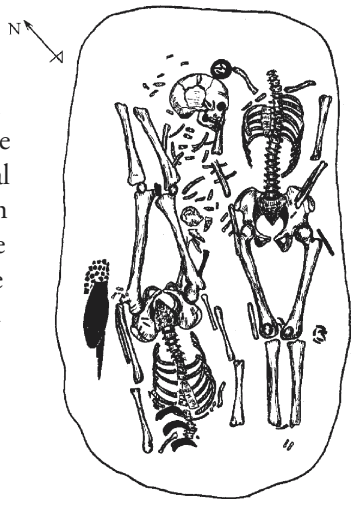

Figure 7. "Lokomotiv". Grave R–3.

In the five graves containing three individuals, the bodies were laid in the grave at the same time. The bodies had been laid out in large burial pits, in two of the graves with the same orientation and in three with opposite orientation. The burial complexes contained a mature male, an adult woman and an infant at the woman's feet, as well as an adult woman, a mature male and an adult male. Two of the burials with opposite orientations contained an adult woman, an adult man and an infant (in both cases, the woman and child were orientated to the north-east, and the man to the south-west), while one of them contained a joint interment of youths (one orientated to the east and two to the west). In grave R–3 (a triple burial of a man, woman and child), the skeletons of the adults had no skulls (Figure 7). Like the single graves, the triple graves contained accumulations of grave goods in particular places. Although they were recorded in all the graves, their number was not large. Some pieces were clearly assigned to particular individuals.

Communal graves

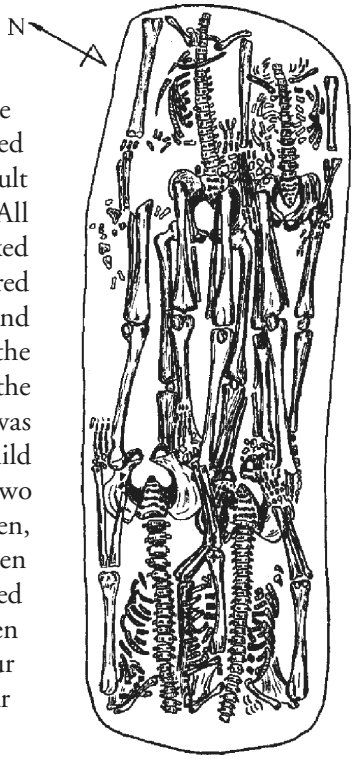

Figure 8. "Lokomotiv". Grave L–2.

A total of 36 persons was recorded in seven graves containing four to eight individuals. Judging by the positioning of the deceased, interments in these graves were carried out at the same time. The dimensions of the burial pits did not exceed those of the single graves, which explains why it was very difficult to place such a large number of the deceased in them. All inhumations were supine except for one case where a flexed position on the right side was recorded. In five graves the interred individuals had been placed in pairs in two or three levels and orientated in opposite directions, to either the north-east or the south-west (Figure 8). In the other two, the orientation was the same, to the north-east. The population of each grave was different: one contained four men, three women and one child in one grave, another three men, a young woman and two children, another four men, another two men and two women, another four women and one man. In this case, the women were located in pairs at the bottom of the pit, and were orientated in different directions, with the man resting upon the women in a flexed position on his right side, and touching all four women. In the other two graves the bodies shared a similar orientation: one contained a woman aged 35–45 years, together with a younger woman and three children, and the other contained a woman aged 35–45 years, a younger

woman and two children. In comparison with the other burials, the group graves contain a significant number of children and a large number of adults (Table 3).

A characteristic feature of the group of graves with four or more persons was that 22 of the 36 skeletons had no skulls (Table 3). There was no empty space where the skulls should have been: the cervical vertebrae of all the postcranial skeletons rested against the walls of the pit suggesting that the individuals had already been decapitated before burial. Furthermore, this group of graves displayed abundant evidence of violent death. In grave L–10, 35 arrowheads and needle-like bone points were found in the thorax of a man. In grave L–22, arrowheads were lodged in the lumbar vertebrae of two deceased. Grave goods were scattered, and consisted exclusively of adornments and weapons: arrowheads, broken compound daggers (spearheads) and bone points. Adornments were located in the area of the cervical vertebrae and clavicles, but the weapons mentioned above lay among the thorax and pelvic bones.

