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Late Middle and Early Upper Paleolithic in the Eastern Adriatic and the Problem of the Regional Middle/Upper Paleolithic Interface

The Eastern Adriatic Late Middle Paleolithic is relatively well known. On the other hand, Early Upper Paleolithic sites in the same region are scarce; and in particular, sites from Early Aurignacian, which are completely lacking. Sites with stratigraphy encompassing Late Middle Paleolithic and Early Upper Paleolithic that would contribute significantly to better understanding of the Middle to Upper Paleolithic transition, have not yet been found. In this paper, we give an overview of the archaeological record of the regional Late Middle and Early Upper Paleolithic from Croatia, Bosnia and Herzegovina, Montenegro, and Albania. The information on the research of Late Middle Paleolithic sites conducted in different regions of the Eastern Adriatic (e.g., Mujina pećina and Velika pećina in Kličevica in Dalmatia, the open-air site Campanož and Romualdova pećina in Istria, and Bioče and Crvena stijena in Montenegro) is given. AMS and ESR dates give a good temporal frame for the Late Middle Paleolithic. In contrast, radiocarbon dates for the Early Upper Paleolithic are scarce, and were produced a long time ago, hence bringing into question their reliability (as supported by their very late age for Aurignacian). Only one recent AMS date from Šandalja II could represent the real Aurignacian age. According to current data, there is a hiatus of several thousand years between Late Middle and Early Upper Paleolithic in the Eastern Adriatic. Here we suggest several potential reasons for such a fragmentary record of the Middle to Upper Paleolithic transition in the Eastern Adriatic.

Keywords: *Eastern Adriatic, Late Middle Paleolithic, Early Upper Paleolithic, Late Mousterian, Aurignacian, Middle to Upper Paleolithic transition.*

Introduction

The Adriatic region is of an extreme importance, owing to its geographic position, which connects the Mediterranean with the European continent, as is reflected in the rich archaeological record. In recent years, work on Mousterian sites in this region has intensified, and has provided important information about the chronology of habitation, adaptation, and behavior of Mousterian people. Unfortunately, very limited new information about the Early Upper Paleolithic was gathered by recent research. In this paper, Middle and Early Upper Paleolithic sites from the Adriatic region (Fig. 1) will be briefly presented, and the problem of the Middle/Upper Paleolithic interface will be discussed. The Adriatic region, including both sides of the modern Adriatic Sea and the Danube corridor, is very important in regard to the modern peopling of Europe (Chu, 2018). Here, we present currently available data from Croatia in the north down to Albania in the south.

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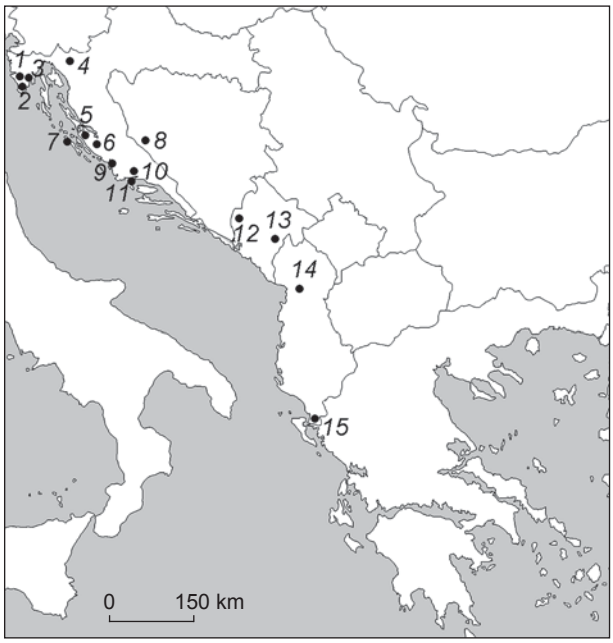


Fig. 1. Locations of Middle and Early Upper Paleolithic sites in the Adriatic region, mentioned in the text (base map is designed using d-maps.com).
1 – Romualdova pećina; *2* – Šandalja II and Campanož; *3* – Ivšišće; *4* – Bukovac pećina; *5* – Open air-sites between Ljubač Bay and Posedarje; *6* – Velika pećina in Kličevica; *7* – Veli rat (Dugi otok Island); *8* – Gigića pećina; *9* – Stipanac; *10* – Mujina pećina and Karanušići; *11* – Kaštel Štafilić-Resnik; *12* – Crvena stijena; *13* – Bioče; *14* – Blazi cave; *15* – Shën Mitri.

Overview of the Middle and Early Upper Paleolithic sites in the Eastern Adriatic

Northeastern Adriatic

Coastal areas. Several years ago, the Middle Paleolithic was discovered at two sites (Romualdova pećina and Campanož) in the Croatian part of Istria (Komšo, 2008, 2011). Romualdova pećina is located on the southern slopes of the eastern part at the end of the Lim Bay, northeast of Rovinj (Malez, 1979; Komšo, 2008). M. Malez (1979: 252) determined the industry from this cave to represent the younger Aurignacian and the early phase of the Gravettian. Judging by the presence of a shouldered point, the finds are most likely from the Early Epigravettian rather than Gravettian (Montet-White, 1996), or even from Late Epigravettian (Vukosavljević, Karavanić, 2017). The determination of a part of the industry as Aurignacian is questionable. D. Komšo (2008) excavated the site in 2007 and found Mousterian artifacts. Recent archaeological work at this site has yielded the first radiometric dates (over 48 and 50 ka BP) for the Mousterian industry in Istria (Janković et al., 2017).

Another Mousterian site in Istria is Campanož, located in the open air near Medulin, not far from Pula. Salvage excavations of 99 m^2 recovered lithic material from a layer at a depth of about 50 cm below the surface (Komšo, 2011). A large lithic assemblage (more than 30,000 specimens), with frequent debitage items, strongly suggests that the site was a workshop. No faunal remains were recovered.

The Early Upper Paleolithic in this region is represented only by one cave, and maybe one open-air site. The cave site is Šandalja II, located near Pula, and it contains Upper Paleolithic (Aurignacian – E, F, G, and H complexes, and Epigravettian – C and B complexes) lithics, and faunal and human (Epigravettian) remains (Karavanić, 2003; Janković et al., 2011; Karavanić et al., 2013). Layers G, F, and E have provided radiocarbon dates between ca 32 and 27 ka cal BP, while the results obtained for level H do not fit chronologically into the dated stratigraphic sequence (see (Malez, Vogel, 1969; Srdoč et al., 1979)). However, a new date on a bone sample from level F indicates that all the old dates are too young (Richards et al., 2015). A small split-base osseous point was found in Level H, while in the lithic industry of this level and the H/G interface, only one lithic implement might be considered as an Aurignacian tool type. However, layers G, F, and E, including the E/F interface, contain an Aurignacian lithic industry and some osseous tools (Karavanić, 2003; Čujković-Plečko, Karavanić, 2018). Flakes are the most common lithic element in these deposits, although blades and bladelets are also represented. A very small percentage of tools could be explained either by their production elsewhere or, alternatively, people could have taken them from the site. Nosed and carinated end-scrapers are quite common, while Aurignacian blades are missing. Side-scrapers and notches are present in significant quantities. Dufour bladelets are missing from the sample, but it is not clear whether this reflects the real situation at the site, or the fact that the sediment was not sieved. The most common osseous tools in these units are awls. Four pierced animal teeth from the Aurignacian layers represent decorative items, and suggest symbolic behavior.

Ivšišće is an open-air site yielding surface finds, located at the rims of the Čepić polje, in the southeastern part of Istria. Judging by their technological and typological characteristics, these finds could be attributed to the Early Upper Paleolithic and Neolithic (Komšo, Balbo, Miracle, 2007). Although no cultural layers have been preserved, this is potentially the first Early Upper Paleolithic site (possibly Aurignacian) to be found in Istria since the discovery of Šandalja II, and the first Early Upper Paleolithic open-air site in this part of Croatia.

Hinterland. Another interesting site from the Early Upper Paleolithic period is Bukovac pećina, located in Croatia's Gorski Kotar region, southeast of the town of Lokve (Malez, 1979). An osseous point from this site, discovered more than 100 years ago, was probably

massive based (Mladeč-type point), and can be attributed to the Aurignacian (Ibid.), as is supported by radiocarbon dating made on animal bone that originate from the same layer as the osseous point. The proposed age for the Bukovac bone point is ca 34,000 cal BP. The bone point (found inside the cave) and stone flake core (found in the trench in front of the cave mouth) are the only evidence of human activity on this site, representing chronologically and spatially discrete episodes of human presence. The flake core was found in the layer dated between ca 44,000 and 42,000 cal BP, placing it during the course of Middle-Upper Paleolithic transition. Core morphology could suggest its attribution to the Upper Paleolithic, although a Middle Paleolithic attribution cannot be excluded (Janković et al., 2018). In the absence of other diagnostic material, both attributions could be taken into the account.

Central Eastern Adriatic

Coastal areas. Several important Middle Paleolithic sites are situated in Dalmatia. Velika pećina lies in the canyon of the Kličevica brook, near Benkovac, in northern Dalmatia (Fig. 2, *a*, *b*). Animal bone from level D was dated by radiocarbon AMS to ca 43 ka cal BP (Karavanić, Čondić, Vukosavljević, 2007). Another animal bone from layer D (cut into two pieces) yielded two results: ca 39.7 ka cal BP (Beta-372935) and 36.5 ka cal BP (Beta-372934) (Karavanić et al., 2014). However, a result of ca >48 ka BP (OxA-33732) was yielded for stratigraphic unit 20 (trench near entrance), while level C (trench inside the cave started in 2006) was dated to ca 40.8 ka cal BP (OxA-33654) (for other dates see (Karavanić et al., 2018)). The dated bone sample (OxA-33732) from stratigraphic unit 20 is consistent with the result of U-Th dating of flowstone, and probably represents the real age of the dated stratigraphic unit* (Fig. 3). Obtained dates suggest that Mousterian humans visited the cave for the first time around or before 50,000 years BP, and were also present there later, during the time of the Middle/Upper Paleolithic transition, around 40 ka cal BP. The tools are small (as in the so-called Micromousterian) and made of local chert. Among the tools, diverse side-scrapers are present, and among these, microlithic transverse scrapers are remarkable (Fig. 4). Animal bones and teeth from Middle Paleolithic levels are less common than artifacts. Although some finds (pottery) from later periods were found, there is no single find suggesting an Upper Paleolithic affiliation. Velika pećina is the cave site geographically closest to many open-air sites in the Ravni kotari area, and on islands, which makes it very valuable for comparisons with those sites.

Š. Batović (1973, 1988, 1993) found Mousterian artifacts on Dugi otok Island and Molat Island. A large number of stone artifacts, and also debris, were gathered near the lighthouse on Veli Rat in the northern part of Dugi otok Island (Malez, 1979; Batović, 1988). The lithic finds were attributed by Malez (1979) to the Mousterian (Middle Paleolithic) and Aurignacian (Early Upper Paleolithic); but later analysis based on material gathered by Malez, did not demonstrate the presence of Aurignacian-type tools (Hinić, 2000). This site should, therefore, definitely be attributed to the Middle Paleolithic, while the attribution to the Early Upper Paleolithic remains doubtful. Recent field surveys of Veli Rat confirmed the earlier attribution of found lithic scatters based on techno-typological grounds. In addition to old positions, some new surface lithic scatters are also found. Old and new data from Veli Rat suggest that majority of surface lithic finds belong to the Middle Paleolithic; but Upper Paleolithic and/or Mesolithic remains are also present (Krile, Vujević, 2017).

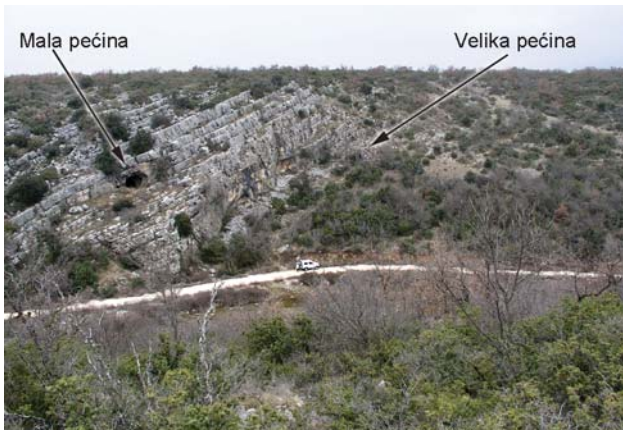
In the area between Ljubač Bay and Posedarje, north of the town of Zadar, there is a large concentration of Paleolithic open-air sites (Fig. 2, *e*, *f*) (Vujević, Perhoč, Ivančić, 2017). Š. Batović (1965) collected numerous finds there. They are designated with the name of the specific area where they were found (for example, Radovin, Slivnica, Jovići). The sites yielded mostly finds from the Middle Paleolithic, but there are also some younger artifacts. Judging by their typology, some of the assemblages could represent the Charentian type of Mousterian (Vujević, 2007). The industries from these sites are similar to those of other Mousterian sites of the Eastern Adriatic region. The tools are usually small, as in the so-called Micromousterian, and denticulates and notched pieces are frequent. However, an especially important place is held by nosed/carinated end-scrapers, collected by Batović in the Radovin-Dračice site. Artifacts of the same type were found by D. Mustać not far from St. Peter's Chapel*. These types of artifacts belong to the Aurignacian, and are very rare in this region (Fig. 5).

Z. Brusić (1977) collected a number of lithic artifacts near the islet of Stipanac in Prokljansko Lake, near Skradin (north Dalmatia), at a depth of 3 m, assigning them to the Mousterian industry. Centripetal (probable Levallois) core confirms this attribution, but it is quite possible that some of lithic material is from later periods. Therefore, Stipanac is the first underwater Middle Paleolithic site discovered in Dalmatia.

Other Mousterian sites come from central Dalmatia. Mujina pećina lies north of Kaštela, close to city of Split (Fig. 2, *c*, *d*). Chronometric dating (radiocarbon and electron spin resonance) has demonstrated that the

*Opinion of J. Hellstrom and P. Bajo, given in personal communication.

*Information about location where these artifacts were found was obtained in the personal communication.



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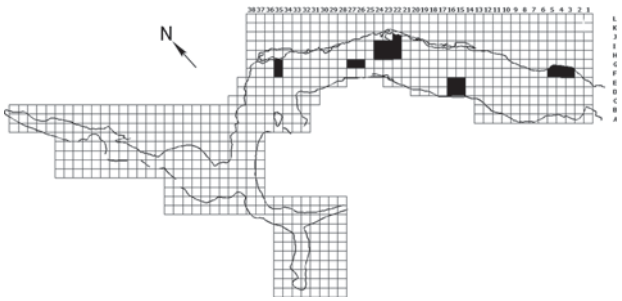

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e

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Fig. 2. Middle Paleolithic sites in Dalmatia. Photo by N. Vukosavljević (*a*) and I. Karavanić (*c–f*), drawing by M. Vuković. *a* – Velika pećina in Kličevica, general view from southeast; *b* – plan of Velika pećina in Kličevica (plan drawing by Ivan Čondić, modified after (Karavanić et al., 2016)); *c* – Mujina pećina, general view; *d* – view from Mujina pećina towards Kaštela Bay; *e* – view from Ravni kotari area towards Velebit mountain; *f* – open-air site Radovin.

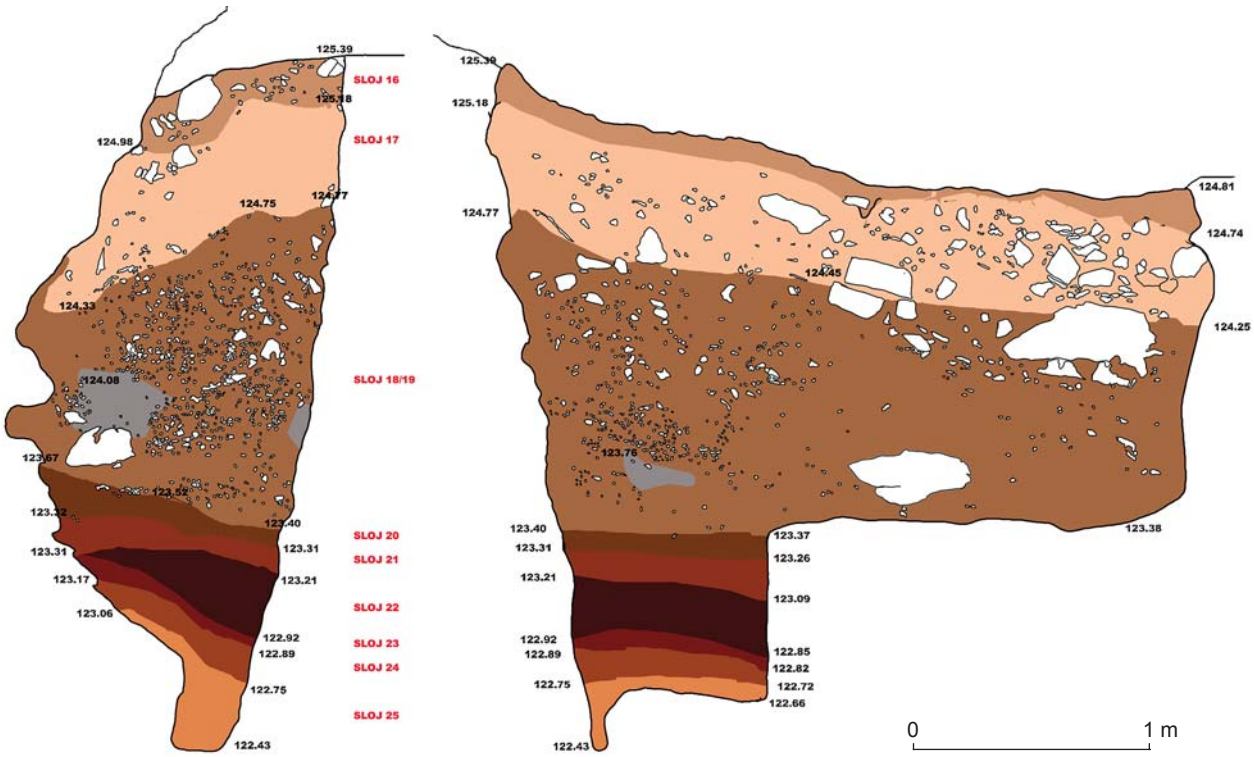

Fig. 3. East (F 2/3 line; left) and south (E/F 3-5 line; right) profiles of the trench near the cave mouth. Remains of dated flowstone are visible between layers 17 and 18/19. Drawing by R. Maršić.

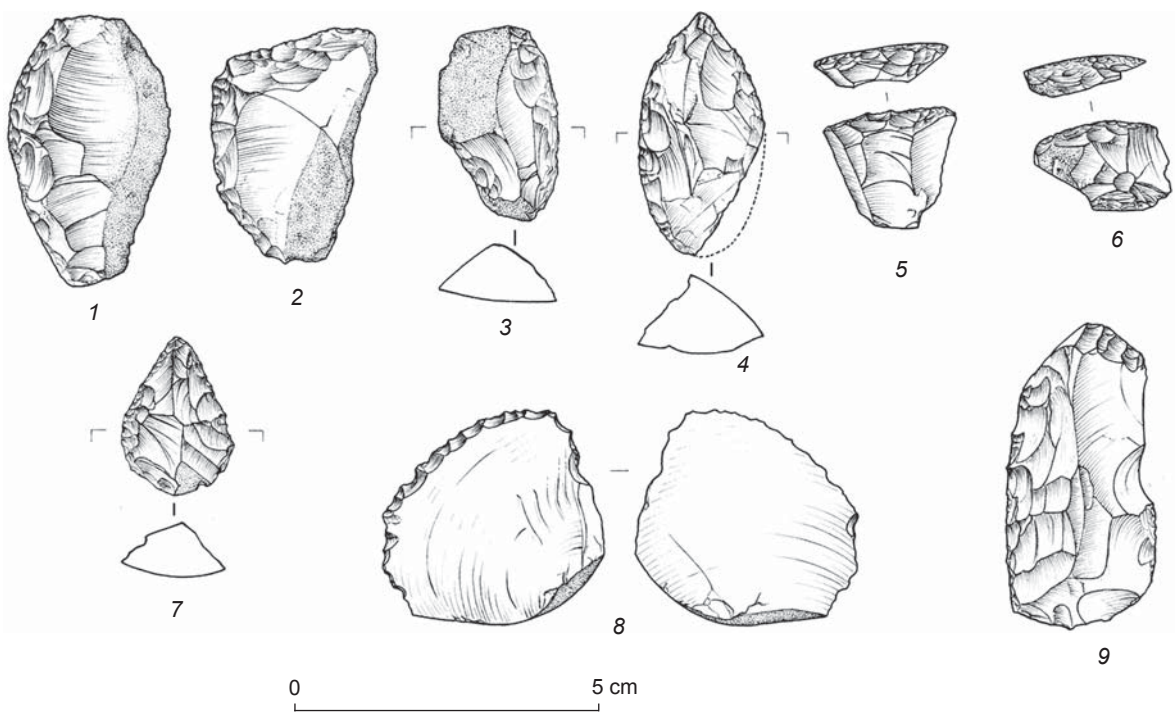

Fig. 4. Selected stone tools from Velika pećina in Kličevica. Trench near the cave mouth. Drawings by M. Rončević.
1, *2*, *3*, *5*, *6*, *9* – side-scrapers; *4* – limace; *7* – convergent side-scraper / point; *8* – raclette on Janus flake. *1* – layer 20; *2* – layer 23; *3*, *4*, *6*, *7*, *9* – layer 22; *5*, *8* – layer 21.

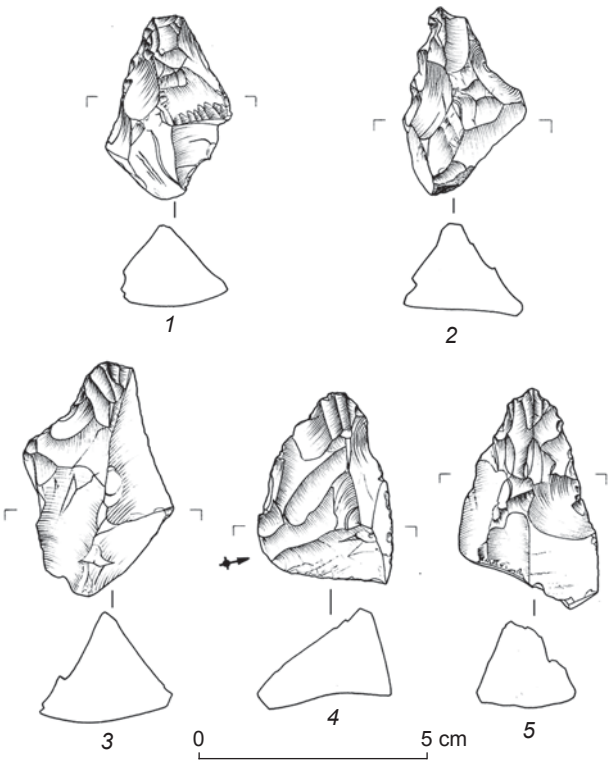

Fig. 5. Nosed and carinated end-scrapers (surface finds from the Radovin-Dračice open-air site). Drawings by M. Rončević.

Mousterian sequence of Mujina pećina can be attributed to a period between approximately 49 and 39 cal ka BP (Boschian et al., 2017; Rink et al., 2002). Traces of all the phases of stone tool production are present. The tools were largely made from local raw materials (chert). Centripetal cores are presented. The most frequent types of tool in the upper levels are retouched flakes and denticulates/notched pieces (Karavanić et al., 2008); but in the lower levels, scrapers are much more frequent than in the upper (Šprem, 2016). The tools are generally small, and strongly resemble the so-called Micromousterian. Along with stone artifacts, many faunal remains were also found in Mujina pećina. In the upper levels, Preston T. Miracle (2005) has identified unambiguous traces of human activity (damage caused by breakage, cut marks, burn marks) on the bones of chamois, ibex, red deer, and large bovines—aurochs and steppe bison. The fact that the remains of red deer, chamois, and ibex in Mujina pećina are mostly those of adult animals, and that they bear traces of the butchering of carcasses, indicates the important role played by hunting in the life of the Mujina pećina Neanderthals (Ibid.; Karavanić et al., 2008). The oldest levels (E3, E2, E1) at Mujina pećina are the richest in human-related finds, indicating much more intense human activity than in more recent levels. The lower density of finds in the upper levels (B, D1, and D2) suggests that the site was used as an occasional hunting camp during formation of these levels (Nizek, Karavanić, 2012). No Upper Paleolithic components were found in the stratigraphy of this site.

Not far from Mujina pećina (approximately 1 km south), at an open-air site near the village of Karanušići, some lithics were collected from the surface by I. Šuta, after M. Katić's initial discovery of the site (Karavanić et al., 2018). This lithic assemblage exhibits clear elements of Middle Paleolithic, but also of later periods, pointing to the conclusion that material from different periods of prehistory is present here. A trial archaeological excavation was carried out at Karanušići in 2014 (Karavanić et al., 2016), in a trench measuring 2 m^2 (2 × 1 m), positioned at the place where the densest cluster of stone artifacts was found on the surface during the previous field survey. The excavation yielded potsherds and stone artifacts; however, not a single stone find could be attributed undeniably to the Middle Paleolithic, even though this period was determined on the material that was previously collected from the surface (Fig. 6, *2*).

The number of artifacts with clearly Mousterian typological features was also collected from the underwater site of Kaštel Štafilić-Resnik, which lies at a shallow depth of about 4 m (Karavanić et al., 2009). Centripetal cores (Fig. 6, *1*) are presented in the lithic assemblage (Karavanić, 2015), in which side-scrapers are the most common tools (Barbir, 2015). Some Upper Paleolithic cores were also collected, but no single artifact that might suggest an Early Upper Paleolithic (Aurignacian) affiliation.

Hinterland. All these sites are on the territory of modern-day Croatia. However, north of the described central Dalmatian sites, another Middle Paleolithic site containing Mousterian lithics, Gigića pećina, is located in Bosnia and Herzegovina, near the town of Bosansko

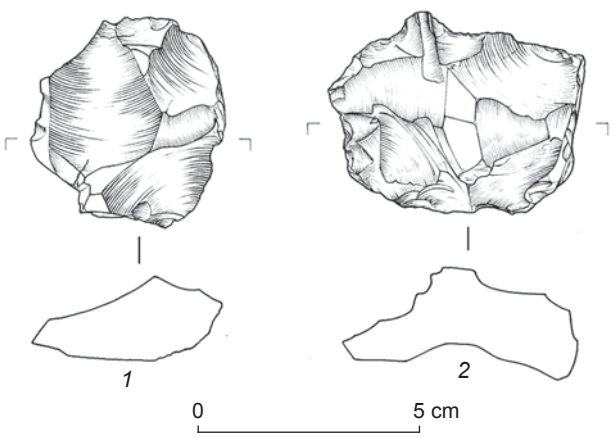

Fig. 6. Middle Paleolithic centripetal cores. Drawings by M. Rončević.
1 – underwater site Kaštel Štafilić-Resnik; *2* – open-air site Karanušići.

Grahovo (Kujundžić, 1989). Although Z. Kujundžić (Ibid.: 12) attributed tools discovered in the upper part of layer IV to the Upper Aurignacian, it seems that there were no typical Aurignacian tools, and thus it is possible that these tools are attributable to the Epigravettian instead of the Aurignacian (Karavanić, 2009). The other sites are located further south-east.

Southeastern Adriatic

Hinterland. Crvena stijena and Bioče rock-shelters located in Montenegro provide a certain amount of information related to the Middle/Upper Paleolithic interface in the Eastern Adriatic (Derevianko et al., 2016, 2017; Dogandžić, Đuričić, 2017; Mihailović D., Whallon, 2017). Crvena stijena layers XVIII–XII are attributed to the Late Middle Paleolithic (Dogandžić, Đuričić, 2017; Mihailović D., Whallon, 2017; Mihailović D., Mihailović B., Whallon, 2017). A series of radiocarbon, ESR, and OSL dates place layers XIII–XII between ca 49 and 42 ka cal BP (Mercier et al., 2017). The final Mousterian of Crvena stijena is characterized by the presence of Uluzzian elements in the lithic assemblage (laminar and microlaminar technology, diverse reduction strategies employed in flaking flakes and splintered pieces, and backed tools, including segments and arched points).

The upper layers of the Bioče rock-shelter are supposed to be of MIS 3 age, which is supported by radiocarbon dates that date the accumulation of layers 1.2 and 1.4 between 40 and 32 ka BP (Derevianko et al., 2016, 2017; Mihailović D., Whallon, 2017). Given the small sizes of tools from layer 1, A.P. Derevianko et al. (2017) refer to this layer's assemblage as Micromousterian. Both Middle and Upper Paleolithic technological and typological elements are present in upper layers (Dogandžić, Đuričić, 2017; Mihailović D., Whallon, 2017). The presence of Middle and Upper Paleolithic elements in Crvena stijena could be explained as continuity in the evolution of lithic industries, when considering its Late Mousterian and Uluzzian elements (Mihailović D., Whallon, 2017). Unfortunately, Early Upper Paleolithic sites in the Southeastern Adriatic hinterland are so far unknown, which prevents a more comprehensive understanding of the Middle/Upper Paleolithic interface.

Coastal areas. In the Albanian archaeological record, until recently, when Hauck et al. (2016) reported on a layer from Blazi Cave (layer 4), which is ca 45 to 43 ka cal BP old, there were no sites dated to Late Middle Paleolithic and Early Upper Paleolithic. Lithic artifacts from layer 4 from Blazi Cave are very few and undiagnostic. Hauck and colleagues also report the probable Aurignacian age of several carinated cores and thick end-scrapers discovered in the open-air site Shën Mitri, in southern Albania. The context of lithic finds there was affected by various taphonomic factors as is visible in the association of Holocene radiocarbon dates and lithic assemblage of probable Upper Paleolithic age.

Discussion and conclusion

In the last 20 years, research on the Late Middle Paleolithic has been conducted in the Eastern Adriatic with different intensity in different regions. Therefore, the Late Middle Paleolithic is relatively well explored and known, and discussed in the literature. On the other hand, Early Upper Paleolithic sites in the same region are scarce, while in particular, sites from the Early Aurignacian are completely lacking. AMS dates give a good temporal frame for the Late Middle Paleolithic. In contrast, radiocarbon dates for the Early Upper Paleolithic are scarce, and were made long time ago, hence bringing into question their reliability, as is supported by their very late age for the Aurignacian. Only one recent AMS date from Šandalja II could represent the real Aurignacian age. There is a hiatus of several thousand years between the Late Middle and Early Upper Paleolithic in this region, and no industry from a single site shows a progressive or transitional nature, with the exception of Crvena stijena. Moreover, sites with stratigraphy encompassing both the Late Middle Paleolithic and the Early Upper Paleolithic have not yet been found.

The reasons for such a fragmentary record of the Middle to Upper Paleolithic transition could be multifold:

relatively short and unsystematic research on the Paleolithic in the region;

paleoenvironmental change, i.e. a rise in sea-level probably destroyed potential sites;

low population density during the Early Upper Paleolithic;

no temporal overlap between Late Neanderthals and Early modern humans;

lack of stratified sites encompassing Late Middle and Early Upper Paleolithic remains.

However, the most acceptable explanation, proposed by D. Papagianni (2009: 133), is that Neanderthals may have disappeared from this region before modern humans arrived; see also (Papagianni, Morse, 2013). It may be that this chronological gap in the habitation of these two groups of humans was caused by various factors that could have made this region difficult for human habitation for some time: among these, the volcanic eruption of Campanian Ignimbrite could be one of the triggers for this gap. This gap is very well documented in Crvena stijena, where traces of human presence were significantly reduced after the deposition of Campanian Ignimbrite tephra (Morley, Woodward, 2011; Mihailović D., Whallon, 2017). In considering this gap, Morley and

Woodward (2011: 690) are taking into account potential environmental crisis associated with this eruption and possibly compounded by climate deterioration caused by Heinrich Event 4. Unfortunately, recent search for tephra and cryptotephra remains in the stratigraphy of Romualdova pećina, Mujina pećina, and Velika pećina in Kličevica did not give positive results (Davies et al., 2015: Tab. 5, *a*).

Some other authors also argue about the effects of the Campanian Ignimbrite eruption on the demise of the Neanderthals. Black et al. do not consider this volcanic event to be the only reason for the Neanderthal extinction, but they do not exclude its possible impact on Neanderthal everyday life (Black, Neely, Manga, 2015). Its potential impact on the hominin population and subsistence is also hypothesized by Fitzsimmons et al. (2013).

Future research in the region should focus primarily on finding new sites that would shed light on some of the issues raised above. Of particular significance would be the discovery of well-stratified sites with Late Middle and Early Upper Paleolithic layers. The presence of carinated and nosed end-scrapers in north Dalmatia, which could be of Aurignacian age according on typological grounds, should encourage investigation of the potential Early Upper Paleolithic sites in this area.

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Insight into Ceramic Technologies at the Maikop Site of Ust-Dzheguta, Karachay-Cherkessia

The Maikop culture of the 4th millennium BC has long been recognized as one of the most intriguing phenomena in the archaeology and history of Eurasia. A pottery assemblage of Ust-Dzheguta, located on the northern slope of the Greater Caucasus, should provide an insight into Maikop society and its technological and social choices. The article provides information on geographical location and geological settings of the Maikop site. Based on optical mineralogy analysis, potential raw materials and geological maps, fabrics and their possible geological sources were defined. The pottery assemblage exhibits technical and technological heterogeneity, including the use of a variety of raw materials and techniques. Correlation between types of vessels and fabrics is traced. Three Maikop pottery industries have been identified. Most of massive and sophisticated basins and pithoi were produced by highly skilled and specialized potters. The majority of vessels were manufactured by part-time potters. Cooking vessels were made as part of household production. The conclusion is provided about the established specialization in the pottery manufacture and preservation of household production.

Keywords: *Maikop phenomenon, Northern Caucasus, Ust-Dzheguta, ceramic technologies.*

Introduction

Various scholars have linked the Maikop phenomenon of the fourth millennium BC and its pottery to the cultures of the Southern Caucasus, Mesopotamia, Anatolia, Syria, Northern Iran, and Europe (Andreeva, 1977; Von Majkop…, 2010; Lyonnet, 2007; Narimanov, Akhundov, Aliev, 2007; Nechitajlo, 1991; Rezepkin, 2000). Many researchers suggested that some Maikop vessels were made using additional technology introduced from the south, a potter's wheel (Munchaev, 1975: 324–332; 1994: 197–201; Korenevskiy, 2004: 36–39, 49–62). The last twenty years have seen an influx of new data from the Maikop settlements, including dozens of calibrated radiocarbon dates (Chernykh, Orlovskaya, 2007; Kohl, 2007; Korenevskiy, 2004; Lyonnet, 2000, 2007; Trifonov, 2001), as well as results of genetic studies (Allentoft et al., 2015; Sokolov et al., 2016), and ceramic studies (Lyonnet, 2007; Korenevskiy, Kizilov, 2015; Rezepkin, 2012; Rezepkin, Poplevko, 2009; Rezepkin, Kulkova, 2018; Poplevko, 2018; Shishlov, Kolpakova, Fedorenko, 2013).

Various theories have been introduced, modified, and applied to the archaeological data. However, these have not fully taken into consideration the pottery—the most frequent and basic component of the material culture. Thus, a description and definition of Maikop pottery and its technology is necessary for further discussion.

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This study forms part of a project that seeks to establish the technological principles of Maikop pottery production by means of comparisons among various Maikop assemblages. The methodology is derived from chaîne-opératoire analysis (Lemonnier, 1986; Leroi-Gourhan, 1943), a detailed reconstruction of artifact-manufacture, use and discarding, focusing on producers' behavior and decision-making (Bobrinsky, 1978; Lemonnier, 1986).

Geographical location and geological environment of the Ust-Dzheguta site

The Maikop settlement of Ust-Dzheguta (870 m asl) is located on the eastern terrace of the Kuban River, north of the town of Ust-Dzheguta, 12 km south of Cherkessk, in the Karachay-Cherkess Republic (Fig. 1). The relief of this region, located on the slopes of the northwestern Caucasus, is divided by parallel ridges into three main areas: flat-or-hilly in the north, foothills, and mountainous in the south. Ust-Dzheguta is located in the southern part of the flat-or-hilly area (400–900 m asl), characterized by a flat landscape with hills and a dense river network, and bounded to the south by the Pastbishchny ridge (900–1500 m asl).

The Greater Caucasus, a folded sedimentary structure formed during the Alpine Paleocene-Cenozoic orogeny, is composed mainly of Cretaceous and Jurassic rocks, with some Paleozoic and Precambrian rock exposures (Geologiya Bolshogo Kavkaza…, 1976; Khain, Milanovsky, 1963; Philip et al., 1989). Ust-Dzheguta is located in the stable development zone (up to 400 m thick) of sea clays of the Maikop series of the Oligocene-Lower Miocene, stretching along the entire Northern Caucasus and continuing on the Crimean Peninsula and in the region of the Western Black Sea. The Maikop series within Karachay-Cherkessia in the basin of the Kuban River and its tributaries is represented by alternating layers (100–150 m each) of calcareous clays and marls, and non-calcareous clays, often with inclusions of dolomite and limestone nodules, and locally occurring interlayers of sandstones (Beluzhenko, Filippova, Pismennaya, 2014). The flat-or-hilly area around Ust-Dzheguta contains Quaternary alluvium, clays and siltstones, Paleogene clays, sandstones, marls, and limestones (Gosudarstvennaya geologicheskaya karta SSSR, 1957, 1987; Gosudarstvennaya geologicheskaya karta Rossii, 2000). Approximately 5–7 km north to the site, Paleocene and Eocene clays, marls, and siltstones are exposed (Gosudarstvennaya geologicheskaya karta SSSR, 1957). The Pastbishchny ridge is built of Cretaceous clays, siltstones, limestones, mudstones marls, and sandstones (Gosudarstvennaya geologicheskaya karta SSSR, 1987; Gosudarstvennaya geologicheskaya karta Rossii, 2000). South to the Pastbishchny ridge, there are the Skalisty range (max. elevation 2644 m) and the wide North Jura depression, bounded to the south by the Peredovoi range (max. elevation 3464 m). The Skalisty range is built of Jura sedimentary rocks. The southernmost Peredovoi range is composed of intrusive Paleozoic granites, granodiorites, tonalities, and diorites. Jura andesites, basalts, dacites, tuffobreccia, schists, sandstones, and siltstones are exposed on the slopes of the Great Caucasus south of the Peredovoi range (Gosudarstvennaya geologicheskaya karta SSSR, 1987).

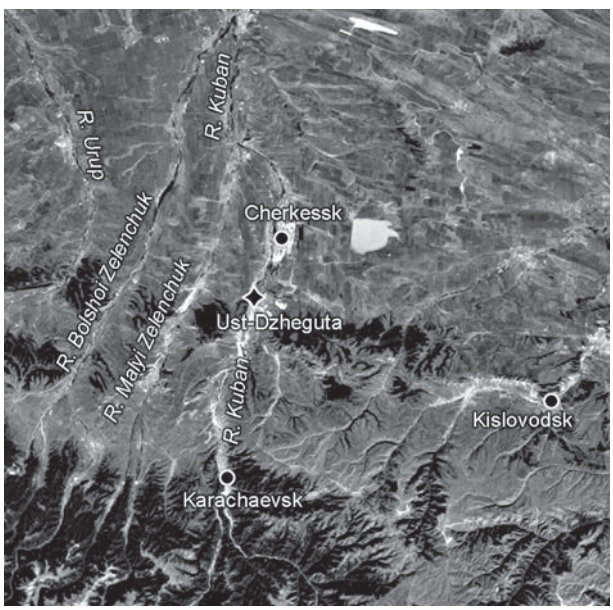

Fig. 1. Location of the Ust-Dzheguta settlement.

Characteristics of the material culture of the site

The Ust-Dhzeguta kurgans and settlement were first investigated in 1964 by T.M. Minaeva and A.L. Nechitajlo (Nechitajlo, 1978, 2007). The finds stored in the Prozritelev and Prave Stavropol State Museum-Reserve aroused great interest among archaeologists, but until now have not been fully described in the literature.

Nechitajlo's field observations and excavations indicate that the archaeological finds associated with the site were distributed over an area of 50 hectares (2007). The settlement has not been archaeologically excavated. The finds were collected from the surface or piles of earth, and include wattle and daub fragments, chipped stone, cores, grinding-stones, animal-bones, and a large amount of pottery.

The pottery assemblage from Ust-Dzheguta includes a large number of jars, bowls, basins/vats, and pithoi, as well as globular pots, a goblet, and cooking ware, such as pots and skillets. An additional component of the assemblage is a stand.

On the basis of visual inspection, it is possible to identify three main groups of ware in the Ust-Dzheguta assemblage:

1. Fine beige to pink or red ware with or without small amounts of organic temper; mainly slipped, and polished or burnished. A wide variety of serving and storage vessels belong to this ware: bowls, jars, globular pots, and a goblet;

2. Grayish, beige to pink, red or yellowish ware rich in vegetal material, slipped, and burnished or carefully polished; includes pithoi, vats/basins with the diameter up to 80 cm, and jars;

3. Dark gray to brown cooking ware with coarse sand, and with or without vegetal material temper; includes cooking ware, such as skillets and cooking pots.

According to S.N. Korenevskiy (2004: 50), the Ust-Dzheguta pottery assemblage typologically corresponds to the Galyugai-Seregino variant of Maikop pottery (3900–3600/3300 BC).

Research methods and procedures

179 pottery fragments and vessels from the Ust-Dzheguta settlement and kurgans have been examined, including 168 from the settlement and 11 from the kurgans. 51 vessels were sampled for mineralogical analysis, including 44 from the settlement and 7 from kurgans 13, 32, 40, and 45. Sampling was qualitative, to ensure the presence of a wide variety of types and fabrics. Although the preserved assemblage was small, the inspected sample included all types of vessels typical of the Maikop settlements.

The sample consisted of a representative selection of vessels (n = 51), including cooking pots, skillets, and the stand. Formation techniques, surface treatment methods, and composition of raw material were examined by visual observation, and were analyzed using the methods of optical mineralogy (Iserlis et al., 2015; Whitbread, 1995). The color and orientation patterns of the matrix were identified and described according to the "Handbook for Soil Thin Section Description" (Handbook…, 1985). The minerals in silt and temper were identified; their frequency, classification, morphology, and roundness were described using visual charts (Ibid.). We define temper as non-plastic, coarse (>62 μm) particles added by a potter, or occurring naturally in the clay. The samples were divided into fabric groups in accordance with lithological affinities in both clay and temper. The lithology of thin sections was compared to geological maps and samples of raw materials (Geologiya Bolshogo Kazkava…, 1976; Gosudarstvennaya geologicheskaya karta SSSR, 1957, 1987; Gosudarstvennaya geologicheskaya karta Rossii, 2000).

Using the site catchment approach (Vita-Finzi, 1978), five potential samples of raw material from the environs of Ust-Dzheguta were taken in order to identify possible local clay sources. Each sample was examined in thin section in its natural appearance and after firing: test briquettes were prepared to test plasticity, shrinkage, and the firing behavior of the materials (Iserlis et al., 2015).

In this study, "ware" refers to a class of pottery with macroscopically similar clay composition, clay treatment, surface treatment, and firing. "Fabric" is a combination of various components and features of a ceramic body, including matrix, temper, and clay treatment, established under the microscope. Every fabric is based on one clay originating from a specific geological location. One ware class could have been made of various fabrics, and one clay source could have been used by producers of various wares. However, a specific fabric should be attributed to a single workshop or to an industry (that is, several closely related workshops).

Results

Techniques. The majority of the vessels were made using coiling technique. Coils and horizontal joint points between them are visible both in cross-sections and on the surfaces. There was no clear evidence for the use of a potter's wheel or tournette. Techniques of shaving and scraping with tools were typical for non-cooking vessels (Lyonnet, 2007; Nechitajlo, 2007).

Some basins/vats and pithoi show clear evidence of coiling technique, with slabs added as complementary parts. Impressions of mat and straw on the exterior of rounded base of a pithos suggest that the lower part of the vessel might have been made in the mold (probably a small pit), covered with textile and/or straw. Impressions of ropes on the exterior walls and deep impressions of fingers on the bottom part of the pithos suggest that the walls were built upwards and fixed with a rope; the vessel had not dried by the time it was removed from the pit. After removal, the potter shaved the exterior bottom surface and scraped the exterior walls, supported by ropes, with a hard tool (flint blade?). Sometimes, scraping and shaving techniques were used for removing excess clay from the exterior surface of bowls, and erasing joints between the coils.

In terms of techniques, cooking vessels (ware 3) show similarity to the non-cooking vessels (wares 1 and 2), except for the methods of surface treatment. After completing the body of a skillet, the potter smeared a thick layer of clay over the exterior surface, and a thin layer of clay over the interior surface. After that, the interior walls were carefully smoothed or polished. Cooking-pots' surfaces were polished or smoothed, but potters invested much less efforts in smoothing the surfaces and erasing folds or stitches between the coils.

Thick slip layers characterize basins/vats and some pithoi. After completing the body of vessel, the potter smeared an additional layer of clay up to 2.5–2.9 mm thick over the vessel. The surfaces were burnished using hard or semi-hard tools with a width of 2–3.3 cm at the working edges, both on leather-hard dry and slightly wet surfaces.

Cross-sections and surfaces of some basins/vats and pithoi suggest that they were fired for short time in an oxidizing atmosphere. Vessels identified as cooking pots showed the signs of extended exposure to fire: soot marks and extensive surface cracking.

In terms of techniques, the pottery assemblage can be divided into three main groups:

1. Bowls, globular pots, goblet, and jars. Potters used coils for building the bodies; vessel walls were thinned using paddle and anvil technique. Vessels were slipped, smoothed, polished and rarely burnished.

2. Basins/vats and pithoi. These vessels were built of coils and complementary slabs; ropes were sometimes used for supporting their thick walls. After forming and thinning using shaving, potters followed a time-consuming process of surface treatment. This group is distinguished by well-treated burnished or well-polished surfaces.

3. Cooking-vessels. This group is distinguished by thick slips and limited effort (mainly smoothing) in surface treatment.

Fabrics. Seventeen fabrics were identified on the basis of the relative quantities of minerals and on evidence for intentional manipulation and treatment of the raw material. The main clay groups (A, B, BB, C, D, and F) are indicated by uppercase letters, to which numerals indicating different types of inclusions may be added (see *Table*).

Group A. Fabric A2 (Fig. 2, *a*).

The matrix is calcareous and contains foraminifera. The silty component includes limestone, iron oxides, feldspar, mica, and amphibole (< 7 %). The temper includes sub-rounded to sub-angular particles of feldspar up to 250 μm in size (sometimes up to 370 μm, 10 %), vegetal material "ghosts" (1300–3200 μm, 5 %), secondary calcareous rock (up to 2000 μm, > 3 %), limestone (sometimes decomposed, mostly foraminiferous, up to 540 μm, > 7 %), sub-rounded grains of rhyolite (40 %) and basalt (up to 600 μm, > 3 %), mica flakes (up to 450–1000 μm, > 3 %), mudstone and sandstone (up to 300 μm, > 1 %), and amphibole (up to 400 μm, > 1 %).

Group B. Fabrics B3, B2, B2-17, and B3-17 (Fig. 2, *b*).

The matrix of this group is clayey with very weak to strong optical orientation; contains iron oxides concentrations. The silt component contains feldspar, mica, iron oxides, amphibole, and calcareous rocks (3 %). The non-plastic ingredients include sub-angular to sub-rounded particles of feldspar (up to 180–270 μm, < 3–7 %), limestone (up to 150 μm, < 1–1 %), mica flakes (up to 90 and 120 μm, rarely up to 200 μm, > 1–> 3 %), amphibole (up to 130 μm, > 1 %), and rhyolite grains (up to 380 μm (very rare), and up to 1 %). Sometimes, dolomite "ghosts" were observed in the thin sections.

Fabric B3. Grog (> 3 %) was added to the clay of one globular pot. Angular particles of grog (450–1000 μm) belong to the same clay group.

Fabric B2. Ust-Dzheguta potters also used clay of group B, with added vegetal material. Two types of particles have been observed: long narrow, straight or slightly curved (20–30 × 1300–2000 μm) and short straight (50–130 × 500–800 μm, > 1 %). Both types sometimes contained traces of tissues and phytoliths.

Fabric B2-17. Two samples with typical clay of group B, with natural inclusions and artificially

Distribution of sampled vessels according to fabrics, pcs.

Type/fabric	A2	B2	B3	B2-17	B3-17	BB2-6	BB2-6-16	BB2-6-7-16	C2-17	C17	CC17	CC2-17	D2	D4	F2	F2-17	FF	Unidentified	Total, pcs.
Bowl	–	–	–	–	–	3	–	–	–	–	–	–	4	–	2	–	1	–	10
Globular pot	–	2	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	3
Goblet	–	–	–	–	–	–	–	–	–	–	–	–	1	–	–	–	–	–	1
Jar	–	2	–	1	–	2	2	1	–	–	–	–	1	1	1	–	1	1	13
Jar/cooking pot	–	1	–	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–	2
Pithos	–	–	–	1	–	1	4	–	–	–	–	–	–	–	–	–	–	–	6
Basin/vat	–	–	–	–	–	–	6	1	–	–	–	–	–	–	–	–	–	–	7
Miniature vessel	–	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	1
Skillet	–	–	–	–	–	–	–	–	1	–	–	–	–	–	–	1	–	–	2
Cooking pot	–	–	–	–	–	–	–	–	1	1	2	–	–	–	–	–	–	–	5
Stand	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1
Total	1	5	1	2	1	6	13	2	2	1	2	2	6	1	3	1	2	1	51

Note. Temper codes: 2 – vegetal material, 3 – grog, 4 – volcanic rock, 6 – added limestone/chalk sand, 7 – feldspar/quartz, possibly crushed, 16 – sandstone/siltstone/mudstone, 17 – granite sand.

added vegetal material (2.3–6.0 mm and 70–130 × 1300 μm, > 1–< 3 %) have been identified. The matrix of the fabric is silty (up to < 7 %). The temper includes angular to sub-angular grains of granite, feldspar, and quartz (up to 2000–2300 μm, < 30 %), mica flakes (up to 550–900 μm, < 3 %), amphibole (up to 200–400 μm, 1–> 1 %), and sub-rounded rhyolite (up to 600 μm, < 1 %). Dolomite "ghosts" (1–< 3 %) and traces of calcareous rocks have been observed.

Fabric B3-17. The temper of this fabric includes angular to sub-angular grog particles (250–2800 μm, 15 %), angular to sub-rounded grains of granite, feldspar, and quartz (up to 900 μm, 5 %), limestone (up to 180 μm, 1 %), mica flakes (up to 550–900 μm, < 3 %), amphibole (up to 200 μm, > 1 %), and sub-rounded basalt and rhyolite (up to 600 μm, < 1 %).

Group BB. Fabrics BB2-6, BB2-6-16, and BB2-6-7-16 (Fig. 2, *c*, *e–h*).

Fabric BB2-6. The clay of this group is almost identical with the clay of group B, but the matrix contains higher calcareous rocks component, and exhibits higher porosity. The limestone grains are mostly disintegrated or "milky". High temperatures, in which the vessels of this group were fired, led to the explosion of calcareous grains. The matrix is porous (3 %), clayey, and shows weak optical orientation. The silty component contains calcareous rocks, feldspar, mica, iron oxides, and amphibole (< 5 %). The temper includes more limestone grains and smaller feldspar particles than clay of group B. Non-plastic components include sub-angular to sub-rounded particles of feldspar (up to 170 μm, rarely up to 330 μm, > 1–< 3 %), limestone and secondary calcareous rock (up to 230–660 μm, 3–< 7 %), mica flakes (up to 90 and 120 μm, > 1–< 3 %), amphibole (up to 130 μm, > 1 %), vegetal material (50–130 × 500–800 μm, > 1 %), mudstone (< 1 %), and very rare grains of rhyolite and sandstone. Judging by a higher content of calcareous material in the matrix, silt, and temper, limestone sand could have been added and crushed with clay of group B.

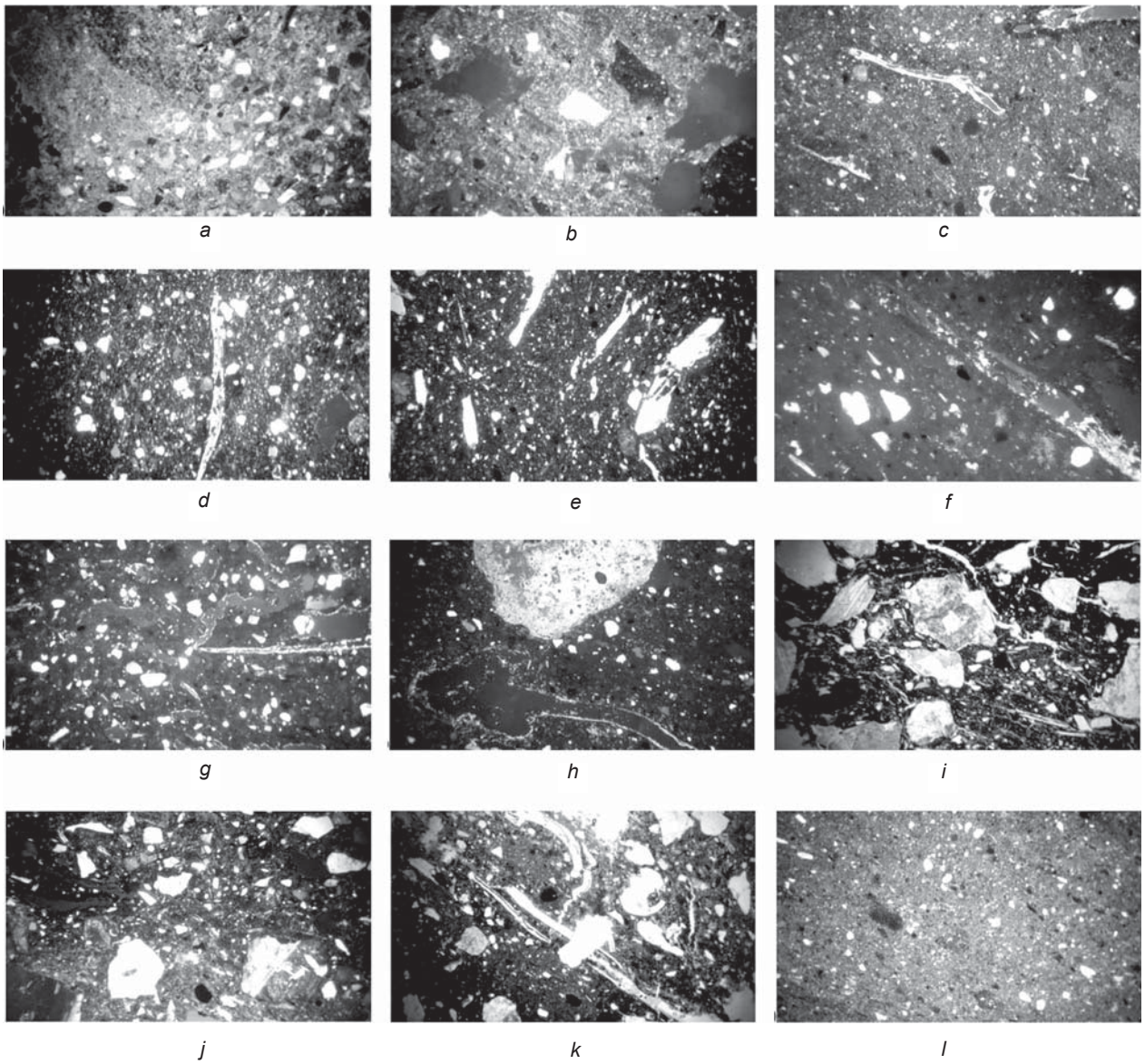

Fig. 2. Thin-section microphotographs.
a – stand, sample 23 (XPL, field width 4.3 mm), fabric A2; *b* – miniature vessel, sample 24 (XPL, field width 4.3 mm), fabric B3-17; *c* – jar, sample 37 (XPL, field width 3.9 mm), fabric BB2-6; *d* – jar, sample 26 (XPL, field width 4.1 mm), fabric F2; *e* – pithos, sample 30 (XPL, field width 4.1 mm), fabric BB2-6-16; *f* – basin/vat, sample 47 (XPL, field width 3.2 mm), fabric BB2-6-7-16; *g* – basin/vat, sample 40 (XPL, field width 3.6 mm), fabric BB2-6; *h* – basin/vat, sample 40 (XPL, field width 3.4 mm), fabric BB2-6; *i* – cooking pot, sample 22 (PL, field width 3.9 mm), fabric C17; *j* – cooking pot, sample 20 (XPL, field width 4 mm), fabric C2-17; *k* – skillet, sample 16 (PL, field width 4 mm), fabric F2-17; *l* – bowl, sample 11 (XPL, field width 4.2 mm), fabric D2.

Fabric BB2-6-16. This fabric is represented by 13 samples with typical clay of group BB2-6, inclusions, and artificially added straw and chaff (180–400 × × 1700–7000 and 11,000 μm; > 7 %), large grains of foraminiferous chalk and limestone (up to 2000 or 2300 μm, < 1–< 3 %), and mudstone grains (up to 2300 μm, > 1–< 5 %). Long (7500–11,000 μm) vegetal particles, phytoliths, and vegetal tissues have been observed in the thin section of basin/vat (sample 40).

Fabric BB2-6-7-16. Sometimes, the Ust-Dzheguta potters added feldspar and quartz sand as a temper. Large vessels (one jar and one basin/vat) were made of typical clay of group BB, with added feldspar and quartz sand (up to 760 μm, < 15 %), straw and chaff (180–400 × 1700–7000 up to 10,500 μm; > 7 %), grains of foraminiferous chalk and limestone (up to 2000 or 2300 μm, < 1–< 3 %), and mudstone grains (up to 2300 μm, 1–< 3 %).

Group C. Fabric C17, C2-17, CC17, and CC2-17 (Fig. 2, *i*, *j*).

Fabric C17. The matrix is clayey or non-calcareous; and exhibits strong optical orientation. The silt component contains feldspar, quartz, mica, amphibole, and iron oxides (5–7 %). Temper includes angular to sub-rounded granite particles, angular to sub-angular grains of feldspar and quartz (up to 2000–2300 μm, 25–30 %), mica flakes (up to 550–1300 μm, < 3–> 5 %), amphibole (up to 200–400 μm, 1–> 1 %), and sub-rounded grains of rhyolite (up to 600 μm, < 1 %).

Fabric C2-17. Two samples were made of Group C17 clay, to which vegetal material (70–130 × × 1300 μm, 1–3 %) was added.

Fabric CC17. Typical C17 clay with temper of added vegetal material (> 1 %) and very rare limestone grains (up to 220 μm, < 1 %).

Fabric CC2-17. Typical C17 clay and temper of added vegetal material (1–< 3 %) and very rare limestone grains (up to 230 μm, < 1 %).

Group D. Fabrics D4 and D2 (Fig. 2, *l*).

The matrix is marly, and contains traces of dolomite, and foraminifera. The silty component includes limestone, feldspar, mica, iron oxides, and amphibole (< 5 %). Non-plastic particles include sub-angular to sub-rounded feldspar (up to 120–170 μm, < 3–5 %), micritic foraminiferous limestone (up to 600 or 760 μm, > 3–> 7 %), mudstone and sandstone grains (up to 500 μm, < 3–< 7 %), mica flakes (up to 90 μm, > 1–3 %), and amphibole (up to 100 μm, 1 %).

Fabric D4. Sub-angular grains of rhyolite (up to 1750 μm, < 3 %) were added to the clay of one jar.

Fabric D2. Ust-Dzheguta potters also used clay of group D with the addition of vegetal material (50–130 × 400–500 μm, < 1 %). Four bowls, one goblet, and one jar were made of this fabric.

Group F*. Fabrics F2, F2-17, and FF (Fig. 3, *d*, *k*).

The matrix is marly or calcareous, and also foraminiferous, and silty. The silty component contains mainly calcite and limestone, accompanied by the particles of feldspar and quartz, iron oxides, and very rare mica and amphibole (< 5 %). Non-plastic components include angular to rounded grains of feldspar and quartz (up to 370 μm, 5–< 7 %), limestone (up to 400 μm, > 1–> 3 %), calcite (up to 120 μm, > 1 %), mica flakes (up to 270 μm, < 1–3 %), and mudstone (up to 1300 or 9000 μm, < 3–7 %).

Fig. 3. Miniature vessel (sample 24).

Fabric F2. Three samples with typical Group F clay, inclusions, and artificially added vegetal material represented by "ghosts" with residual tissues and phytoliths (70–200 × 1400–4000 or 120–700–1400 × × 10,000 μm, 1–< 5 %) have been identified.

Fabric F2-17. The temper includes angular to sub-angular (crushed) granite particles (500–2700 μm, < 20 %), angular to sub-rounded grains of feldspar and quartz (up to 150–580 μm, 5–< 7 %), traces of vegetal material (60–170 × 900–2600 μm, 5 %), mica (80–540 μm, > 1 %), and iron oxides (up to 90 μm, 1 %).

Fabric FF. This fabric is a finer variation of clays of group F (fabrics F2 and F2-17), with limestone and foraminiferous chalk (up to 360 μm, 3 %), mudstone (up to 1200 μm, > 1 %), angular to sub-rounded grains of feldspar and quartz (up to 170 μm, > 1 %), as well as rare mica and amphibole grains.

Provenance of the analyzed vessels

Judging by the microscopic observations, geological literature, and raw material samples from Ust-Dzheguta, Fabric A2 is equivalent to the soil from the site. One sampled stand was made of this clay.

Since the samples of group B are lithologically similar to the samples of group BB (21 pots) and

*Group E is missing, because it was merged with group B on the basis of mineralogical observations. The original group names have been retained to prevent confusion and errors.

to the geology of the site, except for the fact that clays of group BB show higher content of larger calcareous grains and lower content of feldspar, these clays must have originated from the same source, probably the Quarternary or Paleogenic formations. While the mixture of limestone and feldspar as temper is typical for both groups and for the region, the range and frequency of these components are different. This difference can be explained by potter's manipulations. Fabric BB might therefore be identified as sifted of levigated clay B with added limestone, or as clay B crushed by the potters after adding the limestone sand.

Group D and its non-plastic components match the deposits in the vicinity of the site, and show similarity to clays of groups B and BB, except for the group's marly matrix. Thus, this clay group should be identified as marl obtained at some distance from the outcrops of clays B and BB. Exposures of the Cretaceous and Paleocene-Eocene marls, covered by calcareous clays, were found by the author at distances of 2 and 8 km south of the site, and sampled (Gosudarstvennaya geologicheskaya karta SSSR, 1987; Gosudarstvennaya geologicheskaya karta Rossii, 2000). Owing to their distinctive matrix and inclusions, clays of groups B, BB, and D can be linked to the formations south of Ust-Dhzeguta, and especially the Pastbishchny ridge.

Group C and its non-plastic components match the deposits in the vicinity of the site, except for the presence of fresh granite and its derivatives. This group might therefore be identified as local clay with added crushed granite from the Kuban River. The riverbed is covered by cobbles and boulders of granite, as well as other magmatic and metamorphic rocks.

Samples of group F stand apart from the others identified in Ust-Dzheguta assemblage, and exhibit very local features. This group is identified as local marl. The inclusions accompanying the matrix indicate depositional environment within the area of the site.

On the basis of the analysis of samples of potential raw materials and geological maps, clays B, C, D, and F can be identified as originating in the immediate vicinity (up to 2–5 km) of the site.

Discussion

The immediate observation of optical mineralogy analysis was the segregation of raw materials used to create the main groups of ware:

1. All cooking vessels (Ware 3) were produced of clays with added granite or granite and vegetal material; six out of seven were made of Group C clays.

2. Non-cooking vessels (bowls, globular pots, goblet, jars and pithoi; Ware 1) were produced of Groups B, BB, or D clays, with added vegetal material, grog, limestone, mudstone, granite, and feldspar, or of Group F clay, with added vegetal material.

3. Basins/vats and pithoi (Ware 2) were nearly always produced from Group BB clays, with added vegetal material, limestone, mudstone, and feldspar.

The use of clays of groups B-BB was observed for all non-cooking vessels. Large basins/vats and pithoi (in 11 out of 13 cases) were made of clay BB rich in vegetal material and added limestone or mudstone sand (fabrics BB2-6-16 and BB2-6-7-16). Smaller vessels were produced mainly of fabrics with added small amount of chopped straw, granite, limestone, or grog. Addition of vegetal material, limestone, and mudstone to the clay of the thick-walled pithoi and basins/vats could be explained as means of reducing plasticity and ensuring body strength. The Ust-Dzheguta potters consistently added temper to their clays, but the final mixture (fabric) was finely tuned to a set of specific vessels. Finer mixtures were used for producing pottery with thinner walls (jars, globular pots, and bowls), intended for carrying or for daily use.

The stand differs from the pottery assemblage in its composition. It was made of the local clay, which was never used by pottery producers.

Conclusions

The Maikop pottery from Ust-Dhzeguta exhibits relatively high internal variability in its proportions of matrix and temper, and between the compositions of various coarse elements. Ten fabrics have been identified for 41 non-cooking vessels (see *Table*). There is linkage between the typology and clay/temper type of basins, pithoi, and some jars and bowls. However, 12 sampled jars fall in no less than nine fabrics, and 10 sampled bowls were made of four varying mixtures. On the basis of visual observations and optical mineralogical analysis, it is possible to identify three main industries at Ust-Dzheguta:

1 – Basins/vats and pithoi were nearly always created by highly skilled potters, using very special fabrics (BB2-6-16, BB2-6-7-16);

2 – The bulk of the non-cooking pottery was produced by part-time potters, using at least eight different fabrics based on four clay types (B, BB, D, F);

3 – Cooking vessels differ from the above non-cooking pottery industries in terms of function, clay, temper, and surface treatment techniques. The group is characterized by very high variability both in morphology, potting techniques and clay mixtures.

The pottery assemblage of Ust-Dzheguta exhibits a heterogeneity that may be ascribed to different potters, diverse family traditions, and mainly to the low level of specialization for industries 2 and 3. Massive and sophisticated vessels such as basins, most of pithoi, and some jars, were produced by expert potters, whose specialized knowledge was employed mainly for manufacturing large vessels. The bulk of the Ust-Dhzeguta pottery, especially bowls, globular pots, and most of the jars (industry 2), is the product of part-time specialists. These skilled specialists consistently used specific clays, but mixed variable, non-uniform fabrics and created slightly different vessels. Cooking vessels were made as part of household production or by part-time potters (Rice, 2015: 358–362).

The presented analysis reveals the technological signature of the Maikop tradition, as is expressed in the Ust-Dzheguta assemblage. The non-cooking vessel producers (Industry 2) used one of the four (B, BB, D and F) known local clays, and created sets of vessels using similar, but not identical fabrics. The producers of basins and pithoi invested more efforts in obtaining the most suitable clay (BB), mixing special fabric, and creating a burnished or polished surface. This may be linked to a perception of the expectations of consumers, who wanted to have the pots with predictable physical qualities, such as volume, durability, and resistance to stress.

The addition of both grog and granite sand to the clay of a miniature vessel (7.3 cm high) cannot be explained by an aim to increase strength or shock resistance. The potter created this vessel (Fig. 3) exactly following the methods used for making "regular" vessels, including coils and polish of the exterior wall. Use of these methods, as well as the addition of rarely used grog and granite to naturally tempered clay B of a miniature pot, must be ascribed to tradition and the function of the item, and to a form of knowledge transmitted between the tradition carriers. The item could have been used as mnemonic device, carrying information on raw materials and manufacturing, and was involved in interactions between potters—a community of practice (Blackmore, 2010). Reproduction of the tradition over time, using basic practices, such as "regular" clay type, coiling technique, and polish, is consistent with the existence of a community of practice.

The technological analysis of the Ust-Dzheguta ceramic assemblage provides a window into the Maikop phenomenon and its pottery production, makes it possible to establish its specific features with more precision, and gives an insight into relations between producers, pots, and users.

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Chalcolithic and Bronze Age (4th to 3rd Millennia BC) Burials with Gold Ornaments in the Caucasian Mineral Waters Area

This article presents a brief overview of Maikop-Novosvobodnaya assemblages with gold ornaments. Special attention is paid to symbolism. Gold ring-pendants were found in four Middle Bronze Age burials, belonging to the Caucasian Mineral Waters group, Ciscaucasia. One of them (burial 4, kurgan 3 at Lysogorsky-6) is very unusual. It was arranged under a seven-meter-high mound, and contained a set of weapons and implements placed on wooden dishes. Among the stones heaped on the burial, an offering was found—two crania of bulls. Burials of warriors with bronze and stone axes, excavated in Central Caucasus, are discussed. The Maikop-Novosvobodnaya people (4th millennium BC) and those of the North Caucasian culture (3rd millennium BC) differed with regard to the social structure mirrored by the burials. While both those societies were in the early pre-state stage, their social models were different. The Chalcolithic society was marked by military and production symbolism (specifically, that related to carpentry), and their ranking was super-elitist, with abundant gold placed in burials. In the Middle Bronze Age society, symbols related to carpentry were still used, but along with bronze axes of the Transcaucasian (Nacherkezevi) type. Stone axes were associated with smithcraft. The highest degree of military elite stratification at that stage is revealed by assemblages with impact weapons and golden pendants attached to the headgear.

Keywords: *Gold, silver, Chalcolithic, Bronze Age, cemetery, kurgan.*

Introduction

Gold and silver have played an outstanding role in the establishment of civilization and the state economy. At the same time, they were indicators of the high social prestige of their owners even in the pre-state period, being closely related to magical and cult beliefs. Their specific reflection in the burial rites of various Chalcolithic and Bronze Age cultures is an issue that requires special study. In this article, we consider assemblages with artifacts of gold on the basis of materials from the sites of the 3rd millennium BC in the Caucasian Mineral Waters area, against the background of gold's wide distribution in Ciscaucasia in previous times.

Description of assemblages

As is known, gold was widely used by the tribes of the Maikop-Novosvobodnaya cultural community (MNC) in their burial rites in the 4th millennium BC. Both unique and widespread ornaments made of gold are encountered: diadems, flowers, rings, temple pendants, bead necklaces, and needle-shaped rods. Highly artistic casting and stamping of plates in the forms of figures of bulls and lions are noted. Gold and silver vessels, and gold cover plates on weapons are known. In general, finds of gold were recorded in more than 40 burials (Korenevskiy, 2011: 94–100).

Analysis of occurrences of gold items together with weapons and tools in the Maikop burials has shown

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that they are most frequently present in assemblages containing a set of a bronze axe, an adze, a chisel, a dagger, and metal ware (100 or 80 %, 10 cases out of 10 or 14, depending on the recording of assemblages with relatively good preservation); with weapons and woodworking tools, but without metal ware (62 %, 11 cases out of 16); and more rarely in burials with sets consisting of weapons only (38 %, 23 cases out of 59). Gold items are extremely rare (about 2–3 %) in burials without weapons, which are in the majority (more than 130 recorded cases as of 2011). Furthermore, such burials may be interpreted as female (for example, Kudakhurt, kurgan 1, burial 1) (Korenevskiy, 2017: 82–85).

On the basis of the occurrence of gold items in the MNC assemblages, a gradation of burial symbols was proposed. Assemblages containing more than two gold items were considered indicators of super-elitist* ranking; those with one or two gold ring pendants, indicators of initial-elitist ranking; and those without items made of precious metals, indicators of egalitarian funerary practices.

The phenomenon under consideration is thought to be a society of farmers and cattle breeders, wherein the military tribal nobility regularly emphasized in burial rites their prestige, according to the death mythology, with gold ornaments, steadily ignoring bronze ones, and using silver only in rare cases. An abundance of gold in certain graves allows us to estimate such marking as super-elitist or initial-elitist. The most significant MNC burials (with sets of weapons and implements) are related exactly to the super-elitist symbolism.

The MNC can be regarded as a military-elitist model of a prepolitarian ('pre-state') society (the term proposed by Y.I. Semenov) with the military and production (carpentry) symbolism of burial goods. A special feature of the prepolitarian stage of the early period of pre-state development (Semenov, 1993: 586) implied that the highest nobles were interested both in military prestige and job prestige. Therefore, they used symbols of tools as indicators of their extraordinary position, according to their ideas of the structure of the otherworldly realm of ancestors (Korenevskiy, 2004: 78–82; 2011: 125–136; 2017: 82–85).

Early in the 3rd millennium BC, MNC tribes disappeared in the Caucasus. Quite different archaeological cultures appeared in Ciscaucasia. Strong cultural transformations can also be traced in the Southern Caucasus. Finds of gold are rarely encountered in the funerary assemblages of this period in Ciscaucasia. They are represented mainly by headpieces in the form of small rings. Rings or coils of silver are also found. Most frequently, headgear ornaments were made of bronze.