Overall, the burial rite employed in the cemetery shows two marked characteristics, burial of opposed pairs (head to toe) and burial without the head. Burial of pairs of persons head to toe was recorded in 15 of the 70 graves (21.4%). Similar joint burials are known from the Kitoy and Fofanovo Early Neolithic cemeteries of the Baikal region, at the late Mesolithic cemetery of Skateholm II (Gr. X) in southern Sweden and others (Vitkovskiy 1889; Gerasimov & Chernykh 1975; Larsson 1988). A head to toe positioning of the deceased has not been observed in the Late Neolithic cemeteries of the Baikal region.

Skulls were missing in 29 out of 124 skeletons (23.4%). As could be observed in several cases, the skulls were separated from the body between the second and third cervical vertebrae. The practice can be contrasted with the burial of skulls (or human heads) alone, as in the cave of Ofnet (Central Europe). No separate burial containing a skull alone has been recorded on the "Lokomotiv" site. Skeletons without skulls have been discovered in the majority of Early Neolithic cemeteries and in one Mesolithic grave of the Baikal region, but not in the cemeteries of the late Neolithic.

Table 3. The cemetery at Lokomotiv. Sex-age structure, orientation and lack of skulls in the group graves.

Grave code	L–2	L–10	L–14	L–22	L–24	L–25	R–13
Only postcranial skeleton	male ad femal ad **NE** Male ad female ad **SW**	male mat male ad **NE**	female mat **NE**	m-ad m-ad m-ad m-? f-ad f-ad f-mat **?**	male mat male ad **NE** female jv-ad male ad **SW**	female mat female ad **NE** female ad female ad **SW**	f-jv-ad? f-mat? inf II? **NE** inf1 **NE**
Full skeleton		Male ad male ad **SW**	infI infI f-ad infII **NE**	infI **?**	infI infI **SW**	sen **NE**	

? – unknown skull **?** – unknown orientation

Figure 9. Lokomotiv R–8. Burial of a tundra wolf – general view.

Studies of the death rate in terms of age have established that men slightly outnumber women, and that there is a high percentage of individuals aged 20–35 years and a low percentage of child burials. The total sex-age structure of the cemetery was greatly influenced by the last group of graves, where mostly people with children were buried. The ratio of men, women and children at "Lokomotiv" is similar to that of other Early Neolithic cemeteries of the Baikal region as well as to that of some late Mesolithic cemeteries of North Europe – Oleniy Ostrov, Skateholm, Vedbaek and others (Gurina, N. 1956; Larsson, 1988; Alberthsen, Petersen 1976). Unlike the Early Neolithic cemeteries, the Late Neolithic cemeteries of the Baikal region are characterized by a greater number of child graves.

The tundra wolf

In 1995 the burial of a tundra wolf (*Canis lupus albus*) was found in the southern part of the cemetery (Figure 9). The wolves of the tundra and forest-tundra areas are among the largest known. The average body-length of a mature males is 1.26 – 1.45 m, and their weight varies from 50 to 65 kg (Sokolov & Rossolimo 1985: 31). Their lifespan is 9 ± 1 years, and the usual season of death is June–August (according to G. A. Klevizal). The wolf's skeleton was found in an oval horizontal pit, with its longitudinal axis orientated north-south, at a depth of 0.86 – 0.92 m below the present surface. The wolf lay with its head slightly raised in relation to the trunk, with its paws pressed to its body, in a dynamic posture. The head was orientated to the south. The skull of a mature human male, with its first and second cervical vertebrae, was found between the wolf's elbow and knee joints, just below the ribs. To the west of the front paws was an oval spot, surrounded by ochre. Close to the pit's western wall, the lower jaw of a young man, together with some finger phalanges, a few rib fragments and the fibula of a man were found near the wolf's skull. The grave goods included two thin bone

shanks, a fragment of a beaver canine, three bone needles, three prismatic blades, a fragment of a flint blade, and a point made on a prismatic blade.

There were at least two burials here. The lower jaw and the above-mentioned bones represented the remains of a Mesolithic burial, whose uncalibrated age was 7750 ± 70 B. P. (TO–6482). The grave goods are likely to belong to that burial. Judging by radiocarbon estimates the burial of the wolf was carried out 500 years later, i.e. 7230 ± 40 BP (GIN–884a). The skull was found in full anatomical order in a small pit specially dug for it under the wolf's skeleton. Its jaws were pressed together, with atlas and axis under the ribs of wolf's skeleton, which suggests the human head was buried with the wolf. A radiocarbon date has yet to be received for this skull, but the colour of both the skull and the wolf's bones is identical. However, the skull's craniometric parameters differ from those of the general population of the cemetery.