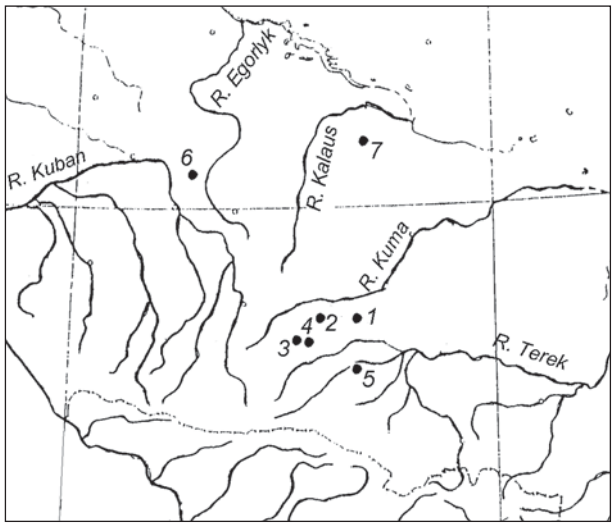

Fig. 1. Locations of burials with gold pendants, mentioned in the text.
1 – Lysogorsky-6 cemetery; *2* – a kurgan near the wine-making state farm "Mashuk"; *3*, *4* – kurgans near the Nezhinsky village; *5* – Chegem II cemetery; *6* – Rasshevatskaya-1 cemetery; *7* – Sharakhalsun-3 cemetery.

Below, we shall consider the most spectacular assemblages with gold artifacts in the Caucasian Mineral Waters group of sites of the North Caucasian culture (Fig. 1). Many ornaments of bronze have been found in the burials of this group. It has been established that bone and bronze pins, and bronze plaques, are related to female burials, as is the case with the assemblages of Ciscaucasian Early Catacomb cultures, while stone maces and axes are related to male ones (Korenevskiy, 1990: 71–81; 2018). The latter were found in more than 25 cases. A bronze axe in the assemblages of the Caucasian Mineral Waters group is the single specimen. It was found in burial 4, kurgan 3 of the Lysogorsky-6 cemetery, in the Georgievsky District of the Stavropol Territory.

*We use terms that seem sophisticated at first sight, because the "elitist burial" notion itself can be interpreted very broadly depending on the accepted criteria of elitism. Super-elitist ranking is a rarity for the 5th to 4th millennia BC. The relevant information is related mainly to such cultures as Varna in the Danube region, the Ghassulian culture in Israel, the MNC in Ciscaucasia, and the Leyla-Tepe culture in the Southern Caucasus.

Ordinary-elitist or initial-elitist ranking in the 5th millennium BC is encountered in the same cultural formations. In Eastern Europe, single gold ornaments in the form of coils were found at Chalcolithic funerary sites of the Northern Pontic Region (Giurgiuleşti, burial 4). Subsequently, such marking of assemblages by silver (more rarely, gold) pendants is known in many regions of Northern Eurasia up to the Late Bronze Age (Korenevskiy, 2017: 124, 125). Egalitarian traditions of funerary practices are not related to egalitarian relationships in society, they are only illustration of cults and beliefs.

This burial was excavated during the rescue works by T.A. Gabuev and Y.B. Berezin in 2015 (Gabuev, 2015; Korenevskiy, Berezin, Gabuev, 2018).

Kurgan 3 at Lysogorsky-6 was the largest one not only in this cemetery, but also within a radius of several tens of kilometers. Its height is 7.2 m, the size along the east-west line is 63 m, and along the north-south line 50 m. The kurgan contained four burials. Burial 4 was the main one. It belongs to the Middle Bronze Age, while the others to the Early Iron Age.

The burial structure had a complex construction. First, a shallow but vast pit with ledges was excavated in the layer above bedrock. Its dimensions were 6.70 × × 6.06 m along the upper edge, and 4.44 × 3.83 m along the bottom. The soil removed from the pit was thoroughly spread around in a ring. Then, a wooden chest 2.6 × 1.6 m in size was deposited in the pit. A dead body was laid there in an extended supine position, with the head towards the west. The chest had a wooden covering. Above it, masonry with a deer antler inside was arranged. Two crania of bulls were placed at two locations above the masonry. Finally, an earthen tumulus was constructed. Thus, over grave 4, a tremendous mound was formed, equal in its size to the mounds over the burials of MNC nobility.

The burial goods of the assemblage under consideration are out of the ordinary. The headgear ornament is a gold ring-pendant 1.5 cm in diameter (Fig. 2, *1*). A set of bronze ornamental pendants (a bracelet?) and beads (Fig. 2, *3*) was at the lower portion of the right-hand humerus. The exact shapes and sizes of the artifacts cannot be restored. Another bronze bracelet is recorded on the carpal bones of the left hand. Its components are severely corroded, and were broken down during cleaning. One more beaded bracelet was found on the right ankle. It consists of bronze cast pendants (4 spec.) comprising a rod with a suspending hole in the upper portion, and balls in the lower one (Fig. 2, *2*). The length of the remaining pendant is 3.6 cm.

Near the wing of the left iliac bone of the buried person, there was a group of items lying on wooden dish or tray No. 1 (Fig. 2, *9*, *10*). The tray (dish?) itself is poorly preserved, and is represented by separate fragments. Its exact shape is impossible to reconstruct. The tray had a flange along the edge. The diameter of the item's remains is about 35 cm. The set of bronze artifacts on the tray included an arched battle-axe of the Nacherkezevi type (Korenevskiy, 1981: 25) (Fig. 2, *4*), a small (7.2 cm long) leaf-shaped dagger (Fig. 2, *6*), an adze 11.5 cm long (Fig. 2, *7*), a rod 38 cm long (Fig. 3, *1*), and a beaker. The beaker is represented by three fragments. Reconstruction of the beaker suggests that it was flat-bottomed, had a height of 110 mm, a bottom diameter of 66 mm, and a mouth diameter of about 70 mm, and its capacity was similar to that of a glass designed for 200 ml of liquid (Fig. 3, *2*).

Wooden dish No. 2 was placed between the knee-joints of the buried person. Only a decayed portion 17 cm in diameter was preserved. A bronze item, fully corroded and broken down, was lying on it. Wooden tray

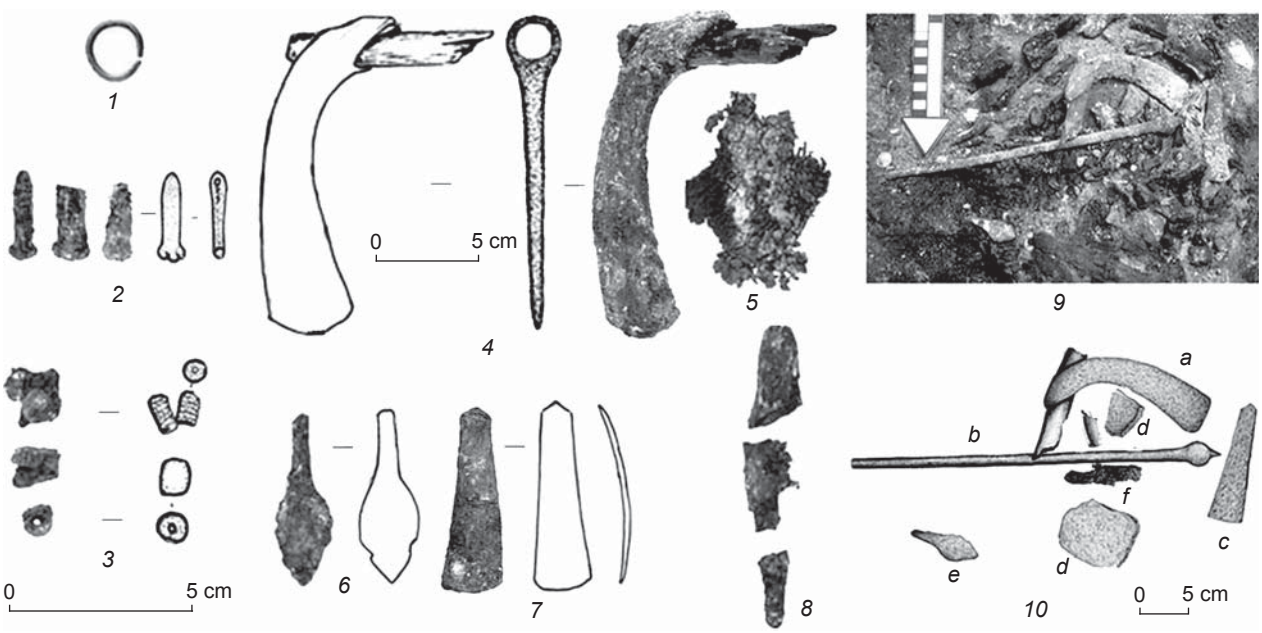

Fig. 2. Goods from burial 4, kurgan 3 of the Lysogorsky-6 cemetery.
1 – a gold pendant; *2* – segments of an beaded ankle-bracelet; *3* – details of a beaded hand-bracelet; *4* – a bronze axe with a wooden handle; *5* – cloth; *6*, *8* – bronze daggers; *7* – a bronze adze; *9, 10* – items on tray No. 1, a photo and a drawing: *a* – an axe, *b* – a rod, *c* – an adze, *d* – a beaker, *e* – a dagger, *f* – cloth (after (Korenevskiy, Berezin, Gabuev, 2018)).

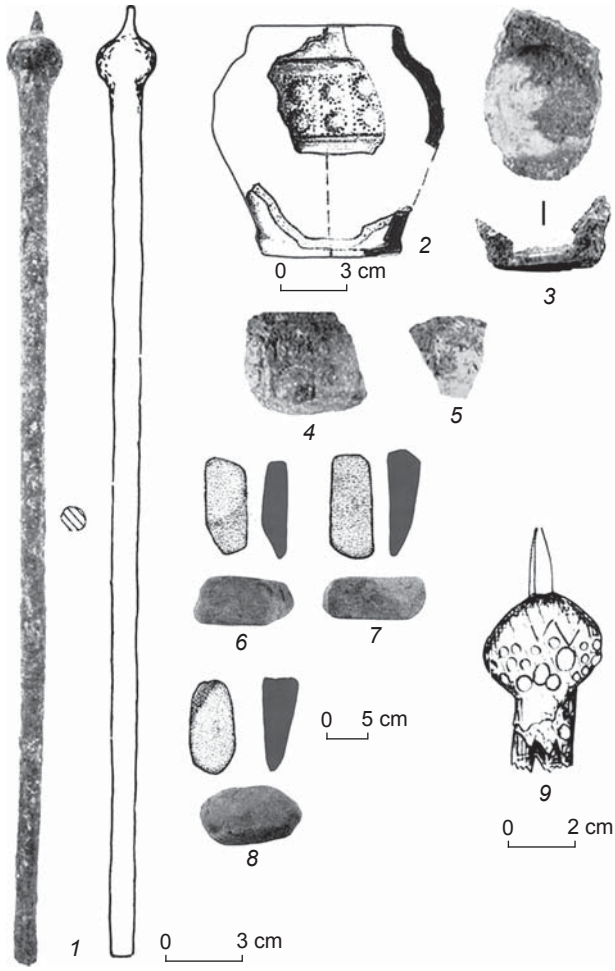

Fig. 3. Finds from burial 4, kurgan 3 at Lysogorsky-6 (*1–8*), and burial 1, kurgan 5 of Nezhinsky group II (*9*).
1 – a bronze rod; *2* – reconstruction of a bronze vessel; *3–5* – fragments of this vessel; *6–8* – stone abraders; *9* – a fragment of wooden staff with bronze nails and a bronze awl. *1–8* – after (Korenevskiy, Berezin, Gabuev, 2018); *9* – after (Korenevskiy, 2018).

No. 3 was located 0.20–0.25 m to the south of the right thigh-bone of the buried, near the southern wall of the wooden structure. It was placed with its long axis along the east-west line. The artifact is up to 40 cm long and about 15 cm wide; its shape cannot be restored. This tray is associated with three stone abraders (Fig. 3, *6–8*) and a severely corroded bronze dagger preserved in fragments, up to 12 cm long. Cloth-fragments were collected under the skeleton (see Fig. 2, *5*). The radiocarbon date of the burial is 2861–2581 BC (4122 ± 23 BP, MAMS-29825) (The Genetic Prehistory…, 2018), which corresponds to the Early Dynastic period in Mesopotamia.

The second example of assemblages with gold pendants in the Caucasian Mineral Waters group is burial 5, kurgan 1 near the wine-making state farm "Mashuk" in the neighborhood of the city of Pyatigorsk (Afanasiev, 1975). The burial was the main one. It was constructed on the earth's surface. The burial site, 3.55 × 2.00 m in size, was lined with a smooth layer of ragged stones and contoured along the perimeter by a stone skirting-board 20 cm high, composed of two rows of tiles. It was oriented with its long axis along the east-west line. The entire site was covered with charcoal. The skeleton of an adult man was found on it, in an extended supine position, with his head towards the west. A stone mound 3 m high and 19 m in diameter was erected above the grave. Then, it was covered with a black-earth tumulus. In total, the kurgan height reached 4.5 m. It contained another three burials of the Caucasian Mineral Waters group, which were located at the circumference beyond the limits of the heap of stones; and one burial likely belonging to a later period.

Near the skull of the buried, there were two pendants—one-turn rings: a gold one 1 cm in diameter (Fig. 4, *1*) and probably a silver one (poorly preserved). Two bronze barrel-like beads 1 cm long and 0.6–0.7 cm in diameter (Fig. 4, *7*) were found in the neck area. A smooth stone axe of the Kabardino-Pyatigorsk type was lying near the bones of the right hand (Fig. 4, *9*). A bronze-headed nail was preserved in the opening for the haft element (Fig. 4, *8*). Its length is 3.4 cm, the head's diameter is 1.7 cm, and the shank's diameter is 0.4 cm. A bent dagger with a tanged handle was near the axe (Fig. 4, *10*). Its length is 16 cm. 16 bronze rivets in the form of pins 0.8 cm long with hemispherical heads were recorded in the belt area (Fig. 4, *5*). Obviously, these were strap cover plates. Also, 12 segment-like pipe-shaped beads (Fig. 4, *6*), made of low-grade silver, were found here (according to the report). The length of a pipe-shaped bead is 1.4 cm, the average width is 0.5 cm. A small vessel 6 cm high, with a flat bottom 4 cm in diameter, was standing at the feet of the buried. It is ornamented with a cord design composed of six horizontal lines, between which two strips are filled with vertical lines, and one strip with oblique lines. The type of the vessel is typical of the burials of the Caucasian Mineral Waters group (Korenevskiy, 1990: 152, fig. 30; 2018). A grinder made of dark-gray serpentine with a greenish tint was found near the vessel (Fig. 4, *11*). Its diameter is 6.7 cm on one side, and 8.4 cm on the other side; its thickness is 4.3 cm. The assemblage belongs to the period of the 29th–25th centuries BC, judging by the date (2834–2475 BC) of a similar smooth axe of the Kabardino-Pyatigorsk type from burial 10, kurgan 32 of the Ust-Dzheguta cemetery (4160 ± 60 BP) (Nechitaylo, 1978: 58). It is in good agreement with the date of burial 4, kurgan 3 of the Lysogorsky-6 cemetery.

The third example is burial 1, kurgan 1 of Nezhinsky group I. The burial was performed in the central part of the kurgan. The burial pit, 3.0 × 2.1 m in size, was excavated to the natural ground level. It cut through the fill of the

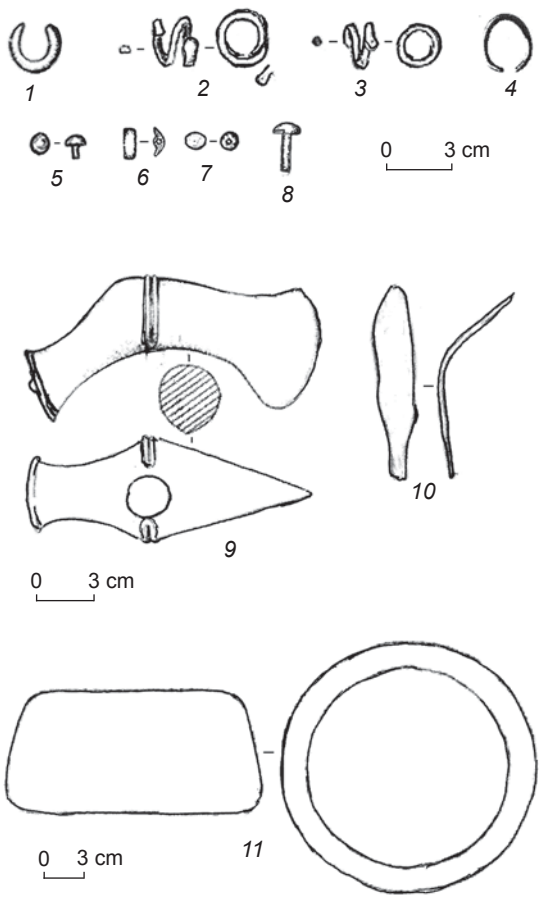

Fig. 4. Finds from the burials of the Caucasian Mineral Waters group.
1–4 – gold rings; *5* – bronze rivets; *6* – a silver (?) pipe-shaped bead; *7* – a bronze bead; *8* – a bronze nail from the axe socket; *9* – a stone axe; *10* – a bronze dagger; *11* – a stone grinder.
1, *5–11* – burial 5, kurgan 1 near the wine-making state farm "Mashuk" (after (Afanasiev, 1975)); *2*, *3* – burial 1, kurgan 1 of Nezhinsky group I; *4* – burial 5, kurgan 4 of Nezhinsky group II (after (Korenevskiy, 1988)).

main burial. The pit contained a stone cyst, assembled from slabs, with an internal contour-size of 2.0 × 0.9 m. The cyst was covered by large slabs, with a heap of stones above them. It accommodated the skeleton of a man, who was buried in a flexed supine position, with his head towards the south.

Near the skull and in the chest area, the following items were found: two gold pendants (one-and-half-turn and two-turn ones), with diameters of 10 mm and 8 mm respectively, and with reforged flattened ends (Fig. 4, *2*, *3*); two forged trapezoidal plaques (with the height of 38 mm and the base of 30 mm), with an opening in the center and a punch ornament in the form of a diagonal cross; three cornelian disk-shaped beads 10 mm in diameter; silver pipes 15 mm long and 3 mm in diameter; three cylindrical paste beads and one round bead; and two animal bones (Korenevskiy, 1988: 9, 10; Gey, Korenevskiy, 1989: 270). This burial can be interpreted as a female, judging by the set of goods, since forged plaques are not encountered in male burials of the Caucasian Mineral Waters group. In other assemblages of the Kuban region (Bolshoy Petropavlovsky cemetery, kurgan 5, burial 3) and steppe Stavropol region (Rasshevatskaya-1, kurgan 14, burial 2), such trapezoidal plaques were accompanied by hammer-like pins—typical ornaments of female burial outfit (Gey, Korenevskiy, 1989; Korenevskiy, 1990: 81, 82; Gak, Kalmykov, 2013: 128, fig. 8, *6*).

The fourth example is burial 5, kurgan 4 of Nezhinsky group II. A vast burial pit (3.2 m long, about 2.2 m wide) with ledges was let into the mound right in the center of the kurgan, and thus destroyed the ancient main burial. Burial 5 can be regarded as a secondary main burial of the Middle Bronze Age. The skeleton in the pit belonged to a 25–30-year-old man (as identified by G.P. Romanova) buried in an extended supine position, with his head towards the east. Ocher is noted near his feet. Under the skull, a gold ring-pendant 8 mm in diameter, with unclosed ends (Fig. 4, *4*), was found. A footed incense burner ornamented with concentric circles was standing at his feet (Korenevskiy, 1988: 124, fig. 74, 75, *3*; 1990: 148, fig. 26, *3*). Among the pit filling stones, a vessel 14.7 cm high, decorated with rows of slotted (nail) "herringbone" ornament, was found (Korenevskiy, 1988: 125).

Discussion

The above assemblages with gold pendants suggest that such ornaments belonged to people who were buried according to special rules. In two cases, they were headgear details of people buried with the highest honors, with weapons and implements. Once, gold pendants were included in the set of adornments of a woman buried in a very large-scale burial facility in the center of the kurgan. This points to a special significance for burials with gold ornaments with respect to other burials of the Caucasian Mineral Waters group, which are located at the circumference of the site. Another gold pendant was a detail of headgear of a man who was buried with honors, in a big pit with ledges let into the center of the burial mound, which allows us to consider it a "new" main or "dominant" burial in the kurgan.

Noteworthy are also two burials with gold pendants and weapons, namely, burial 4, kurgan 3 at Lysogorsky-6; and burial 5, kurgan 1 near the wine-making state farm "Mashuk". We shall describe them in more detail. The range of analogies for finds from burial 4, kurgan 3, is extremely peculiar. Apart from the noted cases in the Caucasian Mineral Waters group, a gold ring was found along with a stone axe in burial 1, kurgan 15 at Chegem II

(Betrozov, Nagoev, 1984: 26). In the Southern Caucasus, gold coils are present in a set containing bronze axes of the Gatyn-Kale type (Korenevskiy, 1981: 27, fig. 5, *1*, *2*), a fluted groove, a dagger, and an awl in kurgan 3 near the Martkopi village (Dzhaparidze, 1998: 42, fig. 25).

A bronze rod in the form of a stick with a mace-shaped top is a unique item. A similar, though wooden, rod is available among the finds from burial 1, kurgan 5 of Nezhinsky group II (Fig. 3, *9*). This burial was a joint one and the youngest among the Caucasian Mineral Waters burials in this kurgan (Korenevskiy, 1986; Korenevskiy, Berezin, Gabuev, 2018).

A bronze beaker is the second unique item in burial 4, kurgan 3 at Lysogorsky-6, since this is the first metal vessel found in the North Caucasian culture burials. Its nearest parallels may be beakers from Trialeti kurgan V (Kuftin, 1941: 417, pl. XCI; Dzhaparidze, 1994: 87, fig. 26, *18*] and the Karashamb kurgan (Kushnareva, 1994: 100), but only as items belonging to the same category of vessels.

Ornaments of burial outfit in the form of beaded bracelets are typical of the people of the North Caucasian culture. An anklet composed of pin pendants is especially illustrative in this respect. The representatives of the Late Pit-Grave culture in Ciscaucasia also had such adornments (possibly, sew-on patches on legging-type long trousers (Korenevskiy, 1990: 59, 60).

Three abraders show traces of use in everyday life. Similar finds are available in the assemblage from the caster-blacksmith and weapon-smith grave (burial 10, kurgan 3 of the Lebedi cemetery (Gey, 1986: 23, fig. 9). The presence of these artifacts suggests that the man buried in the Lysogorsky-6 cemetery was engaged in metal working, i.e. was a blacksmith.

The tradition of placement of wooden trays with low flanges into graves was noted by V.L. Derzhavin in materials from the Tomuzlovka group burials of the Catacomb culture in the Central Stavropol region. Trays are known from the Manych-type burials in the Lower Don area (Derzhavin, 1991: 97). One of them was recorded in burial 32 of the Ipatovo kurgan, dated to the 23rd to 22nd centuries BC, in the north of the steppe Stavropol region (Korenevskiy, Belinskiy, Kalmykov, 2007: 95; 166, fig. 26, *7)*. Derzhavin assumes that the trays performed a special ritual role, since bronze daggers and food were put on them (1991: 97). Judging by the Lysogorsky cemetery, various implements, weapons, and socially prestigious items were placed on the trays. This tradition is not typical of burial rites of the North Caucasian culture of the Central Ciscaucasia. Wooden trays are not encountered in other burials of the Caucasian Mineral Waters group. Their presence in this burial emphasizes its peculiarity.

Especially noteworthy is the combination of an axe as a symbol of weapons, and an adze as a symbol of woodworking tool in burial 4, kurgan 3 of the Lysogorsky-6 cemetery, i.e. the so-called military and production (carpentry) kit. It was well represented in the MNC assemblages of Ciscaucasia. In the 3rd millennium BC, after the tribes belonging to this community disappeared in the Northern Caucasus, such kits became typical for the Early Kurgan Martkopi-Bedeni group burials in Georgia (kurgans 3–5, 9 in Martkopi; kurgan 2 in Tetri-Tskaro; the kurgan on the Bedeni plateau (Dzhaparidze, 1998: Fig. 13, 14, 28, 52; Kushnareva, 1993: 101–103; Gobedzhishvili, 1980: Pl. X)), and one kit was recorded in the northwestern Azerbaijan (a burial in the Gasansu hill) (Museibli, Akhundova, Agalarzade, 2011). Some of the said kurgans were destroyed in ancient times. This makes rather difficult to define the symbolism of burial goods as super-elitist or initial-elitist. However, the most outstanding assemblages include ornaments made of gold and silver, which are indicative of super-elitist funerary practices. Notably, these burials were sometimes constructed using timber cribwork. The Early Kurgan group of the Southern Caucasus belongs to the middle of the 3rd millennium BC (the 28th to 24th centuries BC (Dzhaparidze, 1998: 200), the 26th to 24th centuries BC (Sagona, 2017: 302, fig. 7, *2*)). These assemblages contain bronze axes of the Gatyn-Kale and Martkopi–Gatyn-Kale types*.

In Ciscaucasia, kits composed of a bronze Nacherkezevi-type axe and a bronze adze are known in several burials: burial 4, kurgan 3 of the Lysogorsky-6 cemetery (the North Caucasian culture); burial 24 of the Zagli-Barzond cemetery (the Kura-Araxes culture); burial 30, kurgan 1 of the Ordzhonikidze cemetery, near the Bamut village (the Late Pit-Grave culture); and a destroyed burial in the Andreevskaya Valley, near the city of Grozny (Burkov, Rostunov, 2004: Fig. 5). The cultural attributions of these assemblages are different. However, their localization points to the multicultural symbolism of such burial kits formed under the influence of Southern Caucasian types of weapons and tools, and embodied in the traditions of piedmont population of the Central Ciscaucasia. This leads to the conclusion that the military and production (carpentry) symbolism remained in a modernized form during the post-Maikop period (the 3rd millennium BC) among various tribes, including the Early Kurgan Martkopi-Bedeni people and contemporaneous groups of Central Ciscaucasian population that maintained ties with their southern neighbors and borrowed shapes of bronze battle-axes with bronze wedges (of the Nacherkezevi type) from them.

*The first type has been distinguished according to Caucasus materials (Korenevskiy, 1981), the second one differs from it by its longer and arched wedge. Both types are typical exactly of assemblages of the Early Kurgan Martkopi-Bedeni group.

It is also important to note that a bronze adze has never been found in the numerous assemblages with stone axes of the Kabardino-Pyatigorsk type, one of which was found in burial 5, kurgan 1 near the wine-making state farm "Mashuk". On the other hand, there are several examples of finding stone axes associated with stone grinder-anvils, such as burial 9, kurgan 2 on the Rakitnaya mountain; burial 8, kurgan IV of the Tri Kamnya cemetery; burial 14, kurgan 2 on the Konstantinovskoye plateau; and kurgan 2 near the village of Zayukovo (Kabardino-Balkaria) (Korenevskiy, 2018). These assemblages mirrored another military and production (smithcraft) model of burial symbolism. Such a tradition of burying blacksmiths-casters took place, in its different variants, in a wide range of Eastern European tribes. First of all, it emerged among the Pit-Grave culture people in the Lower Dnieper region, as early as the 4th millennium BC. Subsequently, this tradition can be traced as an pan-cultural phenomenon in the materials from the sites of the 3rd millennium BC and later—the Chalcolithic and Bronze Age in Eastern Europe, Northern Pontic Region, and Ciscaucasia (Ibid.).

Special attention should be given to the deer antlers and the two crania of bulls in the heap of stones above burial 4, kurgan 3 at Lysogorsky-6. The bull cult was very widespread in the primal religions. Right now, we are interested in its reflection in burial rites belonging to the cultures of the 4th to 3rd millennia BC. Analogs include the assemblage with two crania of bulls in burial 25, kurgan 1 of the Maryinskaya-5 cemetery, pertaining to the Dolinsk MNC variant of the Late Uruk period; the burial date is 3334–3097 BC (Kantorovich, Maslov, Petrenko, 2013: 89, fig. 42; p. 92). The heads of bulls were offered as a sacrifice in the burials of nobility of the Alaca Höyük cemetery (tombs E, F, K, L), dating to the middle of the 3rd millennium BC (EDIII) (Kosay, 1951: 164–168, pl. CLVIII, CLXVIII, CLXXXIX). The above examples are associated with the societies that had a military elite, and practiced a super-elitist rite of burying the war leaders, who were also related to cult functions. In this list of analogies, we should note the obvious contemporaneity of the tradition of offering sacrifices in the form of heads of bulls, and even the chronological priority of Ciscaucasia as compared to the areas further to the south, where burials of the highest leaders, who were in addition endowed with symbols of social and cultic power, were performed.

The presence of weapons and implements in the assemblages under consideration allows us to assign the tribes that left burial 4, kurgan 3 of the Lysogorsky-6 cemetery, and burial 5, kurgan 1 of the cemetery near the wine-making state farm "Mashuk" to the same prepolitarian stage of the early period of pre-state development as the MNC, though to a different model. They adhered only to the initial-elitist symbolism, using ornaments made of precious metals. Other burials with weapons (stone axes, maces) of the Caucasian Mineral Waters group are characterized by the military-egalitarian symbolism: according to the accepted funerary practices and mythology of the otherworld's structure, weapons were not accompanied by items made of gold or silver at all.

Headgear ornamentation with gold and silver rings was a widespread feature of social ranking, and distinguished the nobility in many cultural formations of the Middle Bronze Age in Ciscaucasia. For instance, gold pendants in the 3rd millennium BC are encountered in burials of the Early Catacomb and Late Pit-Grave cultures in the steppe Stavropol region and Kalmykia (sites in the Yegorlyk-Kalaus interfluve) (Gak, Kalmykov, 2013). These finds in the assemblages are not related to weapons. Meanwhile, ring-pendants, though made of silver rather than of gold, can be found in military burials with bronze axes in Ciscaucasia and in the Southern Caucasus (for example, burial 6, kurgan 2 of the Bichkin Buluk cemetery, burial 30, kurgan 1 of the Ordzhonikidze cemetery, burial 2 at Nacherkezevi). Such a special feature of the ritual outfit was, probably, caused by the canons of funerary practices aimed at emphasizing the personal prestige (a rank, clan, or status) of an individual, and not at demonstration of his/her material prosperity, since, in other respects, goods in these burials had no significant differences from graves without items of precious metals.

Conclusions

The observations conducted in Ciscaucasia suggest that the gold rings of headgear in the Caucasian Mineral Waters assemblages mark the burials of nobility, both men and women, whose status was sufficiently high to consider them representatives of a local group. Their graves could have been related to the construction of a new kurgan or were special joint burials. Such an attitude towards burials of the local elite can be regarded as a special feature of the tradition of ranking the tribal nobility belonging to the Caucasian Mineral Waters group, where the warrior stratum was gaining the leading position.

A specific trait of burial 4, kurgan 3 at Lysogorsky-6 and burial 5, kurgan 1 near the wine-making state farm "Mashuk" with gold pendants and stone axes was their placement almost in topsoil, and not in a deep bedrock layer. Possibly, this implied connection of the rites with the fertility cult. The western orientation of the deceased in these burials is also unusual, since in the Caucasian Mineral Waters group kurgans of the Middle Bronze Age, buried people are often oriented with their heads towards the east (burial 14, kurgan 1; burial 2, kurgan 4; and burial 6, kurgan 3 of Nezhinsky group I (Korenevskiy, 1988: 22–26). Obviously, these two persons of high rank

(possibly, chieftains) were buried in such a way that their path to the realm of ancestors and their place in it differed from those of other honored tribesmen. Many ancient tribes on various continents had such mythological ideas of various places for the abode of the souls of the dead. For example, the Aztecs believed that souls of heroes go to the sun, while others (not warriors) are dispatched to the underworld. According to the beliefs of the Caribs, brave people after their death will live on the Islands of Happiness, while other tribesmen are consigned to desert lands beyond the mountains (Davie, 2003; Korenevskiy, 2017: 122–124). These ideas of different places for kinsmen's stays in the other world, according to their status and rank in this world, reflected an epoch during which military tension was increasing, efficient stone and metal weapons were created, and hierarchical structures were evolving in societies. Chieftains and weapon-smiths occupied special places among their tribesmen, and gold was considered a more prestigious metal than silver and copper.

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Archaeozoological Studies at Konoplyanka, the Southern Trans-Urals

Konoplyanka is a fortified settlement associated with the Sintashta culture and dating to 1920–1745 cal BC. The faunal sample was studied with regard to standard traits and pathology analysis, rather recently adopted in Russian archaeozoological studies. The results are relevant not only to ancient herd composition and age at slaughter but also to the animals' states of health. The analysis of pathologies provides information about the herders' skills and the housing of domestic ungulates. Ethnographic data relating to the modern grazing management system in the same area and information received from herdsmen are widely used. This makes it possible to assess the carrying capacity of the land, and to arrive at a more accurate reconstruction of the pastoral economy. Osteophagy among the domestic ungulates is analyzed, and the phenomenon is discussed in the context of settlement archaeology. The study has shown that animal husbandry was the predominant subsistence strategy. Results of pathology analysis indicate a high level of herding skills. The cattle were used as draft animals. Osteophagy attests to places where animals were kept. The predominant system was homestead herding, all or most animals being likely kept within the settlement throughout the year.

Keywords: *Bronze Age, Sintashta culture, archaeozoology, animal pathology, ungulate osteophagy, draft cattle.*

Introduction

The Konoplyanka site is one of 22 settlements of the Sintashta culture discovered in the Southern Trans-Urals (Soldatkin, 2018: 210). Many aspects of herding by the population of this culture have been thoroughly studied in recent years (Kosintsev, 2000; Kosintsev, Gasilin, 2009; Kosintsev, Bachura, 2013; Rassadnikov, Kosintsev, Koryakova, 2013). But a number of other issues have not so far been the focus of archaeozoological research, including the analysis of pathological markers, reconstruction of the type of herding, and the radius of the economic (herding) zone of settlements.

This study sets out to reconstruct the pastoral economy at Konoplyanka, employing archaeozoological material from the site (excavations of 2012–2013). The study of this settlement is carried out as a part of a Russian-German joint project aimed at studying the Bronze Age sites located in the Karagaily-Ayat River valley (Koryakova, Krause, 2013: 1). One of our main aims is to reconstruct the subsistence strategy and ways this ancient group interacted with their environment. Archaeozoological methods were complemented by the employment of ethnozoological data in order to attain the purposes of the study most effectively.

Material and methods

The fortified settlement of Konoplyanka is located in the Kartalinsky District of the Chelyabinsk Region, at the headwaters of the Karagaily-Ayat River, approximately

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2 km northwest of a homonymous village (Sharapova et al., 2014: 102). This one-layer site contains predominantly materials of the Sintashta-Petrovka time, and is preliminary dated to 1920–1745 BC (Ibid.: 107–108). The excavation covered 96 m^2 and unearthed parts of a fortification, including ramparts, ditch, internal wall, and part of an adjacent construction (Ibid.: 104).

The osteological sample comprises 779 bones*. The sample was studied according to the protocol adopted at the Laboratory of Paleoecology of the Institute of Plant and Animal Ecology (UB RAS). The age at slaughter of cattle and *Ovicapridae* (sheep and goat) was identified on the basis of state of eruption of buccal teeth and the epiphyses (Silver, 1969). Bone measurements were taken following the protocol by Driesch (1976). Sizes of the domestic ungulates were reconstructed using the coefficients for calculating the height at the withers from metapodial and talar dimensions (Tsalkin, 1960: 119; 1970: 162). The protocol adopted at the Laboratory of Natural Science Methods of the Institute of Archaeology (RAS) was employed for the reconstruction of food-meat composition (Antipina, 2013: 139).

Taphonomy and taxonomic composition of the sample

More than a half of the bone fragments display a perfect preservation (stage 0 after (Behrensmeyer, 1978)). All these well-preserved bones were excavated from the filling of the ditch. The rest of the sample was collected inside construction 1, and exhibits traces of weathering (stage 1–2 after (Ibid.)). Almost all complete bones and large bone fragments were found in the filling of the ditch.

Bones identifiable to a particular species compose a substantial part of the sample (80 %). Most of these belong to domestic ungulates (Table 1). Cattle (*Bos taurus*) and *Ovicapridae* (sheep and goat), horses (*Equus caballus*), pigs (*Sus scrofa domesticus*), and dogs (*Canis familiaris*) are present in the sample. Approximately ten coprolites of dogs, consisting mostly of bone chips, were found in the filling of the ditch as well. Among the bones of small cattle, only sheep bones (*Ovis aries*) were identified, while goat bones were not detected. However, this observation can be most likely explained by the low sample size. Wild species are represented by single bones of roe deer (*Capreolus pygargus*), fox (*Vulpes vulpes*), and beaver (*Castor fiber*). In the complex of bones unidentifiable at the species level, fragments of large ungulate bones are prevalent (*Mammalia indet.*).

*The collection is curated at the Laboratory of Paleoecology of the Institute of Plant and Animal Ecology, Ural Branch of the RAS (Yekaterinburg).

Age distribution of slaughtered domestic ungulates

The number of fragments of the lower and upper jaws of cattle and *Ovicapridae* is low: 17 and 16 specimens, respectively. Horse bones cannot be employed in the analysis, owing to their scarcity: only 3 teeth from young, 1 tooth from a semi-adult, and 4 teeth from adult animals were excavated. According to the state of the dentition, more than a half of the slaughtered cattle were adult (Table 2). Fragments of jaws of senile individuals (i.e. with severely worn teeth crowns) were observed in the sample as well. The proportion of young animals to adult among the small cattle was equal (Table 2).

Our sample does not provide a lot of data regarding epiphyseal fusion. The most representative samples of the bones of cattle were obtained only for the distal part of the radius (6 spec.), both ends of the tibia (5 and 7 spec., respectively), calcaneus (5 spec.), and metapodials (11 spec.). Analysis shows that if epiphyses accrete at the age of 2 to 2.5 years, then a significant preponderance of slaughtered individuals with fused epiphyses is observed; but if at the age of 3.5 to 4 years, then with separated epiphyses. Such an observation suggests that the majority of animals were

Table 1. **Taxonomic composition of the archaeozoological collection**

Species	Number	%
Cattle – *Bos taurus*	392	50.3
Ovicapridae – *Ovis/Capra*	137	17.6
Sheep – *Ovis aries*	20	2.6
Horse – *Equus caballus*	46	5.9
Pig – *Sus scrofa domesticus*	5	0.6
Dog – *Canis familiaris*	20	2.6
Roe deer – *Capreolus pygargus*	1	0.1
Fox – *Vulpes vulpes*	1	0.1
Beaver – *Castor fiber*	1	0.1
Unidentified – *Mammalia indet.*	156	20.1
Total, NISP	779	100

Table 2. **Age at slaughter of the domestic ungulates**

Dentition development	Age, months	Cattle, %	*Ovicapridae*, %
M3 erupted	>30	58	43
M2 erupted, M3 not erupted	18–30	30	44
M1 erupted, M2 not erupted	6–18	0	13
M1 not erupted	< 6	12	0

slaughtered at between 2 and 4 years of age. The horse bones and bones of small cattle are not considered, owing to their scarcity.

Prevalence of various skeletal elements of domestic ungulates, and modifications of bones

The only relatively representative bone sample is that of the cattle. It shows an equal ratio between bones of the head, corpus, fore and hind limbs. In the sample of small cattle, bones of the head and forelimbs are prevalent; while among the horse bone fragments, hind limbs predominate.

One hundred seventy two bones with various modifications were detected in the sample. The most prevalent types of modification are gnawing-marks and signs of the impact of gastric enzymes of dog – 51.1 %. This is followed by cutting and chopping marks – 15.1 %; and signs of thermal effects – 12.7 %. Single bones displaying gnawing-marks and manifestations of contact with gastric enzymes of cattle and *Ovicapridae* were also identified. Several bone crafts and blanks were found during the work with the osteological sample. All these artifacts are burnishing tools made from talar bones of cattle (1 spec.) or sheep (3 spec.).

Skeletal metrics of domestic ungulates

Only a small number of the bones of sheep and cattle were suitable for measurement (Tables 3 and 4). Among the bones of cattle, both cow and bull remains were found. At least two metacarpals, several fragments of the lower diaphyses of the humeral bones, and first phalanxes (judging by their robustness), belonged to bulls. The metacarpals were sexed visually, as sexual dimorphism is well pronounced in these bones (Telldahl et al., 2012).

The height at the withers of cows, reconstructed from one talus, was 115.8 cm, while metatarsals revealed higher values: 118.5–121.2 cm. Three metacarpals were detected, which presumably belonged to oxen, owing to their narrow diaphyses and massive epiphyses. The height at the withers of these animals varied from 125.6 to 132.4 cm. In a bull, the height was determined from a metatarsal bone as 134.4 cm. The height at the withers of sheep, reconstructed from 4 talar bones, varied from 65.5 to 81.3 cm.

Two fragments of horn rods and a skull from a hornless individual were identified among the bones of cattle, and fragments of horns were found among ovine remains as well. There were likely both horned and hornless individuals of both cattle and *Ovicapridae* present in the herd. The scarcity of data does not permit more detailed reconstructions.

Table 3. **Cattle skeletal metrics, mm**

Variable	*n*	Lim	M ± m
P_2–M_3	4	144.0–156.0	147.7
P_2–P_4	5	51.0–57.1	53.1
M_1–M_3	5	86.5–98.8	91.6
M_3	8	32.4–41.8	37.7
Humerus, BT	9	74.3–94.1	84.2
Tibia, Bd	5	58.5–69.7	64.8
Metacarpal, GL	3	205.0–215.0	210
Bp	3	67.4–71.6	68.9
SD	3	30.5–42.1	38.0
Bd	3	70.1–77.1	74.5
Metatarsal, GL	3	218.0–245.0	228.0
Bp	4	47.3–58.1	52.6
Bd	3	52.7–70.7	59.6
Phalanx I, Glpe	14	55.3–68.4	62.0
Phalanx II, Glpe	10	33.4–47.2	41.6

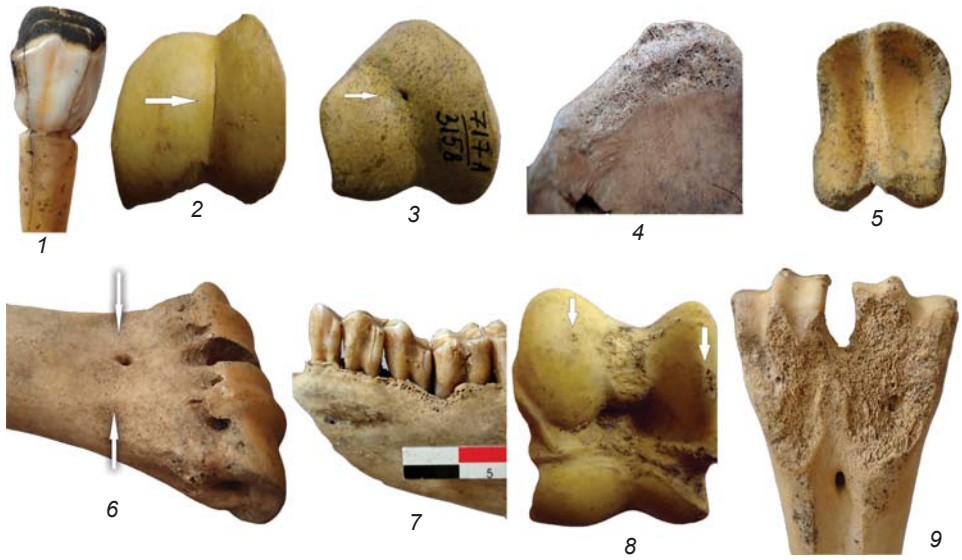
Table 4. **Sheep skeletal metrics, mm**

Variable	*n*	Lim	M ± m
M_3	6	22.3–27.9	24.9
Tibia, Bd	3	30.1–31.9	30.7
Astragalus, GLl	4	29.0–35.9	32.6
Metatarsal, GL	1	169.5	169.5
Metatarsal, Bp	2	23.0–24.0	23.5
Phalanx I, Glpe	4	41.0–45.2	43.4
Height at the withers	4	65.5–81.3	73.9

Results of the paleopathological analysis

A small number of pathological manifestations were only observed in the bones of adult cattle (18 spec.) and sheep (4 spec.).

Cattle. Of dental pathologies in the sample of cattle, one case of a wedge-shaped defect of the incisor was detected. It can be described as a V-shaped incision between the root and the crown of the tooth (see *Figure*, *1*). Depressions of articular surfaces were the most prevalent postcranial pathology (11 spec.) observed in the bovine phalanxes, metapodials, and carpal bones. These emerge as a result of local disturbances in the mineralization of subchondral bones (Thomas, Johannsen, 2011: 52). Among arthropathies, the most prevalent is Type 2 (after (Ibid.: 44)): clefts of the articular surface up to 1 mm wide and 5.0 to 10.5 mm long (see *Figure*, *2*). A depression of Type 4 (after (Ibid.: 46)); round hollow 1.0–1.5 mm in diameter and up to 1 mm deep) was also detected (see *Figure*, *3*). Two loci of eburnation were



Dental and bone pathologies of cattle (*Bos Taurus*) (*1*–*6*) and *Ovicapridae* (sheep and goat) (*7*, *8*), and an example of bone gnawing (osteophagy) by domestic ungulates (*9*).

1 – wedge-shaped defect of an incisor; *2* – depression of the 2nd type on the distal articular surface of the first phalanx; *3* – depression of the 4th type on the distal articular surface of the second phalanx; *4* – eburnation and proliferation of a pelvic bone; *5* – deformation and widening of the proximal articular surface of the first phalanx; *6* – depression on the volar surface of a metacarpus; *7* – precocious wear of P_4 and M_1 and an inflammation of the alveolus of a mandible; *8* – arthropathies of a sheep's talar bone; *9* – metatarsus gnawed by cattle.

found: in the central tarsal bone and in a fragment of the pelvic bone. In the latter, a proliferation of the periarticular surface was observed (see *Figure*, *4*). A marked widening and deformation of the proximal articular surface was identified in a first phalanx of a bull (see *Figure*, *5*). Two oxen metacarpals studied are of particular interest, as they display a number of pathological changes simultaneously. In both bones, subtle deformations and widenings of the articular facets of the distal epiphysis were observed. One of the bones, in addition, exhibits a marked depression (hollow) on the volar surface near its lower end (see *Figure*, *6*) and an arthropathy in the ridge of the lateral trochlea. This metacarpus also demonstrates a pronounced asymmetry between the 3rd and 4th metacarpal bones.

Ovicapridae. In an ovine mandible, manifestations of an inflammatory process of an alveolus were detected in the area of the P_4 and M_1, as well as a strong precocious wear of these teeth (see *Figure*, *7*). Two types of arthropathy were observed in the ovine postcranial skeleton. A depression of Type 2, similar to the one described above, was found on the distal articular surface of a second phalanx. On the medial surface of both ridges of a sheep's talus, we identified the second stage of the *Laesio circumscripta tali* arthropathy (after (Zimmermann et al., 2018: 20)). This lesion is a microscopic locus of osteonecrosis, which was formed as a result of insufficient blood supply (see *Figure*, *8*).

The interpretation of the observed dental pathologies of cattle (*Bos taurus*) and *Ovicapridae* (sheep and goat) is quite straightforward. The wedge-shaped defect can be related to congenital fragility of the cementum of the tooth neck in some individuals, but also to periodontal disease, the effect of salivary acids, or tough feed (Lukyanovsky, 1984: 150). The ovine dental pathology is likely a result of osteophagy found at the settlement (Caceres et al., 2013: 3113).

The etiology of the depressions on the articular surfaces is not yet known precisely, but it is established that causes of this pathology are different in different species. Depressions in the bones of cattle and *Ovicapridae* are manifestations of *osteochondritis dissecans* or *osteochondrosis dissecans* (Stevanovic et al., 2015: 7). However, some researchers suggest that the Type 2 depression is the least related to osteochondrosis. It is probably of developmental origin, and may not affect the functionality of the joint (Thomas, Johannsen, 2011: 53).

The eburnation and deformations of articular surfaces observed in the bones of cattle are not related to the use of the latter as draft animals, but are likely a result of age changes and occasional trauma. Similar lesions were observed in the bones of modern non-working cattle from the Karagaily-Ayat River valley. Pronounced asymmetry of the metacarpals are found in the modern cattle as well. However, the marked depression on the volar surface of the metacarpus of an ox, accompanied by a general asymmetry, may suggest that it was used as a draft animal. Such changes in the metapodials of cattle are typically viewed as markers of heavy physical exercise

(Bartosiewicz, 2008: 158–159). The most probable cause of the ovine talar arthropathies is housing of the animal in a stall, which can lead to a biomechanical stress to the joint (Zimmermann et al., 2018: 22).

Osteophagy of domestic ungulates

Several bone fragments with gnawing-marks caused by domestic ungulates were detected in the sample: three caused by cattle (see *Figure*, *9*), and two by *Ovicapridae*. A survey of modern cow and sheep pens in the Karagaily-Ayat River valley revealed exactly the same type of modified bone fragments, which has helped to explain the modifications observed in the Konoplyanka sample. A thorough description of the types and stages of the modifications may be found elsewhere (Rassadnikov, 2017).

Osteophagy can be viewed as an innate and typical feature of non-nutritional behavior of all ungulates and a marker of mineral deficiency in animals, since plant food cannot completely fulfill the animal's demand for minerals (Caceres et al., 2013: 3115; Hutson, Burke, Haynes, 2013: 4139). An important work by A.A. Kabysh describes a case of mass osteodystrophy of cattle, in the 1950s, in the Bredinsky District of the Chelyabinsk Region, i.e. in the Karagaily-Ayat River valley. The Konoplyanka settlement is located at the northern periphery of that district. A special commission was created to fight the osteodystrophy outbreak. The commission found that the Bredinsky District was an unusual biogeochemical province where the absorption of phosphorus and calcium in ungulates was disrupted, owing to the mineral composition of the soil (Kabysh, 1967: 334). Osteodystrophy is absent in the cattle of the Karagaily-Ayat River valley today, but cases of cattle and *Ovicapridae* eating bones and soil are observed despite mineral feeding of the animals. The probable cause of osteophagy by the cattle and *Ovicapridae* at Konoplyanka may be a combination of factors, including the specific features of the soils of the area, the peculiarities of all ungulates, and seasonal stress in some individuals. Intense dairy exploitation of cattle can be excluded from the list of potential reasons, because osteophagy is widespread among the modern beef cattle of the region.

The study of modern cow and sheep pens near the site has shown that, irrespective of the number of osteophagy markers found, such modified bones are suggestive of two important moments. First, they undoubtedly point to a homestead pattern of herding, since gnawed bones have been found exclusively inside the fence or its closest perimeter in moderns pens. If osteophagy is considered as a manifestation of general physiological stress, it is of note that in most ungulates such stress is observed in late winter to early spring, or during hot summer months (Niven, Egeland, Todd, 2004: 1789). The proclivity of ungulates for eating bones during periods of hot and dry weather has been documented in giraffes, for instance (Langman, 1978). Further, the modern system of pens where most markers of osteophagy have been found is used only during the snowless time of year. We also interviewed a number of herdsmen, who confirmed that osteophagy by domestic ungulates peaks in the summer. Thus, the markers of osteophagy may indirectly point to the season when they emerged. However, this issue requires further research.

Structure of meat food

Only indicators of the osteological spectrum for sheep, horse, and cattle were employed for the calculation of the amount of various kinds of meat consumed. Pig was not taken into account, since at present there is not enough evidence to believe that this domestic animal was bred for meat during the Bronze Age of the Southern Trans-Urals (Kosintsev, 2000: 41). The ratio of meat consumption demonstrates that beef was the main source of animal protein for the Konoplyanka population (Table 5). According to the data on dental eruption and fusion of epiphyses, young animals were consumed along with individuals older than 4–5 years of age. The second most popular type of meat was horsemeat, the third, mutton. Meat of young and adult sheep was consumed in almost equal amounts.

Probable pattern of herding

Reconstruction of the most probable type of herding at Konoplyanka is the most challenging task in this study. First, there are no data on the isotopic composition

Table 5. **Meat food composition**

Indicator	Beef	Mutton	Horsemeat	Total
Osteological spectrum, %	65.9	26.4	7.7	100 (595 bones)
Multiplicity of the weight of cattle carcasses in respect to a sheep carcass	6	1	5.5	–
Amount of meat products in standard units	394.8	26.3	42.3	463.4
Proportion of various types of meat, %	85.2	5.7	9.1	100

of bone collagen for the domestic ungulates, which could have helped to reconstruct the pattern of housing and feeding. Second, in the south of the Chelyabinsk Region, it is not possible to find a direct analogy of the homestead, transhumant, or homestead-transhumant herding, which are believed to have existed at several settlements of the Sintashta culture (Kosintsev, 2000: 44; Bachura, 2013: 287). In order to solve this problem, a number of data sources were employed, including the age distribution of the sample of cattle, the markers of osteophagy in domestic ungulates, and observations on the modern system of grazing management for cattle and *Ovicapridae* in the Karagaily-Ayat River valley. The age distribution of the slaughtered animals is indicative of a milk and meat type of husbandry. Thus, it can be hypothesized that at least a part of the herd was kept near the settlement for milking. The markers of osteophagy may suggest indirectly that the whole herd, or part of it, might have stayed near the settlement during the warm time of the year. Our observations on the modern grazing management system near the site have shown that even a small area of a river valley can, for decades, support the daily grazing of several small herds (100–150 heads) of domestic ungulates during the snowless period. Notably, steppe vegetation is resistant to grazing of mixed herds including cows, sheep, goats, and horses, and does not manifest signs of overgrazing. The hay for winter stall housing is harvested in the area adjacent to the river that is not used as a pasture. Summing up, it can be reasonably hypothesized that the area (2–3 km in radius) of the river valley surrounding the settlement could have supported the demands of the settlement's inhabitants for a pasture and foraging base for many years.

Conclusions

Unfortunately, not all aspects of the results of this study can be discussed thoroughly, owing to space limitations. We only discuss the main findings of the archaeozoological analysis of the Konoplyanka sample. In general, they show that a developed homestead herding was typical of the Sintashta cultural traditions. Husbandry appears to have been the main source of food for that population. This conclusion is also corroborated by the results of paleobotanical studies that failed to identify microscopic remains of agricultural plants in the site's cultural layer (Stobbe et al., 2016). Fishing probably did not play an important part in the subsistence strategy of the inhabitants of the settlement, since fish bones have been found neither in the ditch (which provides good conditions for the preservation of small bones) nor in the dog coprolites.

The domestic type of husbandry is confirmed by observations on the modern system of grazing management for cattle (*Bos taurus*) and *Ovicapridae* in the Karagaily-Ayat River valley, and also by paleobotanical data showing that the surrounding landscape was suitable for domestic herding (Ibid.). Judging by the same data, the areas of the valley located at the distance of 5 to 15 km from the settlement were presumably used for grazing. A number of observations point towards a high level of herder's skills in the inhabitants of the settlement. First, the low prevalence of skeletal pathologies is indicative of satisfactory conditions for housing the cattle. Second, manifestations of the castration of bulls were detected. Finally, oxen were used as draft animals. The signs of osteophagy in the domestic ungulates suggest that the herd was held near the settlement during the cold and, presumably, even warm (cows) part of the year. A number of bone lesions identified (i.e. arthropathies of the articular surfaces—a manifestation of restricted mobility of the joint) may be interpreted as indirect evidence of stall-housing of the animals. The reconstructed meat food composition of the settlement's inhabitants, and the fact that the oxen were used as draft animals, show that cattle were the most important kind of domestic ungulates.

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Burials in Anthropomorphic Jars in the Philippines

The first joint study by Russian and Philippine archaeologists addresses an unusual variant of a burial tradition distributed in Maritime Southeast Asia—burials in anthropomorphic clay jars, found in Ayub Cave (southern Mindanao Island, Philippines), excavated by specialists from the National Museum of the Philippines in 1991–1992, and tentatively dated to 500 BC to 500 AD. Of special interest are lids of jars shaped as painted human heads with individualized facial features and expressions. The finds suggest that Ayub Cave was a necropolis of the tribal elite, and that vessels were produced by a special group of potters using elaborate "prestige technologies". The Ayub ceramic collection has various parallels relating to clay figurines and decoration, including painting, among Late Neolithic and Early Metal Age assemblages from the Philippines (Luzon, Palawan, and Negros Islands), Indonesia (Sumba, Flores, and Bali Islands), and other regions of the Pacific Basin from Japan (Jomon) and Korea (Early Iron Age burials) to the Vanuatu Islands (Lapita culture). These parallels suggest that the source of the anthropomorphic symbolism was the Austronesian migration, with one of its routes passing from southern China via Taiwan, the northern Philippines, Mariana Islands, and further south to Melanesia and Polynesia.

Keywords: *Southeast Asia, Philippines, Ayub Cave, Early Metal Age, burials, anthropomorphic jars, ritual.*

Introduction

The Philippines, along with Indonesia, East Malaysia, Singapore, Brunei, and East Timor are a part of Maritime Southeast Asia. Special features of the dynamics of ancient cultures on the islands of the Philippine archipelago are determined by its geographical location within the tropical belt, as well as by variously directed migration and technological impulses from the mainland territories of East and Southeast Asia.

Until recently, archaeology of the Philippines was only rarely mentioned in Russian publications, such as the summarizing papers "The Old Stone Age in South and Southeast Asia" by P.I. Boriskovsky (1971: 161–162) and "The History of the Philippines: A Brief Overview" by Y.O. Levtonova (1979: Ch. I); the results of archaeological search and the discoveries of the last 25–30 years are actually unknown to Russian specialists. This situation has started changing considerably in recent years: along with a mutual common interest of the Russian

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and Philippine scholars in collaborating at the level of special agreements and options for implementation of joint projects under national science foundations*, a separate ("Philippine") theme is gradually being formed in publications of Russian archaeologists, including the present authors (see, e.g., (Tabarev, Patrusheva, 2018; Tabarev, Ivanova, Patrusheva, 2017; and others)).

Of special interest is a variety of funerary practices on the islands of the Philippine archipelago. A tradition of burials in jars stands out among them. First versions concerning the origins of this tradition appeared as early as the mid 20th century. Thus, for example, O. Beyer associated its occurrence on the Philippine Islands with migrations from the southern regions of China through the Batan and Babuyan Islands to the north of Luzon Island, at the turn of the eras, while W. Solheim attributed it to the cultural diffusion from Indochina, Thailand, and the Malay Peninsula (Beyer, 1947; Solheim, 1970, 1973). Thus far, the earliest manifestations of the tradition of burials in jars have been recorded in Late Neolithic assemblages (ca 3 ka BP), while individual elements remain unchanged up to our times. On the one hand, they fit into the Late Neolithic and Early Metal Age system of burial rites that is common for the entirety of Southeast Asia (Tabarev, 2017a; Bellwood, 1997: 202; 2017: 327; Bulbeck, 2017); and on the other hand, Philippine assemblages demonstrate a number of unique practices. First of all, this applies to burials in anthropomorphic jars in Ayub Cave on Mindanao Island (Fig. 1), which are dated to 500 BC to 500 AD.

In fact, this article is the first experience of joint work performed by Russian and Philippine archaeologists. It considers the burials in jars from Ayub Cave as part of the "anthropomorphic" theme in the funerary practices of Maritime Southeast Asia and in a broader Pacific context.

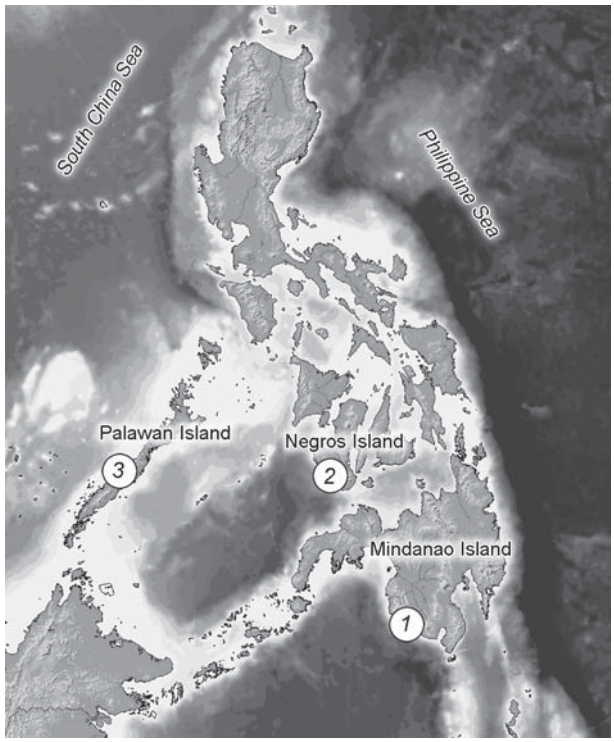


Fig. 1. Map of the Philippine archipelago, with indication of locations of the main sites mentioned in the text.
1 – Ayub Cave; *2* – Magsuhot; *3* – Tabon.

Anthropomorphic jars in the funerary assemblages of Mindanao Island, Philippines

Mindanao Island (whose area is slightly less than 100 thousand km^2) has been only preliminarily studied in terms of archaeology. Among the earliest projects were studies conducted in 1963–1964 and 1967 under the supervision of M. Maceda in the Kulaman Plateau (Sultan Kudarat Province), where excavations were carried out in several caves, and a series of funerary clay vessels and soft-stone urns with remains of buried people, items made of stone and shells, and several metal artifacts were found (Maceda, 1964, 1967). Of special interest are stone urns with anthropo- and zoomorphic subjects (figures of humans, lizards, snakes) (Fig. 2).

In 1965–1966, S. Briones, a postgraduate student of Silliman University, visited the Kulaman Plateau and noted the presence of stone funerary urns and ceramic vessels in Salangsang caves and niches (Briones, 1985–1986). Soon after this, in the 1967–1968, American specialists E. Kurjack (University of Miami) and K. Sheldon (University of Oregon) conducted additional studies in the same areas, and dated a bone fragment from a burial in a jar (585 ± 85 AD) (Dizon, 1996: 195; Dizon, Santiago, 1996: 10; Kurjack, Sheldon, Keller, 1971: 127–128). At the end of the 1970s, W. Solheim, A. Legaspi, and D. Neri published a review paper on the archaeology of the southeastern part of Mindanao (Solheim, Legaspi, Neri, 1979), following which field studies on the island were interrupted until the beginning of the 1990s.

In the middle of 1991, the first data appeared on the anthropomorphic burial jars found in abundance during searches for "treasures"* in one of small caves in the

*For example, in August 2018, an agreement for cooperation in science and technology, the first in the history of Russian-Philippine contacts, was signed between the Russian Foundation for Basic Research and the Philippines' Department of Science and Technology.

*We are talking about searches for gold bars hidden by Japanese military men during World War II.

Fig. 2. Burial urns with anthropomorphic symbolism, the Kulaman Plateau (photo from the authors' archive).

Province of South Cotabato. According to E. Dizon, he managed to see some of these materials, which included 25 ceramic items (lids of jars) in the form of human heads up to 7–14 cm high, up to 6–12 cm in diameter, and 0.2–0.5 cm thick (1996: 191). Details (ears, noses, lips) were made with different techniques: as individual appliqué patterns or as a unified sculpture form; some items were painted red and black; red engobes were also present on the most fragments of the jars themselves.

Archaeological excavations in the cave, which was called Ayub*, were conducted by the team of the National Museum of the Philippines in 1991–1992. The pre-entrance part of the cave has a height of about 3 m with a width of 5 m; the internal cavity descends from the entrance at an angle of 30° by approximately 8 m. The "treasure hunters" destroyed the pre-entrance part using heavy equipment, and excavated test pits in the internal cavity of the cave. Nevertheless, archaeologists managed to discover several square meters of undisturbed cultural layer (Fig. 3), where 29 nearly-complete jars with lids in the form of human heads, as well as about 20 lids restorable from larger parts, and more than 100 various fragments, were found during excavations. According to Philippine specialists, in general, there were about 200 anthropomorphic lids of funerary jars (Cuevas, Leon, 2008; Dizon, 1996: 191; Dizon, Santiago, 1996).

Notably, the faces of ceramic heads show various emotions: smiles, grief, sorrow; some of them have distinctively elaborated parted lips, teeth, and extended earlobes, with paint on the forehead and cheeks clearly visible (Fig. 4). Sexual characteristics designated on the jars themselves allow male and female images to be distinguished (Fig. 5). Thus, a ceramic jar not only serves as a funerary container, but also provides certain information about the buried person or persons.

Funerary urns were accompanied by small jars painted red and black and decorated with spatula and cord imprints, as well as with incised geometrical figures. Grave goods comprise glass and ceramic beads, fragments of ceramic bracelets, ornaments made of shells, and several small iron plates.

Two radiocarbon dates (1840 ± 60 BP (Beta-83315) and 1900 ± 50 BP (Beta-83316) (Dizon, Santiago, 1996: 109)) make it possible to assign the use of the necropolis in Ayub Cave to the turn of the eras, i.e. to the time defined as the Early Metal Age in the archaeological literature on Southeast Asia, and as the "Metal Period" with respect to the island part, since bronze, iron, and gold appeared here almost simultaneously. So far, the number of sites belonging to this period is insufficient to distinguish full-fledged

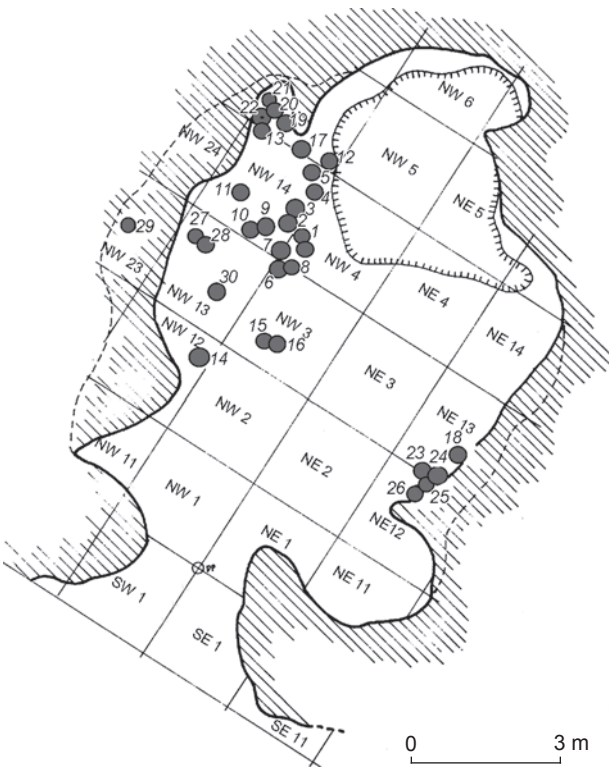


Fig. 3. Arrangement of burial urns found during excavations in Ayub Cave in the 1991–1992 (adapted after (Dizon, Santiago, 1996)).

*After the name of one of the leaders of the Moro National Liberation Front (MNLF), which controlled this territory.

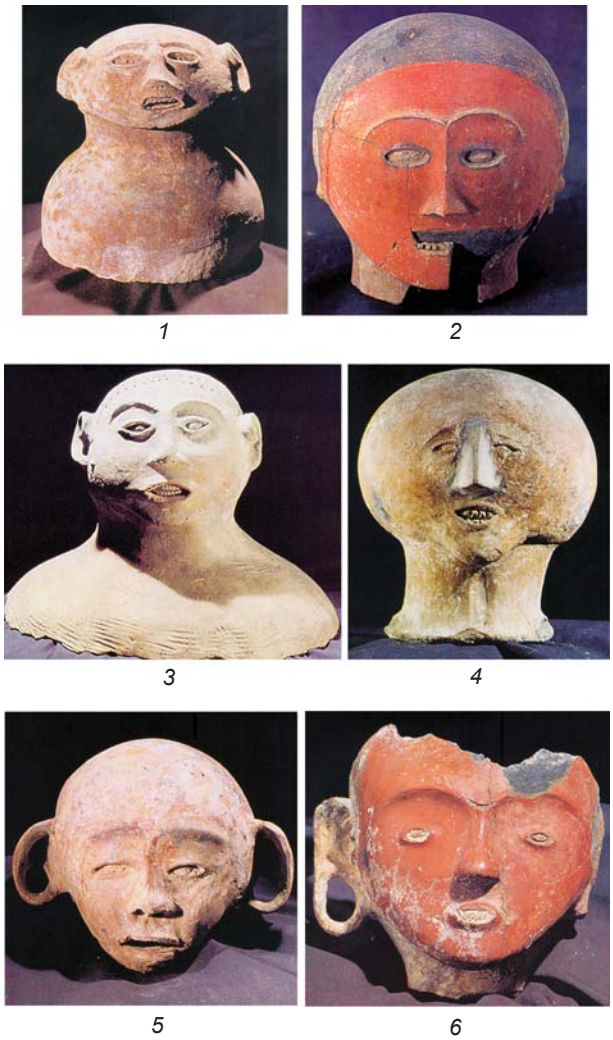


Fig. 4. Anthropomorphic lids of burial jars from Ayub Cave (after (Dizon, Santiago, 1996)).

"archaeological cultures" in the territory of Philippines, so specialists use the terms "assemblage" and "tradition" at this stage (Handbook…, 2017: 6–7).

Anthropomorphic jars from Ayub Cave and their nearest parallels

Owing to the partial preservation of the assemblage in Ayub Cave, the absence of data on DNA, and detailed anthropological definitions, the interpretation of the assemblage and its ethnocultural relation to the present aboriginals of Mindanao has a preliminary character. It is also notable that the adjacent Sagel Cave, pertaining to the same period, does not contain any anthropomorphic funerary jars. Besides, though Ayub is dominated by group burials, Sagel accommodates only single ones (Cuevas, Leon, 2008). All of this points to the variability of burial rite details within the framework of a common tradition.

Fig. 5. Burial jars from Ayub Cave (after (Dizon, Santiago, 1996)).

At the same time, finds in Ayub Cave, despite their vivid specifics, uniqueness, and local character, also reflect anthropomorphic subjects in grave goods, which are common for Maritime Southeast Asia. Noteworthy are the most spectacular examples within the Philippines and Indonesia. For instance, one of the most ancient manifestations of an anthropomorphic subject was found in Tabon Caves (Palawan Island, Philippines), in hall "A" (Fox, 1970: 109). We are talking about the famous Manunggul burial jar. Its height is 66.5 cm, the maximum width is 51 cm. The jar's lid is surmounted with a sculptural composition depicting two dead people, who are moving to the kingdom of the dead in a boat (Fig. 6). The funerary urn was accompanied by artifacts made of jade, agate, and shells, as well as several small clay vessels. There are 891 ± 80 (USLA-992A) and 711 ± 80 (USLA-992) BP dates available for this assemblage, which corresponds to the Late Neolithic, or the transition to the Early Metal Age for the Philippine archipelago (Tabarev, Ivanova, Patrusheva, 2017).

For the Early Metal Age (Metal Age), extremely interesting materials were obtained in 1974–1975, when studying the Magsuhot site (the southern part of Negros Island, the Philippines) (Tenazas, 1974), where common (single) and two "complicated" funerary complexes were discovered. One of them accommodated a ground of 2 × 1 m, paved with flat ceramic fragments, where three large empty burial jars were placed, accompanied by a set of more than 80 small ceramic vessels, anthropomorphic and zoomorphic sculptures, a burial of a woman and two children, and a single stone block weighing ca 500 kg. Of special note is a jar depicting a pregnant woman (Fig. 7, *1*), and also jars with lids in the form of a paired composition consisting of sitting or standing figurines (Fig. 7, *2*).

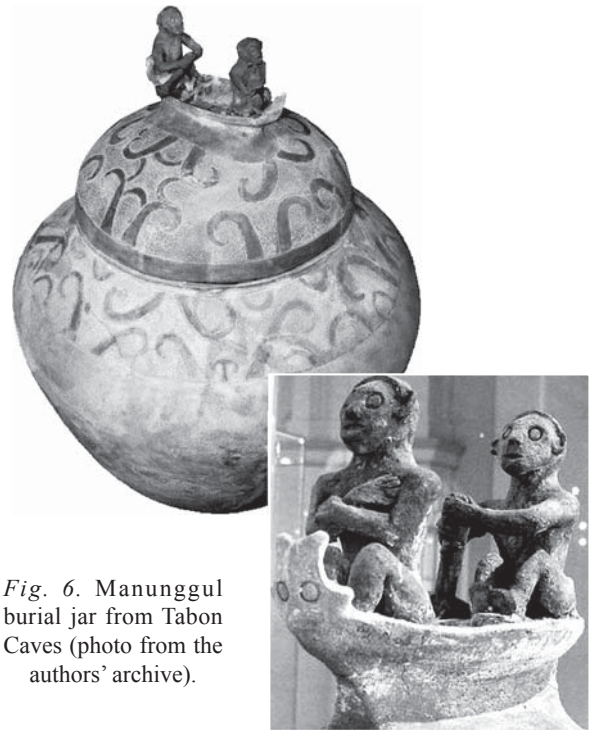


Fig. 6. Manunggul burial jar from Tabon Caves (photo from the authors' archive).