It remains a mystery how this cold-climate animal found itself thousands of miles away from its natural habitat, in the south of Baikal area of Siberia, given that this was the period of climatic optimum, with high humidity and a warm climate. Its species is absent from the paleontological collections that have been put together in this territory. It seems likely that its appearance is owed to human agency. One can guess this wolf played a very important role in the life of ancient society, because it is very unusual for this animal to be buried in a specially created grave. There is abundant archaeological evidence for buried dogs in Late Mesolithic and Early Neolithic cemeteries: for example, the joint burial of a man and two dogs was found on the island of Olkhon (Lake Baikal) (Konopatskiy 1982: 44) and numerous burials of dogs were also recorded at the site of Skateholm I (Larsson 1988). This is understandable with dogs being man's helper in everyday life – but there is no previous evidence for an individually buried wolf.

Date and context of the cemetery

In terms of its rites and grave goods the "Lokomotiv" cemetery belongs to the Kitoy culture of the Neolithic age in the Baikal region. The first burial complexes of this culture were excavated by N. I. Vitkovskiy in 1880–1881 in the cemetery on the left bank of the Angara at the mouth of the Kitoy. Up to the present, 27 locations with cemeteries and separate burials belonging to the Kitoy culture have been discovered. They correspond to the chronological period of 7200–6000 BP.

The uncalibrated age of the burial complexes described above is between 7–6000 BP with the wolf initiating the sequence. The analysis of human bones in the laboratory of L. D. Sulerzhitskiy (GIN, Moscow) has yielded 19 radiocarbon dates which suggest that the cemetery functioned for a period of ca. 800 years (Table 4). The given series of radiocarbon data testify that in the north-Asian context the burials of the cemetery are younger than the Fofanovo and Molodov cemeteries and are contemporary with the cemeteries and separate burials of the Baikal Siberia. In the north-European context the "Lokomotiv" cemetery is contemporary with Skateholm II and Vedbaek, older than the Skateholm I and younger than Olenii Ostrov (Larsson, L. 1988, p. 368; Alberthsen, Petersen, 1976, p. 4; Mamonova, Sulerzshyzkiy, 1989). Similarity with these sites may be observed in some elements of the funeral ritual – absence of constructions over the graves, covering with ochre, inhumation in supine position, prevailing eastern and northern directions in the orientation of the deceased and a great number of

Table 4. The radiocarbon dates from Lokomotiv.

Grave code	Lab. N	^{14}C Age BP
L–22–1	GIN 3333	6700 ± 150
L–22–2	GIN 3331	6740 ± 180
L–10	GIN 3330	6780 ± 80
L–23	GIN 4033	6750 ± 60
L–28	GIN 4035	6820 ± 100
L–24	GIN 4034	6830 ± 80
L–8	GIN 3329	6870 ± 70
L–30–1	GIN 5359	6100 ± 200
L–2–4	GIN 5360	6350 ± 170
L–42–1	GIN 6825	6460 ± 70
L–44–1	GIN 7527	6470 ± 120
L–38–2	GIN 5773	6670 ± 80
R–7–2	GIN 8449	6280 ± 80
R–7–1	GIN 8450	6300 ± 120
R–6	GIN 7112	6540 ± 100
R–14	GIN 10 206	6200 ± 240
R–15	GIN 10 207	6207 ± 200
R–12	GIN 10 932	6410 ± 120
R–13–3	GIN 10 933	6350 ± 40

teeth and fangs of animals among grave goods. There was a small number of ceramics unlike at contemporary caravan sites where they are found in abundance. Ceramics and a large proportion of ground stone implements (60%) indicate early development of the Neolithic on the territory of the Baikal Siberia.

In conclusion it should be noted that the cemetery at "Lokomotiv" has yielded a striking display of burial rites that have been encountered to a much lesser extent in the other cemeteries of the Early Neolithic period in the Baikal region. These features include, the opposite head to toe of the deceased in double burials, some communal graves, a great number of skeletons without skulls, some unique palaeoanthropological and archaeological material, and among the earliest graves, the burial of a wolf from the tundra.

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