Certain ceramic items with anthropomorphic symbolism are also known from other Philippine sites belonging to the Early Metal Age (Leta-Leta, Baja, Kalamaniugan, Kalatagan, etc.) (Fig. 8, *1*, *2*). No less interesting parallels can be traced on the islands of Indonesia. For example, noteworthy is the Pain Haka site (the eastern part of Flores Island), where 13 single burials (mostly partial, without skulls) in jars were found. All jars, with one exception, are of spherical shape, with red engobes; some of them have incised ornaments; in one case, decoration of the upper portion of the body with appliqué patterns in the form of human faces (Fig. 8, *3*) is recorded, and in another one, representations of lizards. Grave goods include sub-rectangular adze-like tools made of stone or shells, bracelets, beads, and pendants made of shells, plus a spine of a sea skate. Metal items are absent, and radiocarbon dates determine the necropolis's age within 3000–2100 BP (Galipaud et al., 2016).

A series of "candy" jars in the shape of flasks or kettles with relief or incised contours of human faces, known from a number of funerary assemblages on the Sumba, Flores, and Java islands, is of no less interest (Heekeren, 1958: Pl. 34) (Fig. 9).

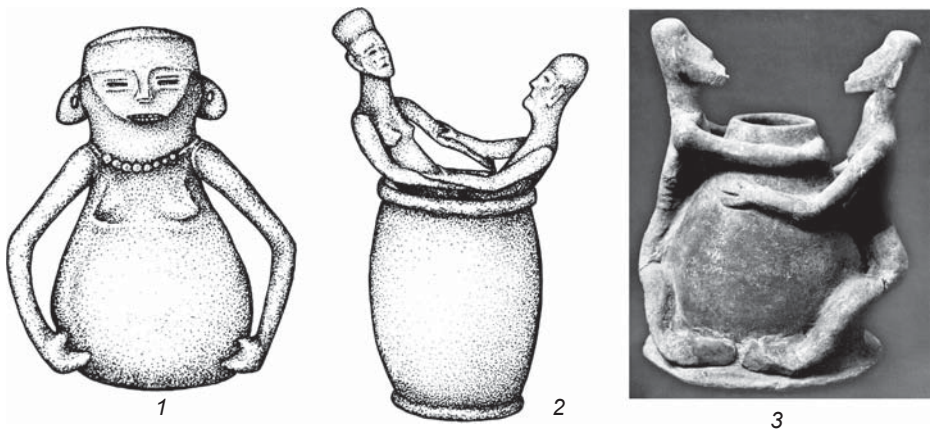


Fig. 7. Burial jars from the Magsuhot site (drawing by Y.V. Tabareva, photo from the authors' archive).

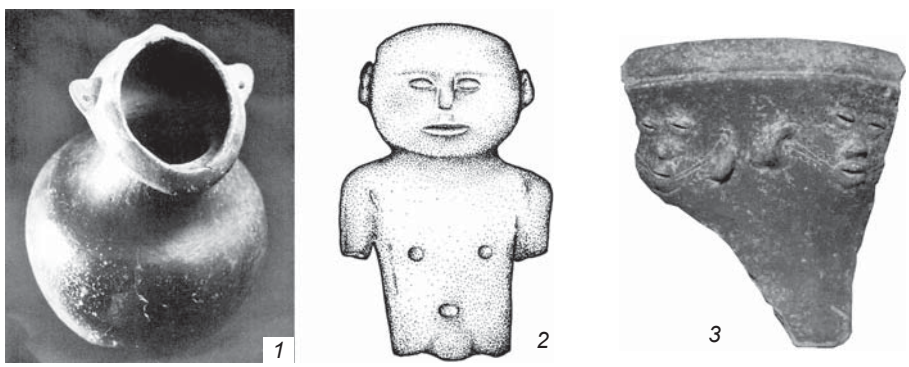


Fig. 8. Anthropomorphic images from funerary assemblages of Maritime Southeast Asia.
1 – Leta-Leta, Palawan Island, the Philippines (after (Dizon, Santiago, 1996)); *2* – Baja, Luzon Island, the Philippines (drawing by Y.V. Tabareva); *3* – Pain Haka, Flores Island, Indonesia (after (Galipaud et al., 2016)).

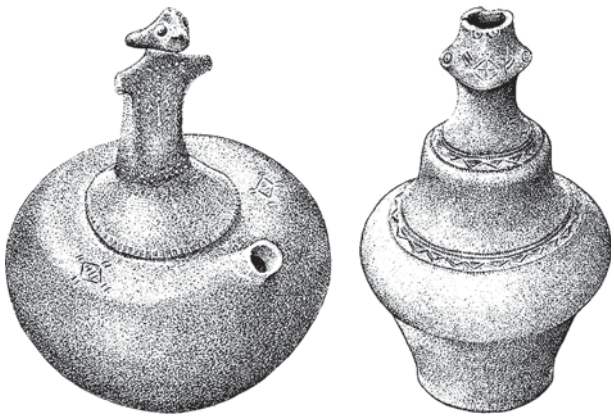


Fig. 9. Ceramic "candy" jars, Sumba Island, Indonesia (after (Heekeren, 1958)).

Conclusions

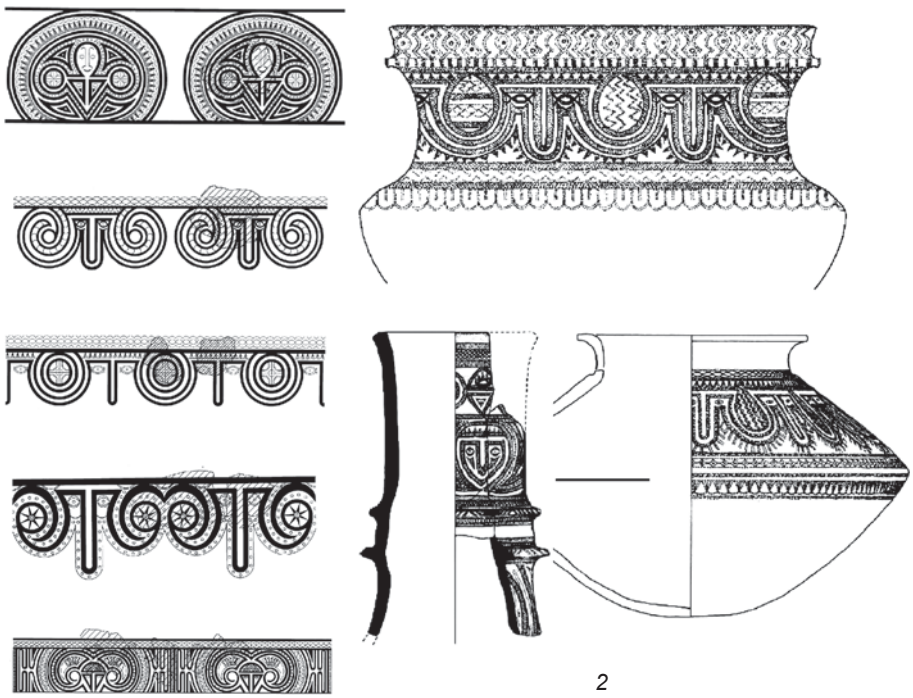
Thus, the assemblage from Ayub Cave (the southern part of Mindanao Island) is a telling illustration of one of the local funerary traditions of both the Philippine archipelago and the entire Maritime Southeast Asia. Analysis of its materials brings researchers to a wide range of interesting subjects.

First, burials in anthropomorphic jars can be interpreted as high-status, and the entire complex as a necropolis of the tribal elite. The grave goods, the "portraitness" of depictions, the complexity of the rite itself, and the absence of data about other funerary assemblages of such complexity in this part of Mindanao Island speak in favor of "elitism" (Barretto-Tesoro, 2003). Manufacture of vessels implies special skills and the existence of a group of potters using elaborate "prestige technologies" (Tabarev, 2008; Hayden, 1995).

Second, the question arises as to whether the anthropomorphic burial attributes are related only to ceramic items and to the period of transition of Neolithic pottery technologies from mainland parts of East and Southeast Asia to the island part ca 4 ka BP; or whether they could have been preceded by local (pre-Neolithic) tradition of making figurines, masks, and amulets from organic materials. This requires a search for and special study of early funerary assemblages (10–5 ka BP) in Malaysia, the Philippines, and Indonesia.

Third, it is essential to involve a maximally wide range of archaeological and ethnographic parallels to the anthropomorphic symbolism within the Pacific Basin. The earliest ones are discovered in the early and middle periods of the Jomon culture (anthropomorphic

Fig. 10. Jar depicting a human face, 70.2 cm high. Yayoi culture. Ibaraki Prefecture. Exhibition of the Tokyo National Museum (photo from the authors' archive).



1 *2*

Fig. 11. Anthropomorphic symbolism of the Lapita culture.
1 – variants of ornaments on jars (after (Spriggs, 1990)); *2* – jars from Teouma cemetery, the Island of Efate, Vanuatu (after (Ravn et al., 2016; Valentin et al., 2010)).

images of "shamans") and the Yayoi culture (stylization of the upper portions of jars in the form of human heads) (Fig. 10) in the Japanese Archipelago (Solovieva, Tabarev, 2013; Tabarev, 2017b), and in the Early Iron Age assemblages on the Korean peninsula, where paired burial jars are interpreted as a "human body" or an "egg" (Riotto, 1995).

And finally, an important event of cultural genesis for the entire Pacific Basin is the distribution of speakers of Austronesian languages from the coastal areas of southern China via Taiwan, the northern Philippines, Mariana Islands, and further south to Oceania (Carson et al., 2013). One of the markers of this migration is red-painted pottery with complex incised ornaments, which is also becoming the determining feature of archaeological assemblages recorded in Polynesia, Melanesia, and the Micronesia islands and combined into the Lapita culture (tradition) (3000–2500 BP). Notably, the anthropomorphic theme (symbolic representation of faces) is recorded in even the earliest pottery belonging to this culture; for example, in burials of the Teouma cemetery on the Island of Efate, Vanuatu (3.0–2.8 ka BP) (Bedford, Spriggs, 2007; Ravn et al., 2016; Valentin et al., 2010), and continues to persist with various modifications throughout the entire period of the Lapita tradition (Spriggs, 1990) (Fig.11), and also in the subsequent Polynesian cultural stratum.

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The Tamga Signs of the Turkic Nomads in the Altai and Semirechye: Comparisons and Identifications

This article presents a classification of tamgas on petroglyphs and portable items. Tamgas are signs of group identity used by medieval Turkic nomads inhabiting Southern Siberia, Mongolia, and Kazakhstan. We describe eight groups of tamgas found in the Altai and in Semirechye, and compare them with similar signs from other parts of the region. The mapping of tamgas, including petroglyphic, sphragistic, and other types have allowed us to assess their date, ethno-political attribution, and the migration routes of groups with which they were associated. The comparison of tamgas in the Altai and Semirechye evidences close links between those regions. Whereas certain groups of tamgas (combinations of many varieties) were emblems of major tribal unions, others were supratribal markers of social status, privileged clans, and alliances. Certain emblems were dynastic signs of the ruling elite. Dynastic tamgas of the Yaglakar clan are known from sites such as Syrnakh-Gozy and Kurai I in the Altai. Certain tamgas on coins and petroglyphs in Semirechye are emblems of the 8th and 9th century Karluk rulers of the Altai (Chagan, Taldura, etc.) and central Mongolia (Shivet Ulan). Two groups of tamgas (No. 1 and 3) have many derivatives, marking certain divisions of the Karluk federation. An example of a supratribal emblem is tamga No. 2, which shows little variation despite being found in various contexts over a vast territory.

Keywords: *Altai, Semirechye, Turkic epoch, tamgas, Uyghurs, Karluks.*

Introduction

Ancient and medieval tamgas known from the vast territories extending from the Cis-Baikal region to the Caspian Sea, and from the Kuznetsk Alatau and Khangai Mountains to the Tian Shan and Pamir-Altai appear on two types of monuments: *portable items* and *immovable monuments* of archaeology and architecture (Fig. 1). Tamgas have been found on memorial and cultic structures (steles, funerary enclosures, balbal steles, tombstones, temple buildings), and in the form of rock paintings: a) in accumulations of petroglyphs ("sanctuaries"); b) near permanent sites, and c) as separate collections of tamga signs ("encyclopedias"), which represent an independent type of historical and cultural monument traditionally referred to as *tamgalytas* in the Turkic-speaking part of Central Asia. Tamga signs are depicted on the following portable items: a) coins of the ancient states of Transoxiana (the Kushan Empire, Khwarazm), vassal possessions of the Turks in Central

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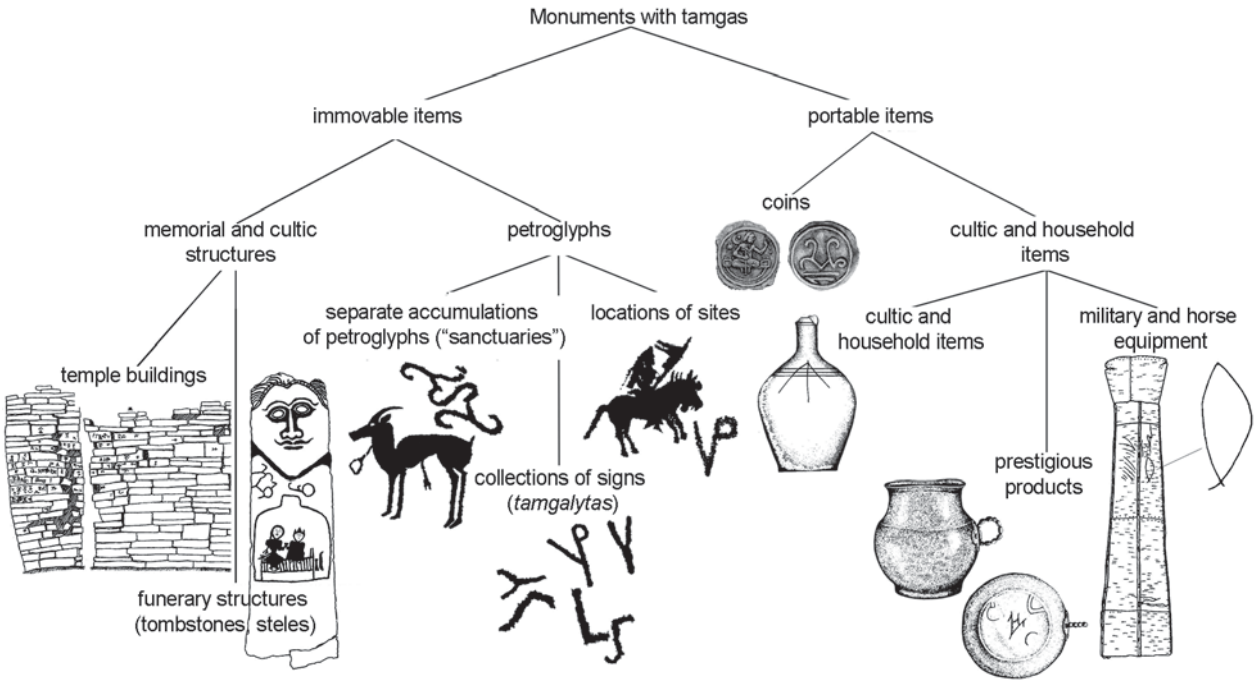

Fig. 1. Classification of monuments with tamgas. Compiled by A.E. Rogozhinsky.

Asia, and urban centers in the Chuy and Talas valleys; b) on cultic and household items, prestigious products (expensive dishware, seals), and items of military and horse equipment (Rogozhinsky, 2014: 82). The tamgas on immovable items have the greatest informational value for the study of land use, settlement, and movement of nomadic tribes. They mark long-term habitation locations and areas of various nomad groups over a particular period of time.

Medieval tamgas have been found at monuments of all the above types on the territory of the Altai in Russia, Mongolia, and Kazakhstan. To date, about 50 locations are known, but this figure reflects only our relatively poor knowledge of the mountainous region. Typologically, about 20 basic forms of tamgas have been identified; some of them have from two to seven varieties. In Semirechye, over 150 locations with tamgas on rocks and memorials have been found; about 30 types of signs have been identified, many of which appear in three to six varieties.

Groups of tamgas: description and identification

Frequent occurrence of some signs at many locations of the Altai suggests the long-term stay of their owners. These signs include the tamga in the form of two connected circles; several of its varieties, which were composed by adding diacritical elements to the main figure, are known (Fig. 2). Tamgas of this type have often been found in the Russian and Mongolian Altai (Kubarev V.D., Tseveendorj, Jacobson, 2005: App. I, fig. 937, 1050, 1248, 1345; Kubarev V.D., 2009: App. I, fig. 399, 440, 562; Vasiliev, 2013: 117–121), but outside of that territory, this "endemic" sign is rare.

Another group consists of tamgas that occur, in addition to the Altai, in many regions of Central Asia. For instance, the tamga in the form of a pair of connected triangles (up to six varieties) commonly appears in the Altai and Semirechye; it is less common in Southern Kazakhstan, the Northern Tian Shan, in the center of Mongolia, and in the Minusinsk Basin. In the Altai, this tamga has been repeatedly discovered on memorials; in Semirechye only on petroglyphs. This tamga could have belonged to a large association of nomads in the Altai, whose units at certain periods occupied the territories of the Central Asian possessions of the Turks.

Rare tamgas located outside of the Altai can be viewed as a result of penetration of certain groups of migrant population or their representatives into the local environment. Such tamgas include the sign on the Syrnakh-Gozy rock and on a vessel from the Kurai I site (Kubarev G.V., 2012: 199, fig. 2), which can be identified as a dynastic tamga of the Yaglakar (a Khagan clan of the Uyghurs) on the basis of the Kary Chortegin bilingual (775–795) from Xian (Alyılmaz, 2013: 52–53; Luo Xin, 2013: 76–78). Such tamgas are very rare; they are noteworthy because of the high political status of the emblem that has been found only on four memorials in Mongolia and China (Bugut, Mogoyn Shine Usu, Shivet

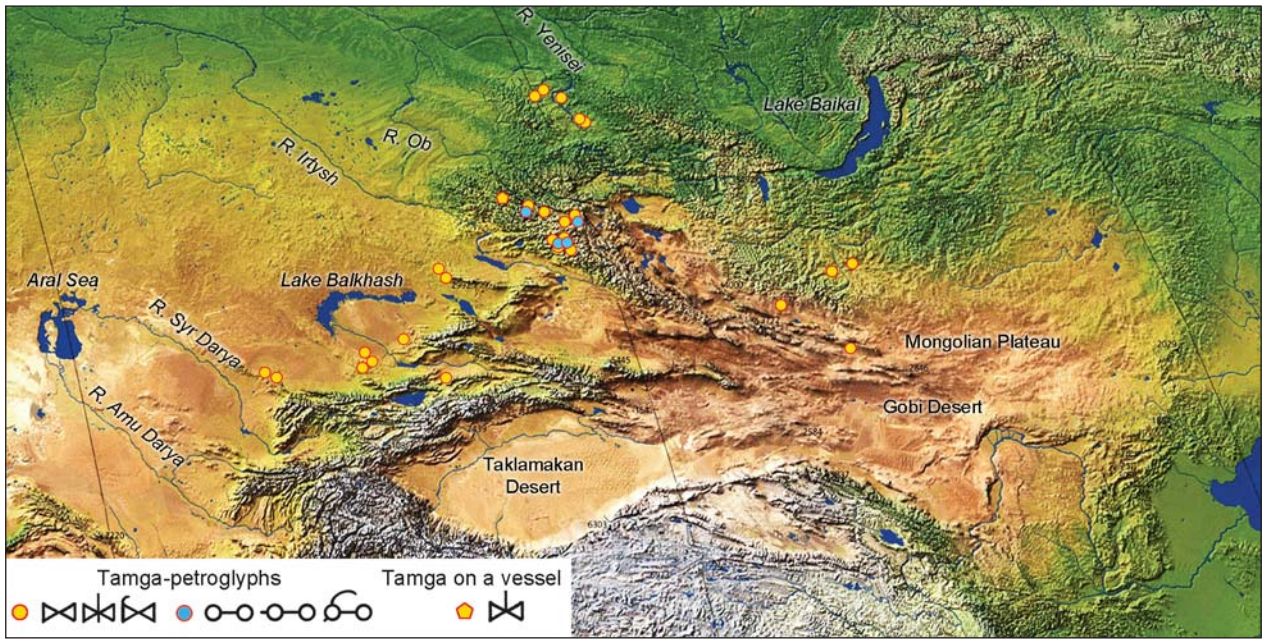

Fig. 2. Locations of tamgas.

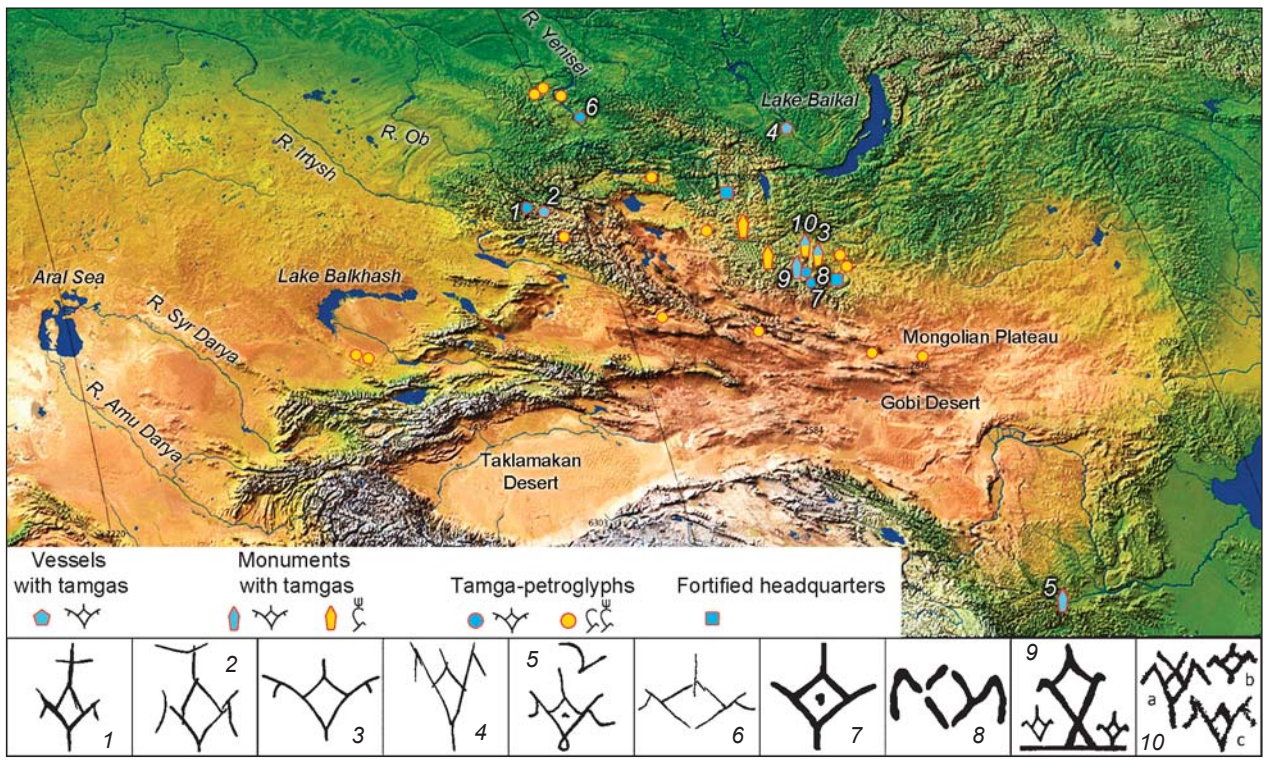

Fig. 3. Locations of tamgas.
1 – Syrnakh-Gozy; *2* – Kurai I; *3* – Mogoyn Shine Usu; *4* – Muruisky Island, vessel 1; *5* – Xian (Kary Chortegin); *6* – Tepsey (E 116); *7* – Zuriyn Ovoo; *8* – Khurugiyn Uzur; *9* – Bugut; *10* – Shivet Ulan. *2*, *4*, *5*, *10* – drawings of the tamgas by A.E. Rogozhinsky.

Ulan, and the epitaph of Kary Chortegin), two silver vessels from Kurai I and from Muruisky Island, and in a form of a petroglyph in Syrnah-Gozy, Tepsey, Zuriyn Ovoo, and Khuriyn Uzur (Fig. 3, *1*, *6*–*8*). The most important of these monuments are associated with the "domain" (*kurug*) of the rulers of the Uyghur Khaganate on the northern slopes of the Khangai Mountains (Klyashtorny, 2012: 95), and petroglyphs of the Khagan

emblem on the Yenisei River (Tepsey) and in the Chuy Valley (Syrnah-Gozy) may mark the distant borders of the territories, which at a certain moment became influenced by the Uyghurs.

A single find in the Mongolian Altai is a tamga associated with the Uyghur tribal union (Esin, 2017: Pl. 2). This petroglyph sign from Tsagaan Salaa IV represents the main form of the tamga, which is known in no less than five more complex varieties. The area where the main tamga and its varieties occur includes at least 16 locations on the rocks and memorials of Mongolia from the borders of the Gobi to the northern spurs of the Khangai Mountains (Fig. 3). Beyond this area, the tamga was found in individual locations in Central Tuva (Belikova, 2014: 101, fig. 23), Semirechye, as well as on a vessel from Muruisky Island on the Angara River. It can be assumed that the remote tamga locations mark the direction of the Uyghur expansion during the period of their elevation (submission of the Tuva Chik in 750–753 and of the Yenisei Kyrgyz in 758) (Kyzlasov L.R., 1969: 57–58; Kamalov, 2001: 89–90), and the subsequent movement of individual groups of the Uyghur population to the west and southwest after the defeat of their state by the Kyrgyz (Malyavkin, 1974: 7).

There is a group of widespread tamgas that often appear in combination with tamgas of other types. Three signs belong to this group: No. 1 – similar to the Greek letter “omega”; No. 2 – in the form of a winding snake, and No. 3 – in the form of an angle with a circle between the rays or short lines on one of them. The areas of these signs mostly coincide, although they do not form a single space, which can be explained by the uneven degree of research on different territories. The common area of the three signs consists of two remote areas: a) the Russian and Mongolian Altai; b) Semirechye, with a numerical predominance of locations in the Chu-Ili interfluve. Individual signs and their series have been found outside the common region, and from this perspective, the territory of their distribution additionally includes the southern and central regions of Mongolia, Issyk-Kul region, and Eastern Fergana region.

Tamga No. 1 is represented by at least five varieties formed by the addition of lines to the unchanged form of the sign (Fig. 4). The greatest concentration of the main tamga and its varieties occurs in the Issyk-Kul region, Chu-Ili interfluve, and the Ketmen Mountains, that is on the left bank of the Ili River and the right bank of the Chu River up to Issyk-Kul. To the west and south of this

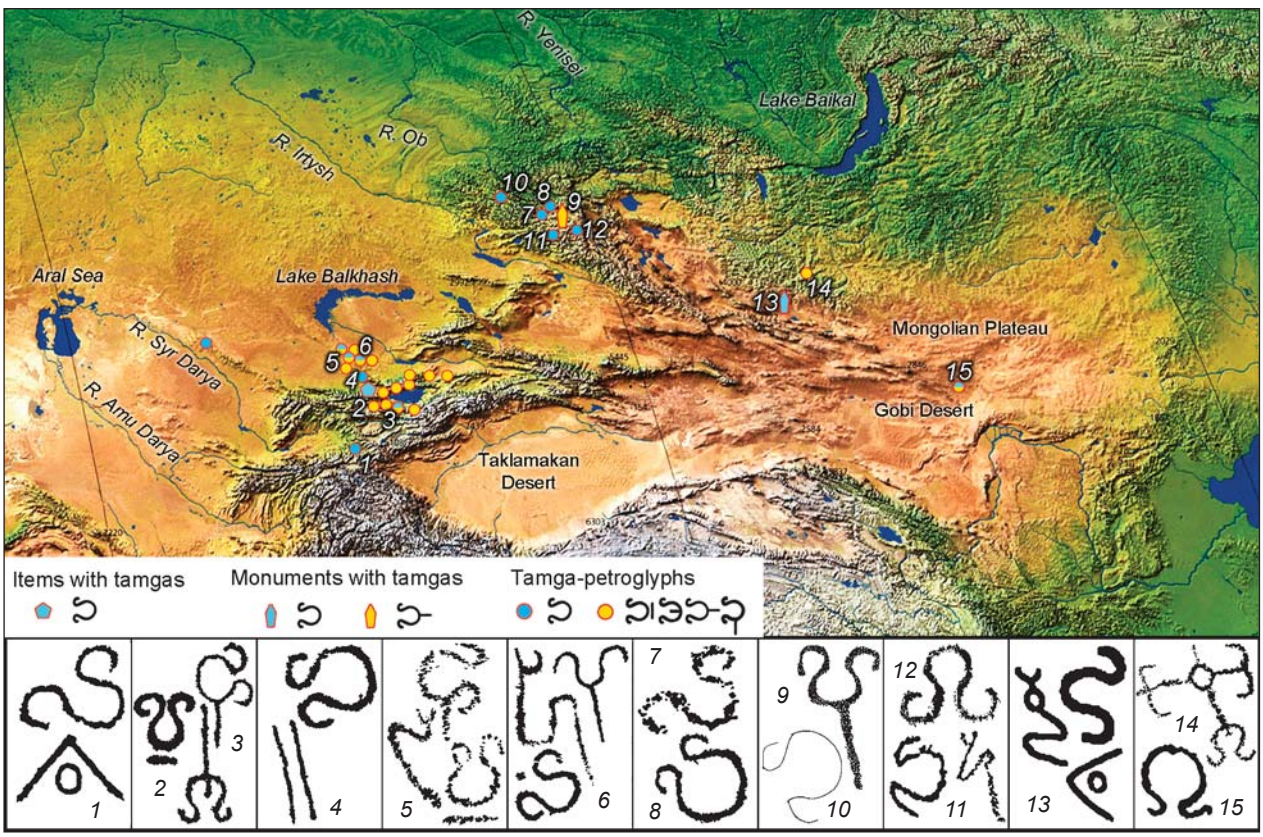

Fig. 4. Locations of tamga No. 1.
1 – Bololu; *2* – Kochkor; *3* – Akolen; *4* – Akterek; *5* – Akkainar; *6* – Tamgaly; *7* – Chagan; *8* – Ule; *9* – Ulandryk IV; *10* – Tuyakhta; *11* – Tsagaan Salaa; *12* – Koibastau; *13* – Bombogor; *14* – Khurugiyn Uzur; *15* – Baishint.

area, the tamgas have been found only sporadically, and derivative signs have been rare.

To the northeast of Semirechye, in the hypothetical initial habitation area of the owners of tamga No. 1, omega-like petroglyph signs have been repeatedly discovered in the Altai (Chagan, Ule, Tsagaan Salaa, and Koibastau) (Kubarev V.D., Tseveendorj, Jacobson, 2005: App. I, fig. 379; Guneri, 2010: Fig. 2, *1*). Its derivative forms (Kubarev V.D., 1987: Fig. 3, pl. LXVII) rarely occur in that region. Tamga No. 1 is a part of two collections of signs. It appears on the bottom of the vessel from burial mound 3 of the Tuyakhta cemetery, and on the memorial stele from Bombogor (Kiselev, 1951: 540–541, pl. LII, 7; Bazylkhan, 2011: Fig. 3). Despite incomplete data, concentrated locations of tamga No. 1 in two areas (the high mountains of the Altai and the Chu-Ili interfluve with the Issyk-Kul region), as well as dispersed areas of this sign, can be clearly visible on the map of the region. The absence of this tamga in the intermediate territory which separates the two areas of concentration (Tarbagatai and Zhetysu Alatau) is notable. This tamga has also been missing from the territory of Central Kazakhstan. The path of the owners of tamga No. 1 from the Altai to the western part of Semirechye and the Issyk-Kul Depression could have passed from the east, through the Ili valley, or the southeast, from the Inner Tian Shan.

Tamga No. 2 does not have any derivative forms (Fig. 5). It is represented by the variants of a snake-like figure rotated at 180°, and three variants of the image of the "head": a bend, fork, or circle (oval). Different iconographic variants have been found in Mongolia and Semirechye, sometimes together at the same location, as it is the case in Tamgaly or Bichigt Ulaan Khad, examined by G.I. Borovka in 1925 (Mongoliya…, 2017: 67, photo II, 25188, 25189) (Fig. 5, *3*, *8*, *12*). A striking example is the rock panel in Urkosh III, where at least five images of the tamga-snake and several other signs were drawn over ancient petroglyphs. Medieval inscriptions located nearby, which mention the titles of the Turkic and Uyghur rulers (Tugusheva, Klyashtorny, Kubarev G.V., 2014) make it possible to evaluate the importance of this religious complex and probably important military and political center in the Altai. Tamga No. 2 in the form of petroglyph has not been found in Tuva and the Minusinsk Basin, therefore a silver vessel with two similar signs from the Uybatsky chaatas should be considered as a gift or trophy. Expensive vessels of this type are more typical of the sites of the Turkic culture in the Altai and

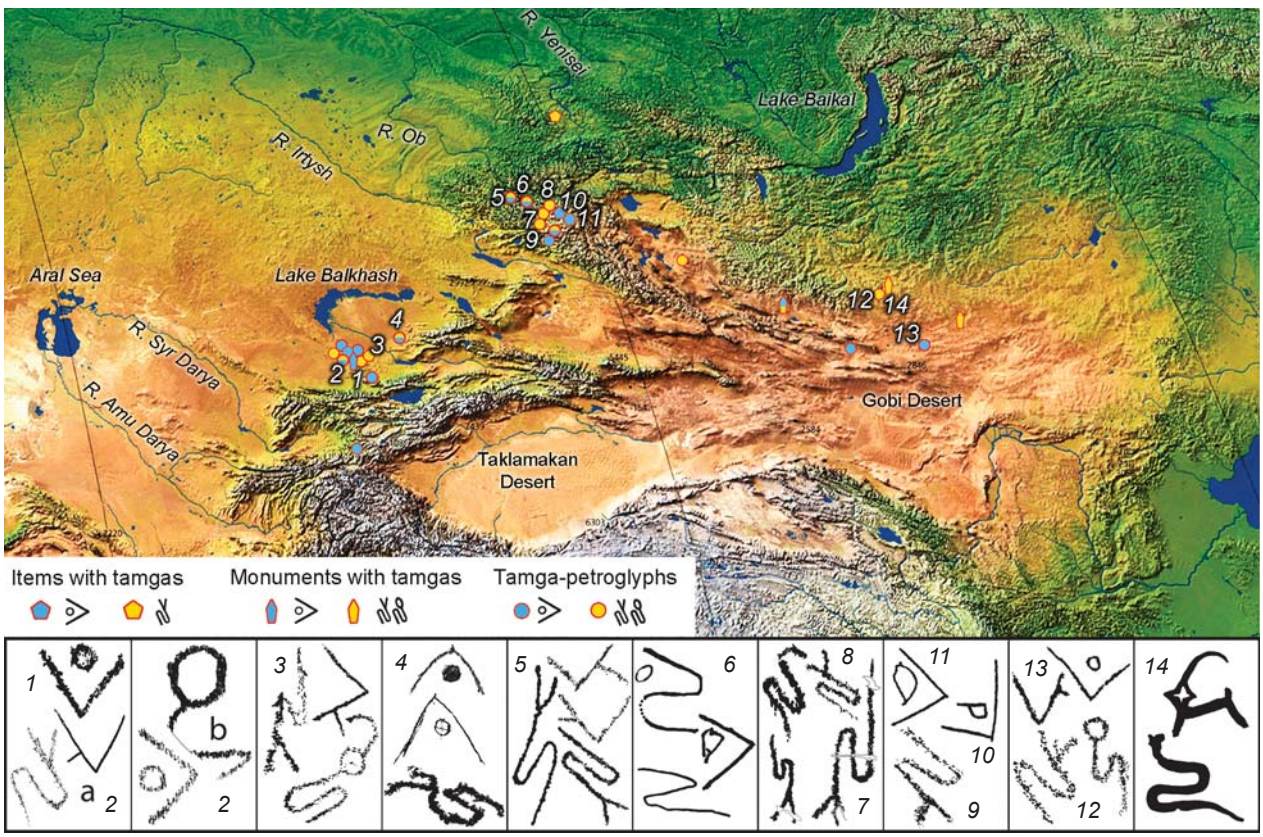

Fig. 5. Locations of tamgas No. 2 and 3.
1, *2* – Kulzhabasy; *3* – Tamgaly; *4* – Eshkiolmes; *5* – Urkosh III; *6* – Kalbak-Tash I; *7* – Chagan; *8* – Ule; *9* – Ukok; *10* – Barburgazy II; *11* – Ulandryk I; *12* – Bichigt Ulaan Khad; *13* – Del-Ula; *14* – Mukhar.

Tuva (Savinov, 1984: 124–125; Nikolaev, Kubarev G.V., Kustov, 2008: 176–179).

The tamga-snake and the omega-like sign (their areas of distribution generally coincide) often coexist in famous tamga accumulations: twice in the Chu-Ili Mountains, at Tsagaan Salaa IV, and on a stele from Bombogor in Mongolia (cf. Fig. 4 and 5). The tamga-snake has not been found in the Issyk-Kul region, and only one image has been known in the eastern part of Semirechye.

The uniformity of this tamga and the special role it played among other signs of the Turkic period makes it possible to view tamga No. 2 as an emblem of the supratribal (clan or class) or general tribal identity. In this regard, it seems useful to recall the specifics of the use of tamgas among the Kazakhs in the 18th–19th centuries. Thus, the tamga of the *Saryuisyn* tribe played the role of a supratribal symbol for several branches of the Senior Zhuz (*Dulat*, *Alban*, *Suan*), which constituted the core of this union (Rogozhinsky, 2016: 226–229, fig. 1). It is possible that the tamga-snake had a similar meaning in some ethnic and political union of the medieval nomads from the region. Given the uniqueness of the form and special status of tamga No. 2 at the monuments with tamgas, including memorials of the ruling elite of the Eastern Turks (Choiren, Mukhar), it can be linked with clan symbolism of the *Ashide*, which was reconstructed in the works of S.G. Klyashtorny and Y.A. Zuev (Klyashtorny, 1980: 92–95, fig. 2, *3*; Zuev, 2002: 85–86), or it can be recognized as a supratribal symbol of a large group of nomads similar to the *Tele* or *Toquz-Oghuz* (on these ethnic and political names, see (Tishin, 2014)).

The invariant basis of tamga No. 3 is the letter V; many derivative forms, including an angle with a circle between the rays, which can be considered the main tamga of a large tribal union, was formed from it. In some cases, this tamga occupies a special "honorable" position when it is combined with other signs of the same type or appears in accumulations of different tamgas. The tamgas on the finds from the Altai, including a belt buckle from Barburgazy (Katanda stage) and fasteners for horse fetters from Ulandryk I have been dated (Kubarev G.V., 2005: 97, 137–140, pl. 3, *12*, *13*; 33, *15*; 83, *11*, *12*, *13*, *17*). The area of main tamga No. 3 with its varieties includes two zones of concentration—the high mountains of the Altai and Semirechye, as well as an area of dispersed distribution along the northern boundary of the Gobi, which makes it possible to establish its complete coincidence with the area of tamga No. 2. Notably, tamgas No. 1 and No. 3 have not been found in the Tarbagatai or Issyk-Kul region, although their combination has been discovered in Bololu in the southeast of Fergana, but scholars are not sure that these signs were simultaneous (Tabaldiev et al., 2000: 88, fig. 2).

The abundance of derivative forms of both signs (tamgas No. 1 and No. 3) with incomplete coincidence of their distribution areas may suggest the existence of numerous related subdivisions which were a part of two large independent unions and occupied some common territories (initially the Altai, then the western part of Semirechye) at approximately the same time (simultaneously or sequentially). In the Tian Shan region, tamga No. 3 (when it is possible to assume the simultaneous creation of signs in one accumulation) is repeatedly combined with tamga No. 2, but never with tamga No. 1. In turn, the omega-like tamga is also often depicted together with the tamga-snake and never with tamga No. 3; one exception is a location in Fergana.

The combination of three signs (No. 1–3) occurs only at the sites of Mongolia: among the petroglyphs at Tsagaan Salaa IV in the Mongolian Altai (Kubarev V.D., Tseveendorj, Jacobson, 2005: 235, fig. 379) and on the stele from Bombogor in Central Mongolia. In this accumulation, tamgas No. 1–3 are depicted on the lower part of the stele and form a row, which separates the upper group of signs of the same type (a circle connected with a line with two outgoing arcs), which has been unknown outside of Mongolia, from 14 tamgas of other forms, 12 of which are among those tamgas that are the most common in the Tian Shan region.

According to H. Şirin (2016: 371–372), the epitaph on the Bombogor stele, which mentions the Basmyls and Karluks, was devoted to the "princess" (wife or daughter-in-law of the Karluk Yabghu), who had the title *il bilge* and probably originated from the *Ashina* dynasty of the Turks or from the *Yaglakar* ruling dynasty of the Uyghurs. However, the monument shows neither signs that can be correlated with the Yaglakar dynasty, nor a tamga in the form of a stylized goat figurine, which was traditionally depicted on the Khagan memorials of the Eastern Turks. It is also unknown whether the female relatives of the Basmyl rulers possessed the high title of *il bilge*. The question of whether the leader of the Basmyls, who led the anti-Turkic coalition in 742–744, belonged to the dynasty of *Ashina* cannot be definitively answered on the basis of written sources (Malyavkin, 1989: 171; Kamalov, 2001: 72–73). The content of the runic text on the stele makes it possible to correlate tamgas No. 1–3 and some more signs at the bottom of the stele with the Karluk union or confederation of tribes, which at some point included the Karluks. It can be assumed that tamgas of the same type depicted on the upper part of the stele probably referred to the "forty-tribe Basmyls". At least four such signs have been found in Gurvan Mandal (near the Bombogor memorial). Two more signs have been discovered in Del Ula; a Chinese inscription dated to 665 was pecked over the tamga (Mert, 2010: Fig. 9, 10; Sukhbaatar, 2015: 97).

The snake-shaped, omega-like, and V-shaped tamgas known from the Altai and Mongolia are generally dated to the period from the second half of the 6th century to mid 8th century. However, tamgas No. 1 and No. 3,

found in Semirechye and Issyk-Kul region, which, in our opinion, are associated with the Karluk unit, can hardly be dated to a period earlier than the second half of the 8th century. Such chronology is supported by the combination of these signs with runic inscriptions (twice in Kulzhabasy and many times in the Kochkor Valley), whose appearance on this territory in the 9th–10th centuries is also associated with the Karluks or other groups of the Altai-Sayan population (Kyzlasov I.L., 2005: 61–62). In addition, a combination of tamga No. 1 and the sign of the "kos alep" type (two parallel inclined lines), which is known as the tamga of the Kypchaks (see Fig 4, *4*), has been found in the Akterek Gorge, which was a part of transit mountain valleys of Zhetyzhol ("Seven roads"), connecting the western part of Semirechye with the upper reaches of the Chu and Issyk-Kul region by nomadic routes. Similar tamgas have been also discovered in Kulzhabasy and other locations of the Chu-Ili interfluve, but they are missing from the Issyk-Kul Depression. The simultaneous presence of the Karluks and Kypchaks on the lands of the Western Semirechye and foothills of the Kyrgyz Alatau could have taken place in the second half of the 9th–10th centuries (Gurkin, 2001: 31–33; Ermolenko, Kurmankulov, 2013: 159). Finally, the concentration of these signs near mountain encampments may reflect the exacerbation of "land shortage" and intensification of tribal struggle among the nomads of the Chu-Ili interfluve during the mass migration of the Karluks to the lands of the "people of ten arrows" and the subsequent flourishing of the urban culture in the foothills of the Northern Tian Shan. Obviously, tamgas No. 1–3 in Semirechye should be dated to no earlier than the second half of the 8th century, but rather to the 9th–10th centuries or later.

Tamga of the ruling clan of the Karluks

A sign resembling an inverted runic grapheme ᛘ (lt), which is present in the tamga accumulation in the valley of the Ashchysu near Tamgaly (Fig. 6, *2*) belongs to the historical stage of changes in the dominant groups of nomads in Semirechye in the second half of the 8th century. Seven signs were pecked on a vertical rock. They are not contemporaneous: four tamgas, one of

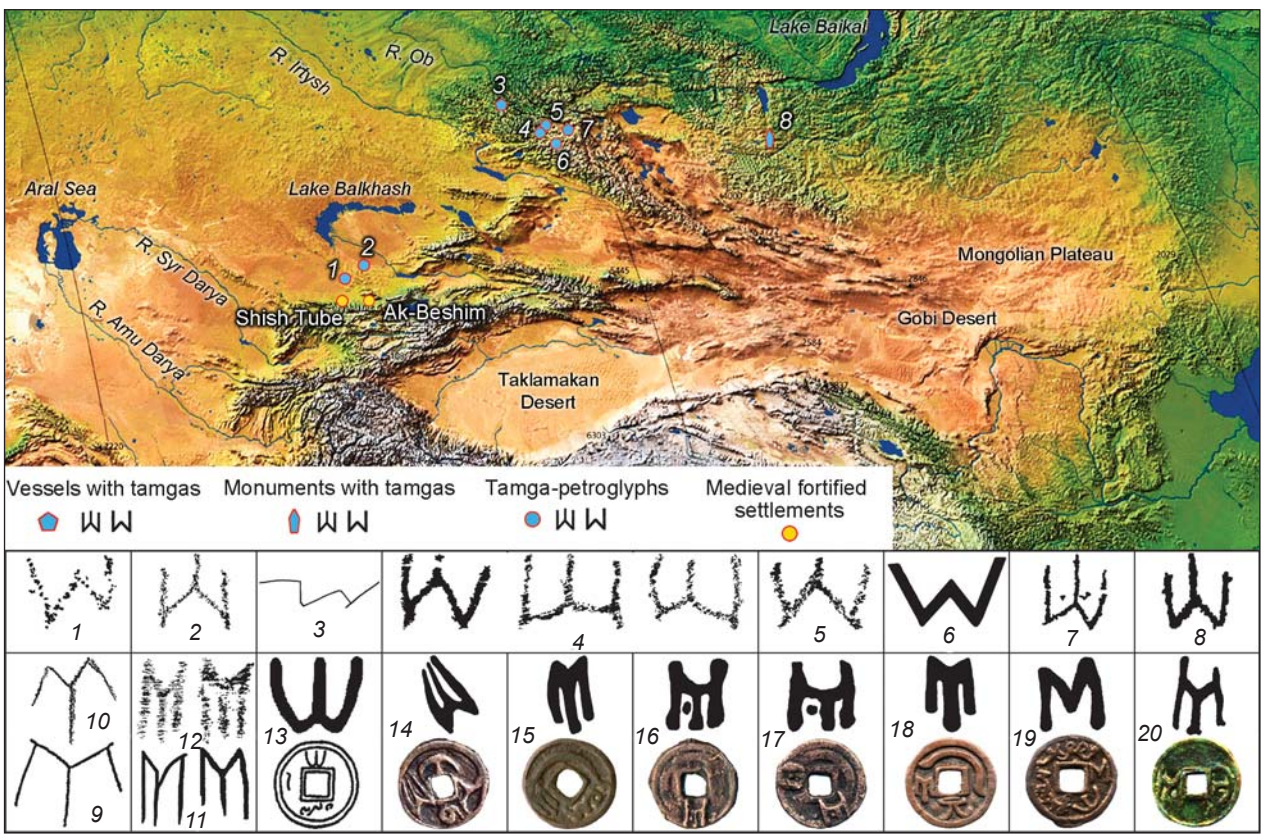

Fig. 6. Locations of tamgas (*1–8*), runic signs (*9*, *10*), and tamgas on coins (*11–20*).
1 – Zhaisan; *2* – Ashchysu; *3* – Tuyakhta; *4* – Chagan; *5* – Taldura; *6* – Yustyd; *7* – Tsagaan Salaa; *8* – Shivet Ulan; *9* – Kalbak-Tash I (XXX); *10* – Kulzhabasy I; *11* – Achiktash; *12* – Kulzhabasy II; *13* – Minusinsk Museum, coin (after (Kyzlasov I.L., 1984)); *14–20* – Semirechye, coins (after (Babayarov, Kubatin, 2016)).

which can be identified as the tamga of the Türgeshes, can be considered the earliest. Two signs were pecked separately and probably later, one above the other on the adjacent face of the rock: the lower one in the form of a straight cross, and the upper one in the form of a runic grapheme. The tamga similar to the latter sign is known from the accumulation of signs of the Turkic time in the Zhaisan locality, in the southwest of the Chu-Ili region (Dosymbaeva, 2013: Photo on p. 238). It resembles an inverted Orkhon runic sign (lt) or (nč) (Fig. 6, *1*). In both cases, the signs show similarities with letters of the runic script (Fig. 6, *11*, *12*), but they should not be confused with the brief inscriptions in the form of a single sign (r) found in Semirechye and Altai (Fig. 6, *9*, *10*).

Both heraldic signs can be identified using numismatic evidence from Semirechye. Already in 1989, on the basis of materials from the fortified settlement of Krasnaya Rechka, the numismatist V.N. Nastich distinguished a coin type with the Sogdian legend "Arslan Kul-Irkin" and two tamgas, "the first of which is in the form of an onion arc with an offshoot inside", and the second was identical in its shape to the tamga from Ashchysu (Fig. 6, *20*). Nastich connected this coin issue and coins of another type with the "dynasty (?) of the Arslanids—certain 'intermediaries' between the Türgesh rulers and the Kara-Khanids, who replaced them in the 10th century in Semirechye" (1989: 117). To date, several types of coins (Fig. 6, *14–19*) with the tamga in the form of the runic sign (numismatists correlate it to the grapheme r) as an additional sign in the dynastic emblem of the Türgeshes have been collected at the fortified settlements of the Chuy and Talas valleys. There is a discussion about the dating and attribution of these coin issues (Kamyshev, 2002: 63–64; Koshevar, 2010: 20–22, fig. 4, 5; Babayarov, Kubatin, 2016: 89–93, 97). The coins were found in 2006 at Ak-Beshim (Suyab) with the legend "fan of the Lord Türgesh Khagan" on the obverse, and the dynastic emblem on the reverse, *covered by an additional tamga* (Fig. 6, *16*, *17*), which A.M. Kamyshev called "a clan sign of the Karluks" (2008: 18–19, photo 6). This sign is identical to the tamga from Ashchysu, but has an additional point between the left and central lines. Finally, the numismatic finds from the fortified settlement of Shish Tube (Nuzket) in the Chuy Valley has recently made it possible to identify the coins of the Karluks' own minting, based on the reading of the legend, "coin of the Lord Khagan of the Karluks" by P.B. Lurie (2010: 280–282, fig. 1, *1*, *2*).

On the coins of this type, the tamga is represented in the form of an "onion arc" similar to the Arslanid coins, and an additional tamga has the form of a runic sign (Fig. 6, *19*), similar to the petroglyph from Zhaisan. According to Lurie, the issue of these rare coins was short-lived and could "relate to any time between 766 and the mid 10th century"; however, "the Sogdian transcription of the ethnonym Kar(ā)luk on the coin is earlier than the one which appears on the Karabalgasun inscription" (Ibid.: 282), and the preferrable period of the coin issue is the second half of the 8th–mid 9th century (Babayarov, Kubatin, 2016: 92–93). Notably, petroglyphs-signs that appear to be the dynastic emblems of the ruling clan of the Karluks are very rare in Semirechye as compared to other tamgas, which can be identified as clan and tribal signs of the Karluk confederation units.

Outside Semirechye, tamga-petroglyphs in the form of runic graphemes or have been found at Tsagaan Salaa I in Mongolia (Fig. 6, *7*), and at the origins of the Chuy River in the adjacent valleys of the Taldura* (Kubarev G.V., 2017: 344, fig. 1) and Chagan in the Russian Altai (see Fig. 6, *4*, *5*). The latter location is especially important, since similar signs discovered by D.V. Cheremisin were combined there with other items: two tamgas were depicted together with expressive engravings of the Turkic time (cataphract horsemen, etc.); another sign was represented on a rock next to the tamga-snake and other petroglyphs located in the area of the concentration of the medieval sites, burial mounds, and ritual enclosures with steles and rows of balbals.

Two images on silver vessels found in the Altai (in mound 3 at the Tuyakhta cemetery, and in a ritual enclosure with a stele at the Yustyd XII cemetery (see Fig. 6, *3*, *6*)) are pertinent to our discussion. A tamga-like goat figurine is represented on the central part of the bottom of the vessel from Yustyd XII; another tamga "in the form of the letter (W) of the Orkhon-Yenisei alphabet is represented on the tray" (Kubarev V.D., 1984: 73, fig. 12, *1*). With its wide base down, it resembles the grapheme with diverging baselines. This sign could be perceived differently only in an inverted position of the vessel. In this form, the tamga shows greatest similarity to the petroglyphs from Taldura, Chagan, and Zhaisan, and to the sign on the coins of "Lord Khagan of the Karluks". If the position of the heraldic sign was important, the tamgas represented on the vertical surfaces of immovable items with limited frontal access, that is, rocks and monuments are needed for establishing its canonical appearance.

I.L. Kyzlasov gave a detailed description of the signs on the vessel from Tuyakhta (2000a: 83–85, 88–90, fig. 1). A drawing of the engraving, made by S.V. Kiselev in 1935, is also known (Vasiliev, 2013: 33–34). At the present time, when it is possible to see the monument on high-quality photographs (http://altay.gasu.ru), the conclusions of our predecessors can be supplemented with additional arguments.

We should point to the compositional and semantic connection of the engravings placed on the flat bottom

*We thank G.V. Kubarev for cooperation in the preparation of this article, for his valuable advice, and high-quality photographs of the tamga from the Taldura Valley.

and inclined rim of the tray from Tuyakhta. A runic inscription covers about a third of the rim; a large tamga occupies the main space of the bottom and is turned with its base towards the inscription. This series of engravings can be considered synchronous. The same tamga appears at Bichigt Ulaan Khad, possibly in the accumulation of signs at Kalbak-Tash I, and on the bottom of a vessel from the Kopyonsky chaatas (Evtyukhova, Kiselev, 1940: Pl. III, *b*). Later, a large omega-like tamga was engraved over the first sign, and two smaller signs of smaller sizes (a variety of the bitriangular tamga and tamga No. 3 in one of its variants) were engraved on the narrow rim. The fourth sign is partially covered with a spot of paint with the museum code; judging by the drawing by Kiselev, there may be two more signs under the spot. Finally, the fifth sign was inscribed between the omega-like tamga and signs on the tray, which in its shape looks similar to the sign on the vessel from Yustyd XII. Generally, the late group of engravings on the vessel can be viewed as a separate accumulation of identifying signs belonging to the representatives of different clans (?), which could have participated in an important collective action (concluding an alliance, funeral feast, etc.). All distinguishable signs of this series belong to the most common signs in the eastern part of the Central Asia, but numerically predominant in the Altai and Semirechye. We should emphasize that the dominant role in this accumulation is played by the tamgas placed in the center of the pictorial field, that is, the omega-like tamga and sign of some privileged clan, identified by the numismatic evidence from Semirechye as the emblem belonging to the rulers of the Karluks in the second half of the 8th–9th centuries.

The dynastic Karluk tamga, as with tamga No. 2 or the emblem of the Yaglakar clan, is rare and is characterized by the stability of its form. In the Altai, such a tamga has also been found at Tsagaan Salaa I; the sign looks similar to the tamgas on the Arslanid coins, but has two points, and not one as is the case with the additional tamga on the coins from the fortified settlement of Ak-Beshim. Also noteworthy is a little-known coin kept in the Minusinsk Local Lore Museum, which has three signs scratched on the reverse and a tamga-like figure (Kyzlasov I.L., 1984: 94, 96, fig. 3) similar to the Altai petroglyphs from Chagan and Taldura. Finally, the representation of the tamga of the Karluks appears on the stele at the Shivet Ulan complex in the Khangai at a considerable distance from the Altai subarea of sign distribution (see Fig. 6, *8*).

Active study of the memorial complex of Shivet Ulan, including the stele with tamgas, has been recently resumed, but the date and attribution of the monument has not been definitively established (Kidirali, Babayar, 2015). Without going into discussion about the origin of this unique accumulation of signs, we should limit ourselves to pointing to the obvious facts*, associated with the representation of the Karluk tamga.

In its present form, the stele with tamgas as a small architectural structure at a memorial complex is not a self-sufficient monument in its own right; at some point it was subjected to reconstruction according to the principle of palimpsests: 1) abrasive treatment of the surface of the solid rock was done selectively (petroglyphs are still visible under the tamgas; some signs were intentionally removed, but not completely erased); 2) the upper part of the stele, the most important in semantic terms, was carefully polished for secondary (?) application of representations or text, but remained empty. The accumulation of signs consists of at least two groups of multisymbolic images created at different times: the tamgas are different in size and execution technique; later signs are superimposed on earlier signs and traces of crude renewal of the latter are visible; compositional consistency of the group of early signs was disrupted by the addition of larger, later figures. Finally, the signs of the early and later groups belong to different areas of the predominant distribution and presumably of different unions of the medieval nomads of Mongolia and Southern Siberia.

Two signs of the main tamga of the Uyghurs and three signs of the Yaglakar clan (two in canonical form as on the stele from Mogoyn Shine Usu, and one with an additional element) stand out from among the early engravings. Four of these five signs occupy the upper level (Fig. 7, *3–5*, *8*, *10*). The tamga of the dynastic clan of the Karluks (Fig. 7, *2*), similar to the signs at Tsagaan Salaa, Ashchysu, and on the Arslanid coins, is located closer to the middle part of the obelisk. The later signs under the Karluk tamga include a large representation in the form of a sickle with a handle and an additional figure similar to a key (Fig. 7, *1*). This sign is commonly found among the petroglyphs of Mongolia and, most importantly, appears at commemorative structures belonging to the ruling elite of the Uygur Kaganate in the initial period of its history (Mogoyn Shine Usu) and its final stage (Sudzhi). The area of this tamga does not extend beyond Mongolia; this sign is most likely associated with one of the influential subdivisions of the Toquz-Oghuz, although the exact attribution of the tamga remains problematic.

Seven to eight signs distinguished by the depth of pecking and their large scale constitute the central axis of the tamga composition. Almost all these tamgas (Fig. 7, *6*, *7*, *9*) commonly appear among the petroglyphs of Tuva and the Minusinsk Basin, at the memorials of

*Photographs of the stele are available on the website TURK BITIG (http://bitig.org/). We express our gratitude to E.A. Miklashevich for kindly providing high-quality photographs of the monument.

Fig. 7. Stele with tamgas from the Shivat Ulan complex. Photo by N. Bazylkhan, drawing by A.E. Rogozhinsky.

Elegest (E-10, 52, 53, 59, etc.) and Eerbek (E-147, 149), on the rocks of Maly Bayankol, Ust-Tuba, and Turan (Repertoire…, 1995: Pl. 50, 29a, *2*, 30, *2*, pl. 52, 36, *2*, *3*, etc; Belikova, 2014: Fig. 23). Tamgas of this group in Mongolia are rare (Mert, 2009: 11). The main area of the signs that prevail on the stele is associated with the territory on the upper and middle reaches of the Yenisei River. The tamga in the form of a circle with a point in the center and connected arcs above it (Fig. 7, *11*) is particularly notable. The shape of this sign is identical with the tamga found by A.V. Adrianov on the left bank of the Belui Iyus. Later, I.L. Kyzlasov established the area of this tamga as the northern part of Khakassia (2000b: 72–73, fig. 1, *5*).

Identification of some of the signs on the stele makes it possible to distinguish two stages in the emergence of tamga accumulations: the early stage, when the owners of the signs of the above Toquz-Oghuz and Karluk subdivisions had approximately equal status, and later, when the tamgas of the incoming groups from Tuva and Khakassia started to occupy the dominant position. The addition of new signs to the stele can be confidently associated with the collapse of the Uyghur State and thus must have happened not earlier than 840. The period of the existence of the Uyghur Khaganate (744–840) as a probable time for the creation of the early group of signs should be excluded considering the position of the Yaglakar tamga in the same row with the emblem of the ruling clan of the Karluks. Apparently, the early stage of the formation of this accumulation goes back to the previous period when the leaders of the Toquz-Oghuz and Karluks recognized the political superiority of the Eastern Turks whose dynastic sign could have occupied the upper area of the stele before its "restoration". An indirect indication of the particularly high political status of the unknown commemorated person is the presence of emblems belonging to the ruling clans which governed two major unions of nomads of Central Asia of that period, on the monument.

Conclusions

The increased volume of identity signs belonging to the medieval nomads from Central Asia, and their specialized study make it possible to use this source in historical research along with other sources traditionally used. Comparative analysis of such signs from the Altai and Semirechye has shown a close relationship between the population of two historical and cultural areas of the region, and has made it possible to establish the areas of the most common signs and movement vectors of their owners. Groups of tamgas of the same type (tamgas No. 1 and 3) have been identified. They are distinguished by a variety of forms and mark the presence of related units in both territories at the same period of time. It may be assumed that tamga No. 2 had the status of a sign designating supratribal identity. Its uniform shape was preserved in various contexts. A group of signs that served as markers of ethnic and political identity of the ruling clans of the Uyghurs and Karluks during the emergence of statehood in the 8th–9th centuries has been identified.

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Belt Sets of the "Redikar Type" in Medieval Cemeteries of the Volga Finns

This article describes belt sets decorated by metal plaques with nodular borders, which will be termed Redikar sets after the place where they were first found in a hoard. They are believed to mark the Magyar migration to Pannonia. The article discusses when and how such belts, as well as similar ones, reached the Volga Finns of the Lower Oka. The mapping of parallels suggests that their principal distribution area is the Kama basin and western Urals, i.e. places formerly inhabited by the Ugrians. Stylistically, the decoration of such belts resembles that of Iranian toreutics and of the cast ritual items from the western Urals (Perm) and eastern Urals. Because trade and manufacture centers with jewelers' workshops associated with silver mines existed in the Kama basin, this might have been the area from which silver belts of the Redikar type were brought to the Volga basin. The chronology of the finds is analyzed in detail, and the conclusion is made that they date to the first half of the 10th century. On the Lower Oka, in the western Urals, and in the Kama basin, Redikar belts are found in burials of military elite members. These were supplied to the Mordvins along the Volga-Kama trade route, spanning territories from the Urals to Scandinavia. Their presence in cemeteries on the Tsna River suggests that the Volga Finns were involved in the formation of early states at the turn of the first and second millennia.

Keywords: *Middle Ages, Volga Finns, Ugric tribes, belt sets, cemeteries, Redikar hoard.*

Introduction

The burial grounds of the Volga Finns in the basin of the Lower Oka River of the late 1st to the early 2nd millennium AD are distinguished by a large number of military graves containing richly decorated composite belts. This part of the male outfit was traditionally considered to be a marker that the buried person belonged to the military class. The composition of the belt set, number of plaques, presence of hanging straps, etc., indicated the rank and status of the warrior in the community or in the military hierarchy. As a rule, specialists consider the belts to be a supra-ethnic category of adornments, but admit that they appeared among the sedentary population under the influence of nomadic tribes (Kovalevskaya, 1979).

This article discusses belt sets of one of the types that scholars associate with the antiquities of the Magyars from the period when they acquired their homeland, namely, belts with metal plaques similar to those found in the 2nd Redikar hoard (Shablavina, 2016: 361–362). This treasure, discovered in the early 20th century, included two belt sets. The belt set of interest to us consists of belt plaques of sub-triangular and arched shape made of gilded silver and decorated with a distinctive nodular border and ornamental décor in the form of lotus-like buds (Ibid.: Ill. 274, 275). The place of the hoard's discovery is very remarkable. It is the vicinity of the village of Redikar in Chardynsky Uyezd of the Perm Governorate, where the medieval settlement and cemetery were located, and where several treasures

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containing coins and items of the late 1st to the early 2nd millennium AD have been found (Belavin, 2007: 23–24; Belavin, Krylasova, Podosenova, 2017: 2).

Another belt with similar sub-triangular and arched plaques, as well as rounded plaques with a loop and relief ring, was found in the early 20th century near the village of Novo-Nikolaevka in Yekaterinoslavsky Uyezd of the Yekaterinoslav Governorate (now the village of Novonikolaevka in the Dnepropetrovsk Region, Ukraine) (Khanenko B., Khanenko V., 1902: Pl. XIX, 645, 668, 679, etc.). According to E.A. Shablavina, the Redikar and Novonikolaevka plaques were made according to the same template (2016: 362). This conclusion certainly needs to be checked, but it is impossible to ignore the striking similarity and uniformity of these plaques.

One of the first scholars who studied the belt set of the 2nd Redikar hoard, was N. Fettich, who included this complex in the circle of Magyar antiquities (1937: Fig. XIV). A.V. Komar attributed the Redikar and Novonikolaevka belts to antiquities of the Subbottsy type, which according to him included Babichi, Tverdokhleby, Korobchino, Katerinovka, Bolshiye Tigany, and other sites associated with the distribution area of antiquities belonging to the time of the Magyar migration to the Carpathian Basin (2011: 56, 58–59, 68–69). Some scholars believe that such belts mark *Magna Hungaria*— the area inhabited by the ancient Hungarian tribes prior to their movement to the west. They assign to these territories the western Urals (Perm), southern Urals (Bashkiria), part of the eastern Urals, and the left bank of the Kama, where a part of the Ugric or related tribes remained after departure of the main group of the Magyars (Belavin, Krylasova, Podosenova, 2017: 4).

In connection with this, it is interesting to ask the question of what kind of phenomena or processes can belt sets of the Redikar type in the cemeteries of the Volga Finns testify to: presence of the proto-Hungarian population in the western part of the Middle Volga basin, or phenomena of a social, political, or cultural nature, which occurred at the turn of the 1st and 2nd millennia AD in the territories west of *Magna Hungaria.*

Description of archaeological evidence

Three assemblages with belts decorated with Redikar type plaques have been found in Finnish cemeteries of the Lower Oka basin. Two belts were discovered in the early 20th century on the Middle Tsna River (the right tributary of the Moksha River) at the Elizavet-Mikhailovsky and Kryukovsko-Kuzhnovsky cemeteries of the Mordvins. The third find was a bridle set decorated with plaques of the Redikar type, which was found in 2012 in the Lower Oka region, at the Podbolotyevo cemetery of the Muromians. Analysis of the burials containing these artifacts makes it possible to clarify the date of the Redikar belt sets, and establish the mechanisms and paths of their distribution on the territories inhabited by the Mordvins and Muromians.

The most complete set of belt plaques of the Redikar type has been found in the burial of the "jeweler" (burial 115) at the Elizavet-Mikhailovsky cemetery (Materialnaya kultura…, 1969: 70, pl. 42, *13–17*). It consisted of ten sub-triangular plaques, nine rounded belt plaques with a slit, and five round belt plaques with a ring (Fig. 1, *2–4*). A hinged buckle with a U-shaped shield decorated with floral ornamentation (Fig. 1, *5*) was at one end of the belt; a pentagonal tip with nodular border, lotus-like buds, and representations of an eagle owl and eagle (falcon?) in heraldic postures (Fig. 1, *1*) was at the other end. An earring of the Saltov type, two *syulgam* clasps, two spiral finger-rings, and a wire bracelet were found in the burial (Fig. 1, *7–10*, *12*). A set of jewelry tools, non-ferrous metal scrap, bridle bit, and axe-celt were at the feet of the deceased (Fig. 1, *6*, *11*) (Ibid.: Pl. 42, *1–9*).

Another belt set, which included plaques of the Redikar type, was found in military burial 69 at the Kryukovsko-Kuzhnovsky cemetery (Materialy po istorii…, 1952: 31). The military nature of that burial was marked by a battle axe, axe-celt, ice pick, set of arrows, bridle bit (Fig. 2, *6*, *7*, *14*), and two earrings of the Saltov type (Fig. 2, *8*), which are considered to have marked the representatives of the military class (Stashenkov, 1998: 216–218). The set of jewelry also included three *syulgam* clasps, a "mustached" finger-ring with widened middle, and a laminar bracelet with ends bent outward (Fig. 2, *9–13*). The belt is represented by a hinged buckle with an oval frame and pentagonal shield with the Redikar ornamental décor (Fig. 2, *5*), 17 oval plaques of the Redikar type, and 24 rounded plaques with a hanging ring (Fig. 2, *3*, *4*). The latter plaques, just like the Redikar plaques, were decorated with a border in the form of a chain of ovals; the central part of the plaques was decorated with two symmetrically located rosettes with pointed side leaves. This quite recognizable decoration element (palmette with "disheveled" petals (according to B. Marshak)) appeared on Sogdian vessels of the 7th–8th centuries (Marshak, 1971: 52). Later, in the period when the Magyars acquired their homeland, such ornamentation became a typical element of décor on Hungarian toreutics. In the repoussé technique, it appeared on the sheaths of sabers and daggers, and on metal plaques on belt bags (The Ancient Hungarians, 1996: Pl. 80, *6*; pl. 96, *23*; pl. 120, 121, *1*, *2*, etc.). The above ornamental décor also appeared on belt sets, for example, on a buckle shield from the cemetery of Bashalom, Hungary (Fodor, 2015: 94).

In the Oka basin, at Podbolotyevo, in horse burial 60, a bridle with plaques of the Redikar type has been found (Zelentsova, Yavorskaya, 2014: 168). The horse

Fig. 1. Finds from burial 115 of the Elizavet-Mikhailovsky cemetery.
1–5 – elements of a belt set; *6* – celt; *7*, *8* – *syulgams*; *9* – earring of the Saltov type; *10* – bracelet; *11* – bridle bit; *12* – spiral finger-ring.

Fig. 2. Finds from burial 69 of the Kryukovsko-Kuzhnovsky cemetery.
1–5 – elements of a belt set; *6* – axe; *7* – celt; *8* – earring of the Saltov type; *9–11* – *syulgams*; *12* – bracelet; *13* – finger-ring with widened middle; *14* – bridle bit.

was buried in full harness: with bridle, bell, stirrups, and bit (Fig. 3). The bridle set included a U-shaped tip with openwork ornamentation, two arched and 11 sub-triangular plaques of the Redikar type, and nine round plaques with pendant rings (Fig. 3, *1–4*). The latter plaques had a border of knobs and the representation of an eagle attacking an animal (fallow deer?) in the central part. The eagle is shown in a heraldic posture with outstretched wings; due to poor casting, the figure of its victim is almost illegible (Fig. 3, *3*).

Fig. 3. Finds from burial 60 of the Podbolotyevo cemetery.
1–4 – elements of a bridle; *5* – jingle bell; *6* – buckle; *7* – bell; *8*, *9* – stirrups; *10* – bridle bit.

Parallels and discussion

Another belt set was found at the Kryukovsko-Kuzhnovsky cemetery. Judging by the belt from burial 69, this belt set existed simultaneously with the items of the Redikar type and was obviously connected with them by the same manufacturing tradition. This composite belt, decorated with plaques with the "disheveled" palmette ornamental motif and borders of chains (Fig. 4, *1–4*), was located in military burial 55 (Materialy po istorii…, 1952: 27). Its complete counterpart is a belt from military burial 279 at the Boyanovo cemetery in the western Urals (Perm) (Belavin, Danich, Ivanov, 2015: 125; Podosenova, 2017b: Fig. 2, 3). Belts from the Middle Tsna River and western Urals are identical both in design of the plaques and composition: they were assembled from heart-shaped simple and rounded plaques with pendant rings (Fig. 4, *2*, *3*). Initially, the belt from the Kryukovsko-Kuzhnovsky cemetery was covered with a thin layer of gold, the traces of which have been preserved in the recesses of the ornamental décor. Traces of gilding are also present on

Fig. 4. Finds from burial 55 of the Kryukovsko-Kuzhnovsky cemetery.
1–4 – elements of a belt set; *5* – earring of the Saltov type; *6*, *7* – *syulgams*; *8*, *9* – bracelets.

the Boyanovo plaques (Podosenova, 2017b: 150; Belavin, Krylasova, Podosenova, 2017: 2).

The assumption that such belt sets existed simultaneously with the belts of the Redikar type and were assembled in the same place is confirmed by the presence on the belt from burial 69 at Kryukovsko-Kuzhnovsky cemetery of plaques decorated with the palmetto with "disheveled" petals and plaques of the Redikar type (see Fig. 2, *2–4*), as well as identical tips on the belt from Boyanovo and the belt from burial 115 at Elizavet-Mikhailovsky (see Fig. 1, *1*) (see (Podosenova, 2017b: Fig. 3, 28)). These tips were decorated in the Redikar style with a nodular border along the edge, lotus-like buds in the narrowed part, and representations of two birds in lozenges in the central part. Judging by the expressive ears, the upper bird was an eagle owl, and the lower bird was an eagle or falcon. Both birds were depicted in heraldic posture (Fig. 1, *1*).

The bird represented in heraldic posture was one of the most common subjects in cultic plastic arts of the Perm and Trans-Ural Ugrians. Plaques in the form of a bird shown in frontal view with wings wide open or in profile with folded wings are considered to be an ethnic marker of the Ugrian culture (Belavin, Ivanov, Krylasova, 2009: 176, fig. 73, 74; 217; Iskusstvo Prikamiya…, 1988: 167, fig. 85–89). The image of the eagle owl on the so-called "Platter with Eagle Owl" from the Voykar River in the Ob region is the closest to the representations described above ((Baulo, Marshak, Fedorova, 2004: Fig. 2), see ibid. for other parallels). This image was widespread in the cultures of the population of Western Siberia until the ethnographic time (Baulo, 2013: 566). Cultic plaques in the form of the eagle owl figure with human mask on the chest have been found throughout the entire territory inhabited by the Ugrians (Iskusstvo Prikamiya…, 1988: Fig. 13, 21).

Several plaques in the form of birds of prey with outstretched wings have been discovered in the Volga region, in the Mari cemeteries of Anatkasinsky, Veselovsky, Cheremisskoye Kladbishche, and Dubovsky, where contacts with the Ural territories were more pronounced (Nikitina, Vorobieva, Fedulov, 2016: 125, fig. 3, *10*; Nikitina, 2012: Fig. 39, *4*; 113, *6*; 263, *9*).

The Kama animal style also has a typical subject of an animal being attacked by a bird of prey, which appears on plaques with a ring, adorning the bridle from burial 60 at Podbolotyevo (Fig. 3, *3*). This subject was widespread in ornamentation of medieval non-ferrous metalware in Eastern Europe ((Totev, Pelevina, 2005: 85–87); see ibid. for the secondary literature). Components of belt sets with the eagle in heraldic posture attacking an animal also appear among the Saltov artifacts. The finds from the Verkhne-Saltov and Podgornovsky cemeteries are the best known among such evidence (Pletneva, 1962: 244, fig. 2, *9*; 1967: 150, fig. 40, *10*). In the Mordvin cemeteries, this subject appears on the Saltov belt sets (Materialnaya kultura…, 1969: Pl. 21, *6*; Peterburgsky, Aksenov, 2008: 12, fig. 10, *43*). However, the plaques from Podbolotyevo were made according to the canon of the "Hungarian" style, known in the western Urals (Belavin, Krylasova, Podosenova, 2017: 3). This subject could well have emerged in the Ural territories. Thus, the subject of the eagle attacking an animal is known from the Sassanian dishes found in the Kama region (Voshchinina, 1953: 185, fig. 1; Leshchenko, 1966: 318, fig. 1; Darkevich, 2010: 70, pl. 4, *3*). In the western Urals (Perm) and eastern Urals, this subject was embodied in cultic casting (Chernetsov, 1957: Pl. XVIII, *11*, *13*), knife pommels (Sokrovishcha Priobiya, 1996: Fig. 15, 17), and handles of fire strikers (Krylasova, 2007: 166, fig. 74; Iskusstvo Prikamiya…, 1988: 67, fig. 22).

All of the above shows that this style could have emerged and developed in the Ugric environment or more broadly in the western Urals. In the region where there was a long tradition of representing animals and birds, Sogdian and Iranian motifs became transformed and received a new interpretation, including ornamentation on the metal parts of belt sets (Smirnov, 1964: 63–64; Tyurk, 2013: 233, 236). This territory had a silver supply in the form of silver Eastern vessels and coins, some of which were probably reused for manufacturing local products (Orbeli, Trever, 1935: 12; Leshchenko, 1976: 188). Today, scholars once again have begun discussing the use of Eastern silver and coins as raw materials, but already relying on the results of studies in the natural sciences (Podosenova, 2016: 15–16). K.A. Rudenko, who analyzed silver items from the Kama region and eastern Urals, which had been traditionally associated with the Volga-Bulgarian circle of silver-making, came to conclusions about the connection of many products with the traditions of the Ugrian world, and existence of highly professional jewelry in the region (Rudenko, 2005/2006: 104–105). Large trade and artisan settlements with jewelry workshops producing goods both for internal and external markets, have been discovered in the western Urals (Perm) (Belavin, Krylasova, 2008: 266; Krylasova, Podosenova, 2015: 41; Podosenova, 2017a: 63). This suggests that the silver belts of the Redikar type were made in such centers.

Tips of belts with representations of the eagle owl and falcon are known from the materials of Birka in Sweden: in female burial 838 one is presented as an amulet (Arbman, 1940, 1943: 311, Taf. 95, 4, *4*, *a*). Several dozen belt plaques turned into pendants have been found in Birka. Some of them are of undoubtedly Magyar appearance (Ibid.: Taf. 95, *1*, *3*, *8*, *9*; 96, *3*, *7*, *12*). Researchers of Birka pointed out to the Volga as a route through which "Eastern" belt plaques were transported from the territories of Khazaria and Volga Bulgaria to Scandinavia. I. Jansson found parallels to these items

in the materials of the Bolshiye Tigany cemetery on the Lower Kama and linked the appearance of such items in Scandinavia with the Magyar migration to the west in the late 9th century (1986: 84–85, 89). Jansson considered the ornamental décor on the Redikar and Novonikolaevka belt sets a parallel to the ornamental decoration of the tip from burial 838 (Ibid.: 85). C. Hedenstierna-Jonson also considered some plaque-pendants from Birka to be of Magyar origin, but noted that the parallels should be sought outside the habitation area of the Hungarians. According to Hedenstierna-Jonson, these finds mark the movement of the Rus people ("Varangians" in Russian literature) across the expanses of Eastern Europe. These items reflect various intercultural contacts, and plaques turned into pendants indicate the exchange of things, which received new meaning in another reality (Hedenstierna-Jonson, 2012: 31, 41). Similar ideas were voiced by T.A. Pushkina concerning the custom of transforming Eastern belt plaques into pendants, which was observed in the materials from Gnezdovo. She considered such adornments as trophies, which indicate the involvement of their owners in some events in the distant Khazar lands (Pushkina, 2007: 328–329). Notably, belt plaques turned into pendants have also been found in the western Urals (Perm) (Belavin, 2000: 109, fig. 50, *1–8*; Belavin, Krylasova, 2012: Fig. 7, *15*; 36, *11*). Thus, such distances between the places where these belts and their parts were discovered, in our opinion, indicate international contacts in the territory from Scandinavia to the western Urals.

Dating

Antiquities of the Subbottsy type, to which A.V. Komar attributed the Novonikolaevka and Redikar belt sets, are synchronous with the late stage of the Saltovo-Mayaki culture and destruction of the fortified settlements of the Severians in the region of the left bank of the Dnieper. This makes it possible to date these antiquities to the mid 9th to the early 10th century (Komar, 2011: 68–69). The dates of the Boyanovo belt and belt sets from the cemeteries of the Volga Finns somewhat differ from the proposed date of the layer with the antiquities of the Subbottsy type. Thus, burial 279 at Boyanovo is dated to the first half of the 10th century (Belavin, Krylasova, Podosenova, 2017: 2; Podosenova, 2017b: 149). Burials with belt sets from the Middle Tsna region belong to the 11th stage in the relative chronology of the Mordvin cemeteries (Vikhlyaev et al., 2008: 145–147). The chronological position of these burials was established by the adornments of the female complex—*syulgams* with ends rolled into thin pipes, the length of which was equal to two diameters of the ring (see Fig. 1, *7*; 2, *9–11*; 4, *7*), *syulgams* with ends bent outward (see Fig. 4, *6*), wire bracelets with faceted straight ends, laminar bracelets with ends bent outward (see Fig. 1, *10*; 2, *12*; 4, *8*), and earrings of the Saltov type (see Fig. 1, *9*; 2, *8*; 4, *5*). The absolute date of the 11th stage is confirmed by coins: a Samanid dirham of Nasr bin Ahmad Ash-Shash (914–932) was present at the 2nd Zhuravkinsky cemetery along with laminar bracelets with ends bent outward (Peterburgsky, Vikhlyaev, Svyatkin, 2010: 122–123, fig. 47; Gomzin, 2013: 144), and imitations of dirhams of the 10th century were found in burial 427 of the Kryukovsko-Kuzhnovsky cemetery together with such a bracelet and *syulgams* (Materialy po istorii…, 1952: 137; Gomzin, 2013: 351). The presence of *syulgams*, which were typical of the previous stage of the burial grounds (see, e.g., Fig. 1, *8*, and also (Vikhlyaev et al., 2008: 144–145)), in the burials with these belts, makes it possible to date the assemblages to the first half of the 10th century.

The remaining set of items from the burials in question does not contradict such a date. According to A.N. Kirpichnikov, combat axe-hammers (see Fig. 2, *6*) of type 1 were in use in Russia from the 10th to the early 11th century (1973: Fig. 6, *33*). Among the Mordvins, axes of this type were commonly used in the 9th–10th centuries (Svyatkin, 2001: 39). Such axes are known from the Alanian burials of the 8th–10th centuries in the Northern Caucasus and the Don region (Kochkarov, 2008: 63). At the same time, such axes were also common in the Kama region (Danich, 2015: 74). According to I. Fodor, they were a favorite weapon of the Magyars (2015: 63). Two-partite bits with immovable circular rings, into which smaller movable rings were passed (see Fig. 1, *11*; 2, *14*), appeared among the Mordvins in the 7th century and lasted until the 10th century (Sedyshev, 2017: 15, Fig. 7, *5*). Similar bits are known from the burials of the 8th–10th centuries of the Nevolino and Lomovatovka cultures in the Kama region (Goldina, 2012: 338, pl. 193, *1*, *2*, *4*; 1985: 238, pl. 31, *21*), and from cemeteries of the same period in the southern Urals (Mazhitov, 1981: 69, fig. 37, *8*). Sub-square stirrups with a curved footplate (Fig. 3, *8*, *9*), which scholars consider to have belonged to the Ugrian antiquities, have been found at Podbolotyevo together with a bridle decorated with plaques of the Redikar type. Such stirrups are known from burial mounds in the southern Urals (Ibid.: 50, fig. 26, *29*; 81, fig. 43, *8*, *15*; 152, fig. 74, *2*, *10*), and from the Bolshiye Tarkhany and Bolshiye Tigany cemeteries on the Lower Kama (on the territory of present-day Tatarstan) (Gening, Khalikov, 1964: Pl. X, 10; Chalikova, Chalikov, 1981: 121, pl. XXXIII, 20). In the 10th century, such stirrups were common among the Hungarians (Révész, 2008: Pl. 19, 21, etc.). Hungarian scholars call stirrups of this type pear-shaped. According to E. Gáll, they are associated with the part of the territory of the Outer Subcarpathia where the "Hungarian conquerors" were present, and go back to the 10th century (2015: 371–372).

Ringed bits with movable large rings and their parallels (Fig. 3, *10*) were used on the same territories with the stirrups (Mazhitov, 1981: 69, fig. 37, 17; Belavin, Krylasova, 2008: Fig. 172; Goldina, 1985: 238, pl. XXXI, 7). Kirpichnikov attributed such bridle bits to type IV, which was widespread in Eastern Europe in the 10th–13th centuries (1973: 26). In the Outer Subcarpathia region, bits of this type were often combined with pear-shaped stirrups (Révész, 2008: Pl. 11, 21, 24, 25).

Thus, belt sets of the Redikar type and similar belts with plaques decorated with the "disheveled" palmette were worn on the territory of the Western Volga region in the first half of the 10th century.

Conclusions

The movement of the Magyars into the territory of their new homeland, according to the recent data, occurred in the 9th century. The belt sets of the Redikar type under consideration and other belts of "Hungarian" appearance emerged in the burial grounds of the Volga Finns a little later—in the first half of the 10th century. Thus, the appearance of these belts among the Volga Finns cannot be associated with the presence of the Magyars, but must have resulted from other processes happening at that time in the western part of the Middle Volga basin.

The mapping of the belts shows that these items are concentrated in the western Urals (Perm). They were most likely made in the same region, which had the needed raw materials, as well as trade and artisan centers with jewelry workshops. The items under consideration could have reached the territories far to the west of the Urals together with precious fur which was transported along the Volga-Kama trade route. Plaque-pendants found in Scandinavian burials (women would wear them as amulet-pendants) and complete belts similar to those appearing at the archaeological sites of the western Urals (Perm) and the Volga region (Arbman, 1940, 1943: Taf. 88, *1*), as well as torques of the "Glazovo" type, which served as a means of payment for large quantities of goods (Hårdh, 2016) testify to long-distance contacts.

The belts of the Redikar type found in the cemeteries of the Volga Finns should also be viewed in this context. It is difficult to judge whether these items belonged to the people who themselves visited the distant western Urals, or were acquired as tribute to fashion and confirmation of status. However, both in the western Urals (Perm) (Boyanovo and Rozhdestvenskoye cemeteries), Kama region (Bolshiye Tigany cemetery) and in the habitation area of the Volga Finns, such items have been discovered in military burials. Together with other items, belts of precious metals were meant to emphasize the high status of such burials.

Identification of such burials makes it possible to better understand the processes of engagement of the population stretching from the Baltic region to the Ural Mountains into international trade, social stratification, as well as conditions for the emergence of early state institutions at the turn of the millennia. It is noteworthy that the presence of militarized mobile groups is observed on the territories whose population played a key role in social and political processes of the time. One such territory at the turn of the millennia was probably the area in the basin of the Middle Tsna River on the northeastern border of the Khazar Khaganate.

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An Assemblage from a Medieval Burial at Lake Parisento, Gydan Peninsula, the Arctic Zone of Western Siberia

This article introduces an assemblage from a child burial discovered in 2016 in the central Gydan Peninsula, Tazovsky District, Yamal-Nenets Autonomous Okrug. Little is known about the archaeological past of Arctic Western Siberia, and these finds are relevant to the study of the medieval period of that area. Medieval burials were studied only in the adjacent peninsula of Yamal. The discovery of the burial is described in detail. It was exposed by soil eolation. Artifacts were redeposited, and virtually the entire skeleton was missing. In a lump of soil stuck to the metal bowl, a few bone fragments and hair were found. Their analysis suggests that the individual was an infant aged 1–3. The assemblage includes an imported bronze bowl, the bronze haft of a knife, a scabbard, and a silver earring. The bowl, made of tin bronze, was apparently manufactured in eastern Iran or Central Asia in the 10th or 11th century. The haft and the scabbard, judging by the type and technology, belonged to a category of artifacts that were common in the Lower Ob basin, the southern Yamal, and the Urals in the late first and early second millennia. On the basis of the results of X-ray fluorescence analysis, we assess the chemical composition of the metal of which all those artifacts are made. The decorated fragment of a clay vessel is attributed to the Tiutey-Sale variant (800–1300 AD) of the Lower Ob culture. The totality of indicators suggests a date for the burial of between 900 and 1100 AD. We conclude that the tundra areas of the Yamal and Gydan peninsulas were simultaneously colonized by migrants from the forest-tundra and the northern taiga zone of Western Siberia.

Keywords: *Gydan Peninsula, Yamal-Nenets Autonomous Okrug, Middle Ages, metal bowl, bronze knife haft, scabbard, X-ray fluorescence analysis.*

Introduction

The West Siberian circumpolar areas of Eurasia have been studied by archaeologists quite unevenly. For instance, in the Yamal-Nenets Autonomous Okrug (YNAO), more than 100 archaeological sites (mostly temporary camps of the medieval period) have been studied on the Yamal Peninsula over the latest 20–30 years, while archaeological works at the Gydan Peninsula have just started. Recently, the archaeological survey in the Gydan tundra has produced the first data. In 2015–2016, the medieval sites of Khaltsyneisalya-1 and -2 were discovered on the northwestern Gydan coast (Skochina, Enshin, 2017). In 2016, in the middle part of the peninsula, remains of a child burial were found, as well as several artifacts without archaeological context

(Gusev, Plekhanov, 2016). Of special interest are grave goods from the medieval child burial, which are described in this article.

The available evidence on the medieval burials in the Arctic Zone of Western Siberia is scarce, and any new data on archaeological sites are quite valuable. In 1929, V.N. Chernetsov excavated a settlement site on the coast of Malygin Strait, close to the Khaen-Sale Cape in northern Yamal. In one of the dwelling remains, a human burial without diagnostic grave goods was found. The deceased was placed on his left side, with bent legs, and his head oriented towards the north. The scholar attributed the settlement to the 16th century (Chernetsov, 1957: 236–237).

In the early 1980s, B.I. Vasilenko, a collector of antiques, transferred the items from his collection (bowls, adornments, knife hafts, and scabbards) to the Salekhard Museum. The donor explained that some of the items were found in the tombs of the Kheto-se cemetery destroyed by soil eolation, in southern Yamal. Later, A.V. Sokolkov resumed studies of the cemetery: in 1992, two burials were excavated. One burial revealed a skeleton in a flexed position on the left side; the other skeleton was in an extended (prone?) position. The skeletons were situated in shallow pits, close to the ground surface. The burials are dated to the 9th to 12th centuries (Brusnitsyna, 2000: 37).

In 2016, one of the present authors excavated the archaeological site of Yur-Yakha III, in southern Yamal. Initially, the site was interpreted as a settlement. Three burials were excavated, two of which were comparatively well preserved. The burials were made 23–28 cm deep in virgin land of sandy loam; the dead were placed in a flexed position on their left sides. The grave goods (a ceramic vessel, a bronze knife haft, and a bracelet) suggest the site should be attributed to the 11th to 12th centuries (Plekhanov, 2016).

Also in 2016, the flat-grave burial ground Bukhta Nakhodka-2, in southeastern Yamal, was partially studied. As a result, a total of 14 burials were excavated, yielding the skeletal remains of six individuals, including two anatomically intact female skeletons (placed in a flexed position on the left side). Among the grave goods, noteworthy is a ceramic vessel similar to that from the flat-grave burial ground of Yur-Yakha III (Kardash, Gaidakova, 2017: Fig. 2). Another burial, in which only grave goods were preserved, contained an Iranian bronze bowl (Ibid.: Fig. 4). The researchers proposed two dates for the necropolis: the mid-6th to mid-7th and the 12th to 13th centuries, and associated it with inhabitants of the Bukhta Nakhodka fort.

The history of the find

The archaeological exploration was carried out in 2016 by the members of the Arctic Research Center, a YNAO state public institution, at Lake Parisento, one of the largest lakes in the hydro-system of Gydan Peninsula (Fig. 1). At a small distance to the north of Parisento, a few considerably smaller unnamed bodies of water are situated. In the 1980s-1990s, on the bank of the closest, the geo-cryological permanent research station “Parisento” was operated. The topsoil at the territory of the station was significantly damaged by its economic activities, resulting in the formation of plots of wind-blown sandy soil without vegetation, and plots of accumulation of aeolian sediments.

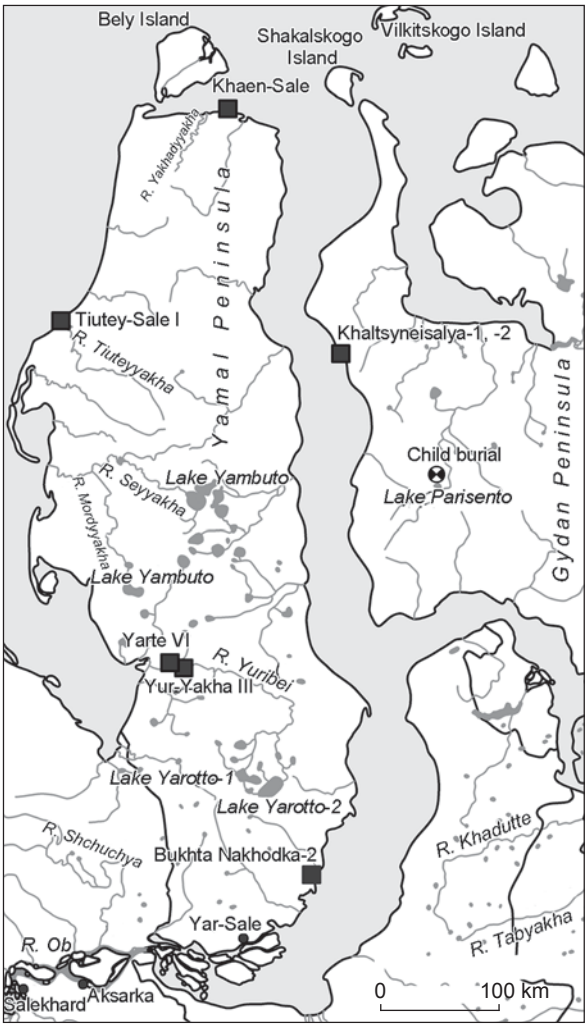
The initial exploration revealed an exposed fragment of a bronze bowl lying upside down on the wind-blown top of a remnant 800 m to the north of Parisento. A test pit of 16 m^2 was established at this place (Fig. 2). During the cleaning, it was found out that under the topsoil and partially preserved turf, some other small fragments of this bowl had been deposited, as well as the bronze haft of a knife with a partially preserved iron blade, a bronze scabbard, an ear-ring, and a small rim fragment of a ceramic vessel. The items were located on a small area approximately 1.2 × 0.6 m in size. The observed random dispersal of the items suggested that they had been redeposited. The culture-bearing layers were formed by the podsolized light gray sandy loam, with minor inclusions of semi-decayed turf, and by yellow bedrock sandy loam disturbed by the soil eolation. No outlines of a depression containing the artifacts, bones, and other remains, which might have been associated with the burial construction, were found. The other test pits established in the vicinity did not produce any new archaeological finds.

A conglomeration of organic materials, including animal (deer?) and human hair and human bones, was revealed on the interior surface of the metal bowl, which suggests its association with burial practice. The conglomeration was analyzed in a laboratory by E.O. Svyatova, a physical anthropologist. She identified fragments of the right and left parietal, temporal, and occipital bones. It was shown that the osteological remains and some hair belonged to an infant 1 to 3 years of age. The most probable age at death was established as 1 year; available data did not provide opportunity for racial identification.

Description of finds

The bowl was made of tin bronze through the hot forging technique, and had a spherical shape (Fig. 3, *1*). The bowl is 13.6 cm in diameter, 5.0 cm high; the walls are 0.05 cm thick. The context of the find suggests that the bowl was broken in antiquity; only seven fragments survived. The item was restored in the workshop of the Shemanovsky Yamalo-Nenets Regional Museum Complex (Salekhard). The color of the bowl varies from dark green to golden

Fig. 1. Archaeological sites in the Yamal and Gydan peninsulas.



yellow; some portions are patinated; the exterior and interior surfaces are polished. A motif of arches and circles made with the aid of a circle-cutting tool covers the bowl's interior surface. The background motif on the bottom of the bowl consists of small circles with dots in their centers, made with a two-cogged rotating tool. A six-petal rosette is in the center of the bottom. It is framed with two plain bands outlined by chains of circles with dots in their centers. The bowl's walls bear a wide band of decoration with the repeated motif of a swimming bird, and a line of circles larger than those on the bottom.

Abundant similar bowls have been reported from Iran, Central Asia, and Eastern Europe (Melikian-Chirvani, 1974: 151, fig. 40, 41). The nearest parallels to the Gydan Bowl were found in the Yamal Peninsula. One bowl fragment was found in the Yarte VI fortified settlement (Plekhanov, 2014: 68, fig. 241). Two bowls of similar type were recovered from the destroyed burials at the Kheto-Se cemetery, in the southern part of Yamal (Sokrovishcha…, 1996: 123, No. 57; p. 124, No. 58). Two other similar bowls were found in 2002 during excavations of the Zeleny Yar cemetery on the Polui River, in the Priuralsky District of YNAO (Zeleny Yar…, 2005: 141). One more such bowl was found in the flat-grave burial ground of Bukhta Nakhodka-2, excavated in YNAO in 2017 (Kardash, Gaidakova, 2017: 333, fig. 4). Similar bowls were acquired in the course of ethnological expeditions in YNAO (Baulo, 2011: 240, fig. 382; p. 250, fig. 383). Bowls of this type are dispersed all over the taiga and

Fig. 2. Place of discovery of the artifacts.

Fig. 3. Finds from the child burial.
1 – bowl; *2* – knife haft; *3* – fragment of knife blade; *4* – scabbard; *5* – earring; *6* – ceramic fragment. *1* – tin bronze; *2*, *4* – copper-based alloy; *3* – iron; *5* – silver-based alloy; *6* – clay.

tundra zones in Western Siberia; in total, not less than 20 intact and fragmented items (the smallest fragments do not exceed 1 cm^2) have been reported (Fedorova, 2012: 86; Zykov et al., 1994: Cat. 302–304). In the European part of Russia, similar items have been recorded in the area from the western slopes of the Ural Mountains to the Oka basin (Rudenko, 2000: 85–87; Nikitina, Rudenko, Alibekov, 2017). The bowls were found in a stable association with burial features all over their dispersal area: metal bowls (or their fragments) were among grave goods or commemorative assemblages at cemeteries.

The common opinion is that bowls of this type were produced by Iranian artisans as early as in the 8th century AD; their mass production began in the 9th to 11th centuries (Sokrovishcha…, 1996: 122). According to one of the latest versions, the places of manufacture of the bowls most probably were the states that existed in the 10th to 11th centuries in eastern Iran and Central

Asia: Kara-Khanid (Ghaznavid) Khanate and Samanid Empire (Nikitina, Rudenko, Alibekov, 2017: 77). Other researchers highlight the distinctive features of bowls from the Mari region of the Volga and northern parts of Western Siberia that differentiate them from classic bowls from Central Asia: northern bowls have no ornaments, and no Arabic inscriptions on their exterior surfaces (Litvinsky, Soloviev, 1985: 166, fig. 47, *3*). However, there were certain exceptions: the bowl from burial 20 at Barsov Gorodok in the Surgut region of the Ob had an Arabic inscription (Arne, 1936). Information on the local specificities of the bowls unfortunately does not help to determine the centers of manufacture of such vessels, nor the mechanisms of their operation.

The bowls were possibly delivered to northern part of Western Siberia via medieval trade routes. They were most likely transported from eastern Iran and Central Asia through the Volga Bulgaria (Ibn Fadlan's embassy traveled along this route in the early 10th century). This route, representing a part of the Great Silk Road, connecting the eastern and western states, was used in the 9th to mid-11th centuries (Nikitina, Rudenko, Alibekov, 2017: 77).

The knife haft was cast in bipartite cored mold; its surface is covered with a green patina (Fig. 3, *2*). The haft is 6.8 cm high and 1.7 cm wide. It is tubular with an oval cross-section topped with a side-view image of a standing predatory bird, with its long beak bent down. The decoration of the haft consists of two main parts. The lower part, bordering the blade, is faceted, and separated from the blade with a band of double fillet. The upper portion shows three vertical bands in the form of long petals. The bird's beak, sharp-clawed legs, and tail are resting on these petals. Inside the haft, a fragment of an iron stem inserted in a wooden socket remained.

Many parallels to the haft have been recorded in the Ural-Siberian region. For instance, similar hafts were found in cemeteries of the Surgut region of the Ob: Saigatinsky I and Barsovsky I (Barsov Gorodok) (excavations by A.P. Zykov and K.V. Terekhova) (Zykov et al., 1994: 91, 104). Large number of knife hafts were discovered in the Likino cemetery of the 10th to 13th centuries, to the southwest from Surgut (Viktorova, 2008). Hafts were also reported from the Lower Ob region (Chernetsov, 1957: 156, pl. VII, *4*) and even the Upper Kama region (in this area, they are quite rare; possibly they were transported here across the Urals (Oborin, Chagin, 1988: 79, fig. 44). Geographically, the nearest finds to these hafts are from the Yuribei River in Yamal (Sokrovishcha…, 1996: 58–65, No. 13–17). Similar hafts of knives are also known from ethnographic materials and collections made by A.V. Baulo, E.A. Pivneva, and E.I. Tylikova in Shuryshkarsky District of YNAO (Baulo, 2011: 216, fig. 337–338; p. 217, fig. 339–340). Such hafts were in use in the 8th to 11th centuries.

The fragment of an iron knife's blade was found apart from the haft with a stem part; originally, these two finds likely constituted a single item. The fragment is 3.4 cm long and 1.4 cm wide. It is heavily corroded (Fig. 3, *3*).

The bronze scabbard was cast in a bipartite mold (Fig. 3, *4*). The surface was polished, and it is covered with green patina. The item is 10.9 cm long and 3.0 cm wide. The scabbard is oval in cross-section. The lower part has a hole; a semi-round flute runs along the exterior edge of the hole. Judging by the uneven edge, the scabbard should have had a decorated lower part. In the upper part of the scabbard, one of the edges is decorated with an image of the head of a griffin, whose neck transforms smoothly into two parallel fillets on the exterior surface of the scabbard. One more encircling fillet starts from the bent-down beak. Close to the griffin's eyes, there is a hanging hole, with the remains of a leather strap.

The bronze scabbard is a rather rare find in the Ob region. Its closest parallels are available in B.I. Vasilenko's collection; they were probably found in the vicinity of Lake Nanto and the Yuribei River (Sokrovishcha…, 1996: 64–65, No. 18). Two stylistically similar scabbards were described by Chernetsov in the mid-20th century. One of these was found in the southern part of Yamal, another in the Pechora basin (Chernetsov, 1957: 156, pl. VII, *2*; p. 157, pl. VIII, *1*). One more scabbard possibly originated from the Severnaya Sosva basin (Baulo, 2011: 219, cat. 342). Thus, all the scabbards discussed here were collected accidentally, beyond archaeological context. For that reason, their age can be determined solely on the basis of their style of decoration, which brings these items together with the bronze portable art of the 8th to 12th centuries.

The silver earring rolled up from a plate, 0.2 cm thick and 2.5 cm in diameter, is covered with a dark gray patina. The earring was made of a thin silver plate rolled up into a tube (Fig. 3, *5*). One of its ends is pointed, the other shows a shallow notch.

The earliest bronze earrings and wire temple-pendants of similar shape and size appeared in the cemeteries of the Upper Kama region in the Lomovatovka period (Goldina, 1985: Pl. III, *1–3*). Later, in the 10th to 13th centuries, similar items were placed, for example, into the Chirgino cemetery (Ivanov, 1997: 247, fig. 62, *2*). A few bronze earrings of the same type were found in the Southern Trans-Urals, in the burials of the Likino cemetery of the 10th to 13th centuries (Viktorova, 2008: Fig. 149, *161*; 160, *271*). Chernetsov described an earring of similar shape from the Lenk-ponk cemetery in the Ob basin (1957: Pl. XXX, *10*). Ring-like earrings were manufactured of silver in large numbers by Bulgarian artisans as early as in the 8th to 9th centuries; such earrings were reported, for example, among the materials from the Bolshie Tarkhany cemetery (Gening, Khalikov, 1964: Pl. XIV, *2*). Earrings of this type were also in

use during the 10th to 13th centuries (Kazakov, 1991: 114–116; Polyakova, 1996: 169). It cannot be excluded that the center of manufacture of such adornments was located in the Kama basin. K.A. Rudenko agreed with A.P. Smirnov that the earrings of this type are not suitable for dating (Rudenko, 2015: 217). However, this opinion applies to the adornments made of copper or silver wire; parallels to the specimen under discussion (which was made of a silver plate) are, so far, unknown.

Ceramics in this assemblage are represented by a small rim. This fragment is 3.9 cm long, 2.6 cm wide, and 0.7 cm thick (Fig. 3, *6*). The rim's edge is ornamented with imprints of a comb stamp slanting to the left; the upper part of the rim shows a band of similar imprints slanting to the right. Below the rim, there is an appliqué fillet with a horizontal bend of vertical imprints of a small comb stamp. Below the fillet, there is a row of pits 0.5 cm in diameter. Further below, on the fragment's neck, horizontal rows of crescent depressions slanting to the left are observed.

This type of decoration pattern was typical of the medieval pottery of Yamal and can be reliably attributed to the Tiutey-Sale type of the Lower Ob archaeological culture of the 9th to12th centuries. This type was identified by L.P. Lashuk on the basis of artifacts found by Chernetsov at the settlement of Tiutey-Sale I (Chernetsov, 1957: 194; Lashuk, 1968). Direct parallels to this type of pottery in Yamal have been reported from the archaeological finds at the Yarte IV fortified settlement, Yur-Yakha III flat-grave burial ground (Plekhanov, 2017), and Bukhta Nakhodka-2 cemetery (Kardash, Gaidakova, 2017: 332, fig. 2). A typical feature of the vessels is a thick bottom on a low tray.

The whole range of dating features of the uncovered items suggests an age of the 9th to 11th centuries for the child burial at Lake Parisento. However, an age of the 10th to 11th centuries seems to be most probable.

Results of the X-ray fluorescence analysis (XRF)

Artifacts made of non-ferrous materials were analyzed in the portable X-ray fluorescence spectrometer Bruker S1 Sorter, which is intended for quantitative non-destructive analysis of the elemental composition of materials using the X-ray fluorescence spectrometry method. The sensitivity of the XRF spectrometer is 0.01 %. This method has currently become a popular tool in archaeological studies, and has proved its efficiency despite certain limitations (Tishkin, Seregin, 2011: 61–66).

In order to detect any alterations in the chemical composition of metal that are caused by corrosion, several samples were collected from each item: from the uncleaned, the slightly cleaned, or the profoundly cleaned surface. The samples from the uncleaned surface showed certain alterations: a higher content of iron (Fe) and arsenic (As); some artifacts also showed a higher content of tin (Sn) and lead (Pb). The chemical composition of the metals has been established through averaging of the analytical data of the samples collected from the cleaned surfaces. The final processing was made according to the generally accepted classification of metals and alloys (Eniosova, Mitoyan, Saracheva, 2008: 125–132).

The bowl was made of Cu-Sn alloy (tin bronze). Similar proportions of copper and tin were also identified in other artifacts with similar morphology (Nikitina, Rudenko, Alibekov, 2017: 76; Melikian-Chervani, 1974: 150). Analysis of the knife haft and scabbard (Cu-Sn-Pb-Zn-As – multicomponent copper-based alloy) has yielded little information thus far; the process of study of composition of bronze West Siberian artifacts has just started. Analysis of the silver earring (Ag content over 91 % – silver-based alloy) has also only added to our knowledge about medieval adornments (see *Table*).

Conclusions

The currently available archaeological data on the arctic zone of the Gydan Peninsula testify to synchronous development of this territory and the neighboring Yamal Peninsula. According to the archaeological evidence, people arrived in the Yamal tundra zone to the north of the Yuribei River in the 5th to 6th centuries AD, which could have been because of the onset of a dry and warm climate (Ushedshiye v kholmy…, 1998). Climatic changes might have caused northward migrations of reindeer herds; human tribes followed the animals.

Chemical composition of metal of the artifacts (XRF analysis)

Item	Alloy	Ag	Cu	Pb	Fe	Se	Sb	As	Sn	Ni	Zn	Co
Bowl	Cu-Sn	0	76.5	0	0	0	0	0.44	22.6	0.27	0	0.19
Scabbard	Cu-Sn-Pb-Zn-As	0	49.2	15.1	0.89	0.07	0.49	3.33	27.4	0	3.52	0
Knife haft	Cu-Sn-Pb	0	77	3.87	0.63	0	0	0	18.2	0.26	0	0.04
Earring	Ag-Cu	91.6	6.98	0.79	0	0	0	0.63	0	0	0	0

By that time, the ancestors of the modern Ugro-Samoyedic population in the northern taiga zone had mastered reindeer-driven carriages, as evidenced by the materials from the ancient ritual-manufacturing center of Ust-Polui (around the 1st millennium BC to the 1st millennium AD) (Gusev, Plekhanov, Fedorova, 2016). The tribes of nomads expanding further to the north probably originated from the communities of hunters and fishermen populating Western Siberia and the forest-tundra zone. Finds from the early stratum at the settlement of Tiutey-Sale (the 6th to 7th centuries), located on the northwestern coast of Yamal, provide information concerning an early episode of this process. Far-away longitudinal migrations following the reindeer herds (northwards in summers, and southwards in winters) were the basis of the subsistence strategy for the population of this area. Gradually, the tundra population became isolated from other tribes, after which the local Tiutey-Sale type of pottery was developed in the 9th to 12th centuries. Exactly this type of pottery was found at the sites of Khaltsyneisalya-1 and -2, located on the northwestern end of the Gydan Peninsula. Thanks to the contacts of the northern taiga residents with the tribes of the southern regions, the taiga people were able to obtain prestigious alien adornments and other goods. The remain of a child burial with rich grave goods found in the central part of the Gydan Peninsula can be interpreted in this context. The Iranian bowl from this burial marks the northeastern boundary of the dispersal area of this type of thing.

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Finds of Medieval Coins from Eski-Yurt, Crimea

This article focuses on the circulation of coins in an anonymous Golden Horde town, which preceded the modern Eski-Yurt, on the outskirts of Bakhchysarai, Crimea. The coins found at the site are compared to others (those from hoards and isolated specimens) in Crimea. The results point to a date between the second half of the 13th century and the late 14th century. The highest economic activity occurred from 1340–1380. The distribution of coins with regard to mints is broadly the same as in other Crimean towns (most were minted in Qirim, Sarai al-Jedid, and Azaq). The presence of rather numerous "al-Jedid" coins suggests that they, too, may have been minted in Crimea, but the evidence is insufficient for a definite conclusion. Most coins from the Eski-Yurt collection were minted under Uzbeg Khan and Janibek Khan (1340–1350), and there are no coins minted after 1380.

Keywords: *Golden Horde, Jochi Ulus, Volga region, numismatics, coins.*

Introduction

The circulated coins are among the most important information sources concerning the history of the Golden Horde settlements. Unfortunately, researchers often delayed publication of available information. As early as 1963, G.A. Fedorov-Davydov pointed out that quite few data on the Jochid coins in Crimea were described in publications (1963: 193). Regrettably, the situation has not changed over the recent dozens of years. The present paper provides information on the coins from Eski-Yurt, and aims at filling this gap.

Eski-Yurt ('Old Settlement') is currently a district in the city of Bakhchysarai. Since its origin in the 13th century and until the early 18th century, the settlement was a separate town (Kniga…, 1999: 59); later it was a suburb district of the former capital of the Crimean Khanate (Manstein, 1824: 75–76). In general, the site has been studied insufficiently. Archaeological research was carried out in 1924 by U. Bodaninsky (Bakhchysarai Museum) and A.S. Bashkirov (Scientific Association of Oriental Studies). Researchers noted that the toponym of Eski-Yurt was not an original name (Bashkirov, Bodaninsky, 1925: 295); the name of this settlement during the Golden Horde's time remains unknown*.

In the last 100 years, this territory has rapidly been developed. In the 1930s, in its plain areas, orchards were laid out; and in the 1970s, the few hills were leveled in the course of factory constructions in Bakhchysarai. At present, only few largest türbe-mausoleums survive in Aziz, in one of the Eski-Yurt cemeteries.

*A.A. Ivanov in his paper on the inscriptions from Eski-Yurt wrote: "The town could hardly have been named Eski-Yurt ('Old Settlement') in antiquity. Presumably, this name is rather young, and the settlement is old as compared to Bakhchysarai, founded in the early 16th century, or to Fort Kyrk-Or, the headquarters of the Crimean Khans in the 15th century. This place can also hardly have been named Krym (Qirim)…" (1989: 30).

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Jochid coins from Eski-Yurt

Coins are among the most important information sources about the settlement's history. Notably, silver and copper Jochid coins have been found in three hoards in Bakhchysarai earlier. Unfortunately, only quite scarce information concerning these finds is available. In 1890, a sachet containing 282 silver coins from the 13th century was found, and transferred to the collection of the Taurida Academic Archive Commission (Otchet… za 1890 g., 1893: 117, 124; Fedorov-Davydov, 1960: 132, No. 10). In the same (or the previous) year, a jug containing 282 Qirim silver coins was discovered. Some coins minted in 765 AH (1363–1364) showed countermarks. Only four of these coins were transferred to the collection of the Taurida Academic Archive Commission (Otchet… za 1890 g., 1893: 124; Fedorov-Davydov, 1960: 152, No. 123). It is not clear what coins were hoarded in the jug, because until now, no silver Qirim coins with a date of 765 AH have been known. The third hoard from Bakhchysarai was found in 1891, and contained not only silver, but also copper Jochid coins. However, the only information on 87 silver coins transferred to the Archaeological Commission is currently available. According to W.G. Tiesenhausen's identification, all these coins belong to a single type minted in the rule of Uzbeg Khan, in 713 AH (1313–1314) (Otchet… za 1891 g., 1893: 132; Fedorov-Davydov, 1960: 152, No. 124). Judging by the scarce information available, the three hoards were found in the area of the Bakhchysarai railway station; thus, they are associated with Eski-Yurt. Recently, it was announced that two copper Jochid coins had also been found in this area. Researchers believe that these coins were minted in Qirim in the 1360s and 1380–1382, respectively, under the rule of Tokhtamysh Khan (Bely, Voloshinov, Karlov, 2004)*.

In the course of archaeological works in Eski-Yurt in 2005, S.V. Karlov revealed 37 medieval copper coins. Eleven more coins were collected at the site by the local citizens, who transferred them to the Bakhchisarai Historical, Cultural and Archaeological Museum-Reserve. We have analyzed all these finds, and provide the relevant data in the table.

Discussion of the composition of the coin assemblage

Despite the small number of coins, certain preliminary conclusions can be reached concerning the circulation of coins in Eski-Yurt during the Golden Horde period. Most (ca 13 spec.) of the coins in the assemblage belong to the Qirim-Solkhat type (Qirim coins with no indication of place of issue). It is also known that the majority of copper coins from Stary Krym are of Qirim mintage as well (Severova, 1990: 43). The Eski-Yurt assemblage contains al-Jedid coins (3 spec.; as well as 4 spec. with illegible Kufic inscriptions, of a similar type), Sarai al-Jedid coins (ca 7 spec.), Azaq (2 spec.), Shehr al-Jedid (1 spec.), presumably Hajji Tarkhan (1 spec.), and possibly a foreign pūl (Bahri Mamluk?) (1 spec.). The coin bearing the name of Tokhtamysh, but with no indication of place of issue, was probably minted in Majar, the Northern Caucasus. Some coins from Eski-Yurt, with place of issue indicated as "Sarai al-Jedid" and with a flower rosette (especially imitations), might have been minted beyond the Lower Volga region (Fig. 1). New information will be helpful in identifying the places of issue of these coins.

In the described assemblage, the youngest date minted on the coins is 783 AH (1381–1382). Only one coin is dated to the 13th century; one more coin is dated to the 13th to 14th centuries (the exact date is unknown), five or six coins are attributed to the 1340s, four to seven coins to the 1350s, two coins to the 1360s, and seven coins to the 1380s. Undated coins, including the Toktamysh coin and the Hajji Tarkhan (?) pūl, can also be attributed to the 1380s or to a later period. The minting time of some coin types is unclear. Further information on this point will possibly facilitate more exact attribution. For instance, coins bearing the image of a lion framed with stars and the "Qirim pūl" legend are presumably dated to the mid-14th to early 15th centuries (Lebedev, 2000: No. m53). However, there are no solid arguments for this (or any other) dating.

Let us focus on coins of particular interest, or those with a debatable attribution.

Pūls with eagle images (Fig. 2) were described by C.M. Frähn (1832: 39), but their minting place has been established only recently. S.A. Yanina (1954: 437) studied the Bulgarian numismatic assemblage, and attributed this set of coins to Sarai al-Jedid mintage. However, in 1958, she renounced her previous interpretation, and reinterpreted the legend as 749 AH (1348–1349) with no indication of place of mintage (1958: 406). Still later, she put forward another hypothesis: "Qirim mintage in 744 AH" (1343–1344) (Yanina, 1962: 156). Abundant coins bearing stylized images of a double-headed eagle have been found in the Volga region. On the basis of this fact, many researchers proposed this region as the place of issue of these coins. Fedorov-Davydov (1999: 126) pointed that "the most reliable attribution of such coins is the New Sarai or Sarai mintage". The coin circulation in Crimea of the Golden Horde period was studied later than that in the

*Until now, no Qirim coins of the 1360s have been known. The authors have possibly identified such coins, but unfortunately the cited work does not contain any description of them. It is also unclear what particular type of coin has been attributed to the Qirim coins minted under the rule of Tokhtamysh Khan.

Coins found during the 2005 excavations and collected by local citizens

No.	Issuer	Mint	AH	Number	Weight, g	Reference	Notes
1	2	3	4	5	6	7	8
1	Anonymous	–	–	1	0.96	(Lebedev, 2000, No. m1.	2nd half of the 13th c. (?)
2	Tokta	Solkhat	–	1	1.05	(Ibid., No. m8)	On the obverse side, there is a face framed by the traces of inscription: “Toktu-bek fair-minded khan”; on the reverse side, there is a composite tamga in the center, combining signs of Batu and Nogai house, and an inscription around it: “Solkhat mintage”
3	″	Qirim (?)	–	5	0.85 1.54 1.60 1.63 1.77	–	1340s (?) With an image of a double-headed eagle
4	″	″	–	1	…	–	1340s (?) With an image of a double-headed eagle (?). Broken; weight was not determined
5	″	Sarai al-Jedid	–	5	0.67 1.68 1.77 1.83 1.95	–	1350–1360s Imitation (?). With a flower pattern
6	Qildibeq	Azaq	763	1	2.56	–	–
7	Anonymous (?)	Shehr al-Jedid	–	1	1.30	–	1360–1370s
8	Anonymous	Al-Jedid	“872”	2	2.08 2.10	(Fomichev, 1981: 234, No. 150; Pavlenko, Lebedev, 2005: No. m17)	Distorted date. Minted in 772 or 782 AH (1371–1372 or 1380–1381)
9	″	″	783	1	1.95	(Fomichev, 1981: 234, No. 151; Pavlenko, Lebedev, 2005: No. m18)	–
10	″	Al-Jedid (?)	–	4	1.40 1.61 2.15 2.98	(Klokov, Lebedev, 2002: 116, No. 137/15)	Kufic inscription on this type remains illegible. Probably “al-Jedid”
11	Tokhtamysh	–	–	1	1.73	(Yanina, 1954: No. 127)	–
12	Anonymous	Qirim	–	2	1.76 1.95	(Lebedev, 2000: No. m53)	Lion framed with stars. Unclear time of minting. V.P. Lebedev dates this type to the period from the mid-14th to early 15th century
13	″	Hajji Tarkhan (?)	–	1	1.81	(Klokov, Lebedev, 2002: No. 100/8) (?)	Identification was made by the ornament. Legend did not survive. Minted in the late 16th c. (?)
14	″	Azaq	–	1	1.90	–	Unclear type
15	?	Al-Jedid	?	1	1.65	–	–

Table (end)

1	2	3	4	5	6	7	8
16	Anonymous	–	–	1	2.05	(Lebedev, 2000: No. m22)	Unclear time of minting. Probably, Qirim mintage
17	″	Qirim	–	1	0.97	–	Unclear type of Qirim pūls. Legend “Qirim mintage” on the tamga sides
18	–	–	–	1	0.65	(Lebedev, 2000: No. m67) (?)	Anepigraphic pūl
19	?	?	?	15	0.35 0.52 0.62 0.67 0.70 0.74 1.24		Unidentified. Some coins show traces of inscriptions and images. Eight coins are broken, their weight was not determined

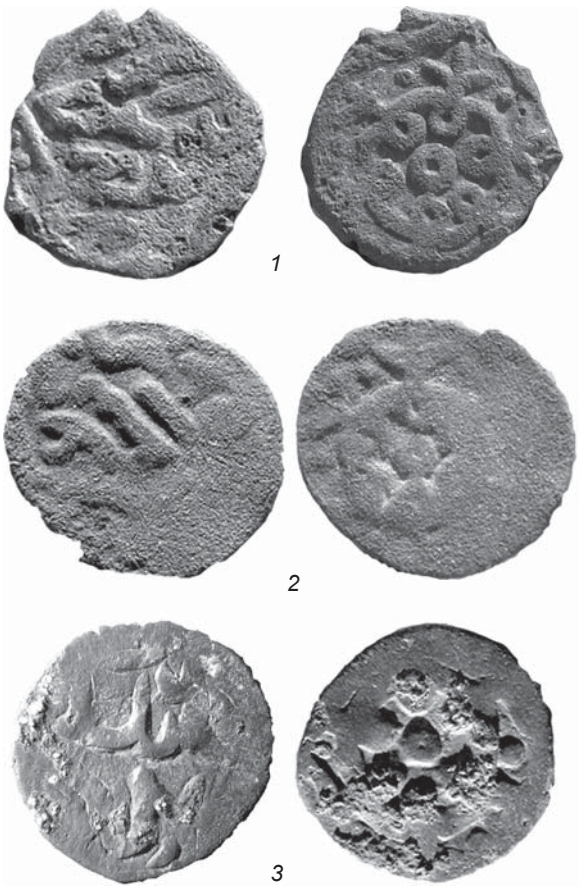

Fig. 1. Anonymous: Sarai al-Jedid. 1350s–1360s. Flower pattern.

Volga region. According to the most recent discoveries, coins with the image of a double-headed eagle have been found in the Crimean Peninsula considerably more often than in the Lower Volga region. K.K. Khromov alone reported more than 500 different varieties and imitations of such coins in Crimea (2004: 16). Khromov suggested that these coins were minted in Qirim in 743 AH (1342–1343), while imitations were produced until the 1360s (Ibid.: 19). In our view, the proposed interpretations of legend are debatable, yet the places where these coins were found suggested Qirim mintage.

Yanina dedicated one of her publications to the coins of Shehr al-Jedid (Fig. 3). A significant number of such coins have been reported from the fortified settlement of Old Orhei, located between the villages of Trebujeni and Butuceni in Moldova. Yanina proposed to identify New Town with Old Orhei (1977: 201–209). This hypothesis was accepted and became popular among the researchers.

Fig. 2. Anonymous: Qirim (?). 1340s (?). Stylized eagle image.

Fig. 3. Anonymous: (?): Shehr al-Jedid. 1360s–1370s. Mono-epigraphic.

The Shehr al-Jedid coins have been recorded in Crimea. Khromov reviewed 12,500 pūls found in Ukraine and Crimea, and identified 53 coins from Shehr al-Jedid: 6 coins from the Odessa Region; 8 coins from the Nikolaev Region, and 39 coins from Crimea

(http://www.hordecoins.folgat.net/r_online_shehr_ae_ukr.htm).

A significantly greater number of Shehr al-Jedid coins was found in Old Orhei (252 pūls among other finds from 1947–1981) (Abyzova, Byrniya, Nudelman, 1981: 81–86). V.A. Sidorenko (2000: 277) hypothesized that the New Town coins were minted in Sarai al-Jedid, renamed by Abdallah Khan. However, in the Volga region, such coins are quite rare; hence, this hypothesis is untenable. At present, the most reliable hypothesis on location of the mint of Shehr al-Jedid coins (Yangi-Shehr and others) has been put forward by Yanina. However, the interpretation of the coin legend is also debatable. According to E. Nicolae, a Romanian numismatist, the legends on the Shehr al-Jedid pūls mention the name of Kutlug-Bugi (Nicolae, 2003).

The al-Jedid copper coins are of two types (Fig. 4). One more type is very similar in design and bears a still undeciphered Kufic inscription (these pūls were probably minted in the same place as the above-mentioned al-Jedid coins).

Al-Jedid pūls with a complicated design, four "good luck knots", and a distorted date of "872" AH have been already reported from Azov, Majar, and Selitrennoye fortified settlements (1 spec. from each) (Fomichev, 1981: 234, No. 150; Pavlenko, Lebedev, 2005: 35, No. m17; Klokov, Lebedev, 2002: 108, No. 91/4). A vague inscription is visible below the date. V.P. Lebedev noted that such coins were "often found in Crimea; therefore, it seems reasonable to interpret the unclear word below the date as 'Qirim'" (Pavlenko, Lebedev, 2005: 35). Their time of minting is also debatable. According to Lebedev, the real date may be either 782 or 772 AH (either 1380–1381 or 1370–1371) (Ibid.). In our view, the first date is preferable, because it is closer to the date of 783 AH (1382–1383) minted on other al-Jedid pūls with a very similar design. Al-Jedid copper coins with slightly different ornamentation and the date of 783 AH (1382–1383) have also been reported from Azov (1 spec.), Selitrennoye (1 spec.), and Majar (3 spec.) fortified settlements (Fomichev, 1981: 234, No. 151; Klokov, Lebedev, 2002: 109, No. 94/7; Pavlenko, Lebedev, 2005: 35, No. m18).

The type of pūl with Kufic legend and the ornament with a four-fold rotational axis is preliminarily dated to 1380–1390 (Klokov, Lebedev, 2002: 116, No. 137/15). Yanina interpreted the relevant legend as "Sarai mint" (1954: No. 131), which seems debatable. Such coins have rarely been found in the Lower Volga region: only two pūls from Selitrennoye, and one pūl from Bolhgar hill forts (Ibid.; Klokov, Lebedev, 2002: 116, No. 137/15). The Kufic legend may be interpreted as "al-Jedid".

Fig. 4. Anonymous: al-Jedid. 1370s–1380s. Geometric pattern.

The comparatively small Eski-Yurt assemblage contains a greater number of the al-Jedid copper coins of Toktamysh period than the huge Lower Volga and Northern Caucasus collections, containing many thousands of various coins. Apparently, the al-Jedid coins were minted somewhere to the west of the Volga. The available data on coin circulation in the western part of Jochi Ulus do not provide solid grounds for establishing the exact place. Discoveries of such coins in Crimea suggest that possibly they might have been minted on the Crimean Peninsula. However, such an inference is not yet well-supported.

Apart from the copper al-Jedid coins of the Toktamysh period, a silver coin with a date of 785 AH (1383–1384) is also known. It was found by P.S. Saveliev in the Ekaterinoslav hoard. This scholar believed that the coin was minted in Sarai al-Jedid (the word "Sarai" was omitted in the legend) (Saveliev, 1858: 71, No. 130).

Among accidental finds from Eski Yurt, the nominal coin of Toktamysh, with no indication of place of issue, is of particular interest (Yanina, 1954: No. 127); another interesting specimen is a poorly preserved pūl possibly minted in Hajji Tarkhan (the coin's legend is illegible, but the design is as on the Hajji Trakhan pūl (Klokov, Lebedev, 2002: No. 100/8), likely issued not earlier the last quarter of the 14th century (reliably dated coin minting in Hajji Tarkhan started only from that time). We do not know of any records concerning the discovery of any Hajji Tarkhan pūls in the Crimean Peninsula.

Hence, this find provides new information on connections between the Lower Volga region and Crimea in the late 14the century. The Toktamysh coin was obviously minted in Majar, because the greatest number of this type of coin has been discovered so far in the Majar fortified settlement, in the Stavropol Region (Pavlenko, Lebedev, 2005). The Majar al-Jedid coins were recorded in the Stary Krym hoard, found in 1983 (Severova, 1990: 44–45; Pachkalov, 2002: 204, No. 154).

The Jochid coin collection from Eski Yurt contains a poorly preserved pūl apparently issued beyond the Golden Horde's territory. This is likely a Mamluk coin. This attribution was proposed by Stephen Album (USA) in a personal communication. Mamluk coins have been reported from Jochi Ulus and Crimea (see, e.g., (Ivanov N.N., 1999)), but up to the present there have been no publications devoted to the Egyptian and Syrian coins found in Eastern Europe.

Conclusions

Classification of the described numismatic finds by their minting date reflects the dynamics of the economic activity in the Golden Horde settlement. Only one coin has been dated to the 13th century. This testifies to the fact that by that time, the circulation of money was not well developed here. About 20 coins have been attributed to the 1340–1380s. The Toktamysh nominal coin, the Hajji Tarkhan pūl (?), and Qirim pūls with the lion image surrounded by stars can also be attributed to the 1380s or later periods. Thus, the economic activity in this Golden Horde settlement was the highest between the 1340s and 1380s. Available data attest to the decay in the money circulation in Eski-Yurt by the end of the 14th century.

In the assemblage under discussion, the majority of coins, on which the place of minting is marked, were minted in Qirim. To all appearances, the coins with the "al-Jedid" sign also belong to this category. These finds are typical mostly of Crimea and neighboring regions. Solitary specimens were minted in Azaq or Hajji-Tarkhan. a significantly greater number of coins was minted in the capital town of Sarai al-Jedid. However, some coins from Eski-Yurt with the "Sarai al-Jedid" legend and flower rosette might have been minted in Crimea, rather than in the Lower Volga region.

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Children's Games in the Sociocultural Space of a Siberian Town: Historical and Archaeological Context

This article describes a collection of toys from a homestead in the medieval town of Tara, the Omsk Region, considered in a broader historical context. This study focuses on the spatial arrangement of toys on the ground plan of the homestead, evidencing the overlap of the adult's world with the world of children, which is relevant to the development of children's self-awareness and socialization through play. Games are an active way for children to organize their space within the adults' world and using its model. Toys help them assert themselves and "inhabit" the domestic world of the homestead. The children's presence in the space of the house – homestead – town is marked by various toys, such as mock weapons, hard and soft balls, whistles shaped like birds, tiny dishware, knucklebones, svaikas (sharpened iron pins, which, when thrown, were meant to stick in the ground inside iron rings), mumblety-peg, etc. The reconstruction of children's games within the excavated homestead can be projected onto the entire town, since homesteads were the main habitats. Children belonging to various social classes played inside houses, in backyards, pastures, and areas between the homesteads. Because the living zone was mastered through play, games played an important role in the organization of the town's sociocultural space. As the children grew, their living space expanded beyond the family's limits.

Keywords: *Children's games, toys, localization, living space, Siberia, Tara, archaeology.*

Introduction

The sociocultural space of urban complexes is marked by a great number of manifestations of objects, and is richly represented by archaeological evidence. Playing is one of the aspects of society's everyday life. It is a specific activity in the area where a person is free from the necessity imposed by society and the state, yet this activity is not isolated from utilitarian aspects, and their interaction and interpenetration is determined by the specific cultural and social context (Khrenov, 2005: 17, 34).

Children's games are a special way to generalize and systematize their ideas concerning the world around them. Games provide an active form of organizing children's space in the world of adults, following its model. "Childhood games represent hot, tireless, but at the same time fun work helping the child to vigorously develop his spirit and body, implant knowledge and experience, and lay the first foundations for future activity in life" (Pokrovsky, 1895). Games play the role of a modeling semantic system, which helps children to navigate in the "worldly sea" in an informal manner. Game behavior

serves as a prototype of "adult" life, and symbolic gaming counterparts serve as tools for acquiring knowledge and skills. By mastering the world around them, children (individually and in company) "objectify" themselves, materialize their presence in certain more or less permanent or temporary places for playing in the house, courtyard, or outside of those, but within the borders of the territory which they master, as well as through substitute objects—toys, crafts, or drawings, which help them to assert themselves in the space of the house, and "populate with themselves" their home world (Osorina, 2000: 37).

Children's presence in the space of house – homestead – town is manifested in the archaeological context by game attributes attached to specific objects where children used to play. A series of toys have been found in the cultural layers of towns from the time of Old Rus to Modern Russia. Various classifications of them according to their composition and material have been proposed. Excavations of Russian sites in Siberia have enriched the archaeological collection of attributes of children's games and have significantly expanded the geographical boundaries of traditional children's game culture, which is now equipped with a wide spatial and chronological comparative field. We will present not a very large, but diverse collection of toys from medieval Tara. In the description of the collection, the emphasis will be placed on the location of toys in the home world of the homestead and adjacent territory, which determined the role of children's games in urban sociocultural space.

Children's games in the homestead and urban space of Tara

The evidence from the excavations of a homestead complex in the historical center of Tara makes it possible to analyze mastering of urban space by children at the level of micro-planigraphy. Such an approach has informational advantage, since the worlds of adults and children coexist in a most natural way precisely in the living space of a homestead. Development of a child's self-awareness and his/her socialization, including socialization by means of games, happens through interaction of these worlds.

This homestead functioned for a long time (the cultural layer was over 3 m thick), and was rebuilt several times after fires. A reconstruction at one of the stages of its operation was made on the basis of excavation results (Fig. 1). The homestead included five structures: the owner's house—a five-wall building with extensive entry room, a log house with large stove, a cellar with a structure over it, a banya, and a well. The land plot of the homestead was rectangular in plan view and was enclosed by a fence or palisade (Tataurov, Chernaya, 2015).

Most of the toys were found in the entry room of the owner's house (weapon models, balls, sled runner), in its residential part (children's ceramic dishes, bird whistles, birch-bark balls), and in the courtyard—at the mound of earth around the outer walls of the log house (a set of knucklebones) (Fig. 1). Their locations are associated with the places where children could spend their free time and/or keep their treasures thus denoting, objectifying, and consolidating their presence. Judging by the availability of toys, adult residents allowed children's games in the house and courtyard in order to control the whereabouts of children, especially in the case of danger, which was important in the semi-military town of Tara.

In the entry room, the boys kept their "arsenal": two bows with arrows and two swords/sabers (Fig. 2, *1–8*). The Tara toys imitated adult weaponry. Fathers, grandfathers, and boys cut out knives and sabers according to real military models, elaborating the most significant details—handle, guard, blade, etc. Children's bows (five of them have been found in Tara) also show the signs of a real weapon, including widening

Fig. 1. Reconstruction of a homestead with the places that children played games (*a*) and stored toys (*b*).

Fig. 2. Toys.
1, *2* – bows; *3*, *5* – arrowheads; *4*, *6* – arrows; *7*, *8* – swords/sabers; *9* – playing chip; *10* – scythe. *1–8* – wood; *9* – ceramics; *10* – iron.

in the central part (handle), end plates, and notches for fastening the bowstring. Toy arrows with arrowheads of various types: long narrow armor-piercing, leaf-shaped, and blunt points (Fig. 2, *3–6*) give us some idea of the set of arrows in the quiver of a Tara archer. Children's copies made of hazel wood, juniper, and oak from 50 to 90 cm long, with well-elaborated details, including those imitating a composite bow, glued together from pieces of wood and bone plates, are known from archaeological collections of the 9th–16th centuries from Novgorod, Pskov, Staraya Ladoga, Beloozero, Staraya Russa, etc. Toy bows after the 16th century have almost never been found in Old Russian towns, which can be explained by the disuse of this weapon. The fragments of children's bows from the layers of the first half of the 17th century of the excavations in Pskov are attributed to the final stage of the existence of such toys (Rosenfeldt, 1997: 115; Khoroshev, 1998; Zakurina, Salmin, Salmina, 2009). In Siberia, bows remained in use as a combat and hunting weapon long after that, which is also reflected in the distribution of toy models of bows found in Tara, Mangazeya, and at the Berezovo and Staroturukhansk fortified settlements (Parkhimovich, 2014: 256, 259, 260; Vizgalov, Parkhimovich, 2017: 91, 99, 174).

Wooden models of swords or sabers (one intact and one broken) have been found in the entry room of the Tara house. The identification of the type of weapon is conventional. The blade of the intact item is long and straight, and the blade of the broken weapon shows some kind of bend, but one cannot say with certainty that it was made originally in this way (Fig. 2, *8*). A children's weapon from Mangazeya, which was called a sword, has a straight blade (Vizgalov, Parkhimovich, 2017: Fig. 121, *16*; 257, *4*). A broken Tara sword is very similar to the Mangazeya find (Ibid.: Fig. 257, *4*) in the form of the handle, although sabers of rods with a loop-like guard are also known from Mangazeya (Vizgalov, Parkhimovich, 2008: Fig. 166, *4*). Local children were familiar with sabers, which were a part of the weaponry belonging to the servicemen of Siberia. Children also were acquainted with swords, as indicated by the presence of a sword handle with round pommel in Mangazeya (Ibid.: Fig. 166, *5*) (swords with similar pommels have been found in Novgorod and Sarapul (Khoroshev, 1998: Fig. 1, 3; Sarapulskaya kladovaya…, 2018: 32)).

Toy weapons from the Siberian collections confirm the conclusion made on the basis of excavations in Old Russian towns: toy-imitations present rich informative evidence for the study of weapons. The remains of pommels of wooden swords from Novgorod accurately reproduce the main proportions of real combat swords. A series of children's swords from clearly dated stratigraphic layers have made it possible to identify evolutionary changes in military weaponry of medieval Novgorod. This is all the more valuable because iron swords have been found very rarely in the urban cultural strata (Morozova, 1990: 70; Khoroshev, 1998).

Toy weapons could have been very similar to the real prototypes. For example, the "weapon set" (wooden belt (combat) knives and a *pernach* (flanged "six-feathered" mace)) from a Pskov courtyard of the second half of the 17th century even causes doubts that it belonged to children, making it possible to correlate these models with the adult cultural environment as attributes of ritual or theatrical performances (Salmin, 2013). However, the main part of imitations was intended for children's games, representing copies of real objects reduced in size. For instance, the models of bladed weapons from Tara, while reproducing the proportions of the prototypes, fit in size (50–60 cm) to a child's height.

There are very few toy utensils, tools, shoes, or means of transportation among the Tara materials (a spatula, dishes, sled runner) as compared to other towns (Rosenfeldt, 1997: 118, 119; Vizgalov, Parkhimovich, 2008: Fig. 166, 167; 2017: 91, 137, 147, 165, 174, 185–186), but they also demonstrate similarity with their

everyday life prototypes. Models of boats have not yet been found in Tara, but the archaeological collection of children's boats from Novgorod gives us some idea of the level of shipbuilding, and similar finds from Mangazeya provide information on various types of ships (Morozova, 1990: 70; Khoroshev, 1998; Parkhimovich, 2014: 255). Toy-imitations serve children as "building materials" for creating their own world. Imitation is a mechanism for exploring the surrounding reality and directing children to the adult world with the available examples of things and methods of their use, even if their adult meaning is not completely understood by the children, and they reproduce it in their own way.

Two hard balls (*shary*) carved from tree roots have been found in the entry room of the Tara house (Fig. 3, *3*, *4*). A. Tereshchenko considered ball games to be "male" in nature (1848: 50–53, 58, 59). Therefore, it was logical to find these toys, along with the "military arsenal", in the entry room where the boys kept things for their amusement. Wooden hard balls (*shary*) and leather soft balls (*myachi*) as universal toys for competitive (active) games were common in Russian towns. As a matter of fact, a ball element of segmented shape (5.0 × 8.5 cm) was found in Tara. Balls made of segments, as was the case with Tara, or from two circles and a connecting band, as was the case in Veliky Novgorod, were cut out of wet, sometimes multicolored, leather (fabric balls have been found in the excavations in Mangazeya). They were stuffed with wool, horsehair, moss, wool threads, or tow. After drying, the leather would wrap tightly around the padding. The manufacturing of leather balls was an auxiliary production in shoemaking craftsmanship. It is not surprising that those who liked playing ball games acquired balls for not a cheap price, paying several pairs of knucklebones, a good hopscotch marker, or *svaika* (iron pin). Lathed wooden balls, which have also been found in the cultural layers of Old Russian towns, were more expensive than hand-carved.

Different variations of games with hard or soft balls required agility, skill, and dexterity. One of the varieties involved digging a rather large pit called a *kaslo* or cauldron, and small holes around it according to the number of players. The game leader tried to capture someone's place by driving a hard ball into their hole; the other players had to beat the ball away while it was approaching (Pokrovsky, 1895; Tereshchenko, 1848; Morozova, 1990: 70; Rosenfeldt, 1997: 116; Rybina, 2006: 18; Veksler, Osipov, 2000: 155; Parkhimovich, 2014: 258, 259; Osipov et al., 2017: 117, 118). This version of a ball game representing an enemy's raid on peaceful dwellings was an imitation of real enemy attacks, town sieges, and their defense by the town dwellers. The game not only developed agility, but also cultivated combat fervor and patriotic spirit in the younger generation.

A glazed ceramic bird whistle was found in the residential part of the owner's house at the Tara homestead (Fig. 3, *2*). Such items, appearing in different morphological and technical variations, are a typical attribute of folk musical culture, and have often been found in settlement complexes (Fekhner, 1949: 55; Rosenfeldt, 1997: 118; Khoroshev, 1998; Kolyzin, 1998: 117; Tkachenko, Fedorova, 1998: 345, 346; Glinyaniye igrushki…, 2002; Spiridonova, 2002: 216; Matveev et al., 2008: 126, 127; Tataurova, 2008: 200; Vorobiev-Isaev, 2014; Parkhimovich, 2014: 258; Tropin, 2017: 480; Baranov, Kupriyanov, 2017: 509, 510; and others). The technology of their manufacturing is described in the ethnographic literature (Tseretelli, 1933: 183; Galuza, 1998: 172; Bondar, 2006; Korotkova, 2006). Comparison shows that despite centuries of a well-established manufacturing tradition, whistles had specific local features in terms of techniques and shapes, and

Fig. 3. Game accessories.
1–2 – bird whistles; *3–5* – balls; *6–8* – dishware; *9* – spatula; *10* – sled runner; *11* – playing chip; *12* – fragment of a composite belt. *1*, *2*, *6–8*, *11* – ceramics; *3*, *4*, *9*, *10* – wood; *5*, *12* – birch-bark.

individual artisans had their own secrets and style. Special skill was needed to make the toy perform the function of a musical instrument. The mouthpiece with a slit-like hole for blowing air was usually located in the tail of the "bird". A part for producing the sound (*pishchik*) was located under the tail or on the back of the figurine (the toy would not whistle without it); two finger holes were on the sides. By closing the holes, the player could change the pitch and play a simple melody. Success in making the whistle was ensured by having a clear idea of the nature of sound due to the pulsation of air entering from the zone of normal pressure into the air stream, where it is lowered. The correct direction of the wind duct, free from any clay particles, was important, making the sound clear and loud (Glinyaniye igrushki…, 2002: 7; Bondar, 2006). Whistles and rattles were not only toys, but also amulets: it was believed that they scared away evil spirits from the child by their noise and whistling. This also explains their persistent use (Glinyaniye igrushki…, 2002: 8).

Girls played in the residential part of the Tara house, where miniature ceramic dishes (Fig. 3, *6–8*), a wooden spatula (Fig. 3, *9*), and balls made of birch-bark bands have been found. Small balls (4–5 cm in diameter) could have served as heads of dolls (Fig. 3, *5*), and a large ball (15 cm) could have been used for playing ball games. Girls, who were attached to home, their mothers, and grandmothers, imitated important components of the adult life scenario in role games: they "cooked", took care of the "child" by swaddling and dressing their dolls, "spun" wool, etc. Professional potters produced a significant part of toy dishware, and adults made dolls of clay, wood, straw, and rags (Fekhner, 1949: 56; Rosenfeldt, 1997: 116, 118; Kolyzin, 1998: 119; Tataurova, 2008: 199; Parkhimovich, 2014: 254, 255; and others), which manifests the interaction of children and adults in the process of training girls for the crucial role of housewife and mother. Girls also participated in active games. For example, they played ball; sometimes together with boys. Collective games are typical for children of all ages (Zabylin, 2003: 526, 531, 532).

The third place for storing game attributes was found in the courtyard near the earthen mound around the outer wall of the log house. A set of 20 knucklebones (in Russia played like marbles – *translator's note*) of the same size were found in a hole about 40 cm deep, covered with a piece of birch-bark; protruding parts of joints were cut off or sawn off on some of them (Fig. 4, *2*). The damage done to the bones shows that they were used for playing for quite a while. There was no shooter in the set (a knucklebone drilled and filled with lead), although many such finds are known. The knucklebones were stored in an area free from buildings, which implies participation of children from several homesteads in the game (Fig. 1). Boys are playing in a similar area in the picture of the famous Russian artist V.E. Makovsky (Fig. 4, *1*).

The game of knucklebones was one of the most popular games, and this is why knucklebones have been found almost everywhere, and in Siberia both at the sites of the Russian and indigenous population, among the set of items that reached the indigenous people from/through the Russians (Belov, Ovsyannikov, Starkov, 1981: 43; Tataurova, 2008: 198; Chernaya, 2015: 170, 171; Baranov, Kupriyanov, 2017: 504, 510). The popularity of the game was ensured by easy availability of raw materials—a hock bone, which was boiled. Knucklebones had value; they were exchanged for, for example, balls or *lasy*—balls of snow drenched in water and frozen (Tereshchenko, 1848: 25–26).

Certainly, it is important that the Tara set of knucklebones was hidden. Making stashes has utilitarian and symbolic aspects in children's territorial behavior. In this way children can materialize their secret presence in a certain place and establish deep personal contact with the living space by performing secret material exchange with the environment. The arrangement of stashes/"secrets" is a tradition of children's subculture, one of the symbolic ways of taking over the mastered territory through "growing into the soil" and being literally inside the flesh of the earth. Children's hiding places, albeit they have been rarely found in excavations (one example is a stash with bird whistles from the Tomsk Region), are indicators of firm mastering of space and settling in the environment (Osorina, 2000: 127–145; Parkhimovich, 2004; Vorobiev-Isaev, 2014: 229; Chernaya, 2015: 36, 37; 2016: 17; Vizgalov, Parkhimovich, 2017: 333–340). It was important for the Tara boy who owned the stash with knucklebones to feel that he possessed his own secret, inaccessible to the uninitiated, in the space of the homestead.

During the excavation of the Tara homestead, it was possible to establish three main places where the toys were located. Yet, attributes of children's games, such as round chips 3–5 cm in diameter made of pottery fragments (Fig. 2, *9*; 3, *11*), have also been found without links to specific places. Such scattered pieces have also been discovered in the fortified part of Tara. They occur at urban and rural sites in the European part of Russia and in Siberia. Such chips were used as "money" in the games of *kremeshki*, checkers, or "buying-selling". "Kreymeshki are made of broken pottery and tiles; they are made round to the size of a two-kopeck piece, but no larger than a five-kopeck coin" (Tereshchenko, 1848: 42). The easy availability of such toys made of broken pottery determined the universality of their existence (Kostyleva, Utkin, 2008: 216–218; Tataurova, 2008: 198).

Individual fragments of glass vessels of European manufacture, made in the technique of onlaid glass threads, have been found on the territory of the Tara homestead. The broken vessel lost its status as a prestigious item from the adult world, but the brightly colored fragments became a real treasure for children,

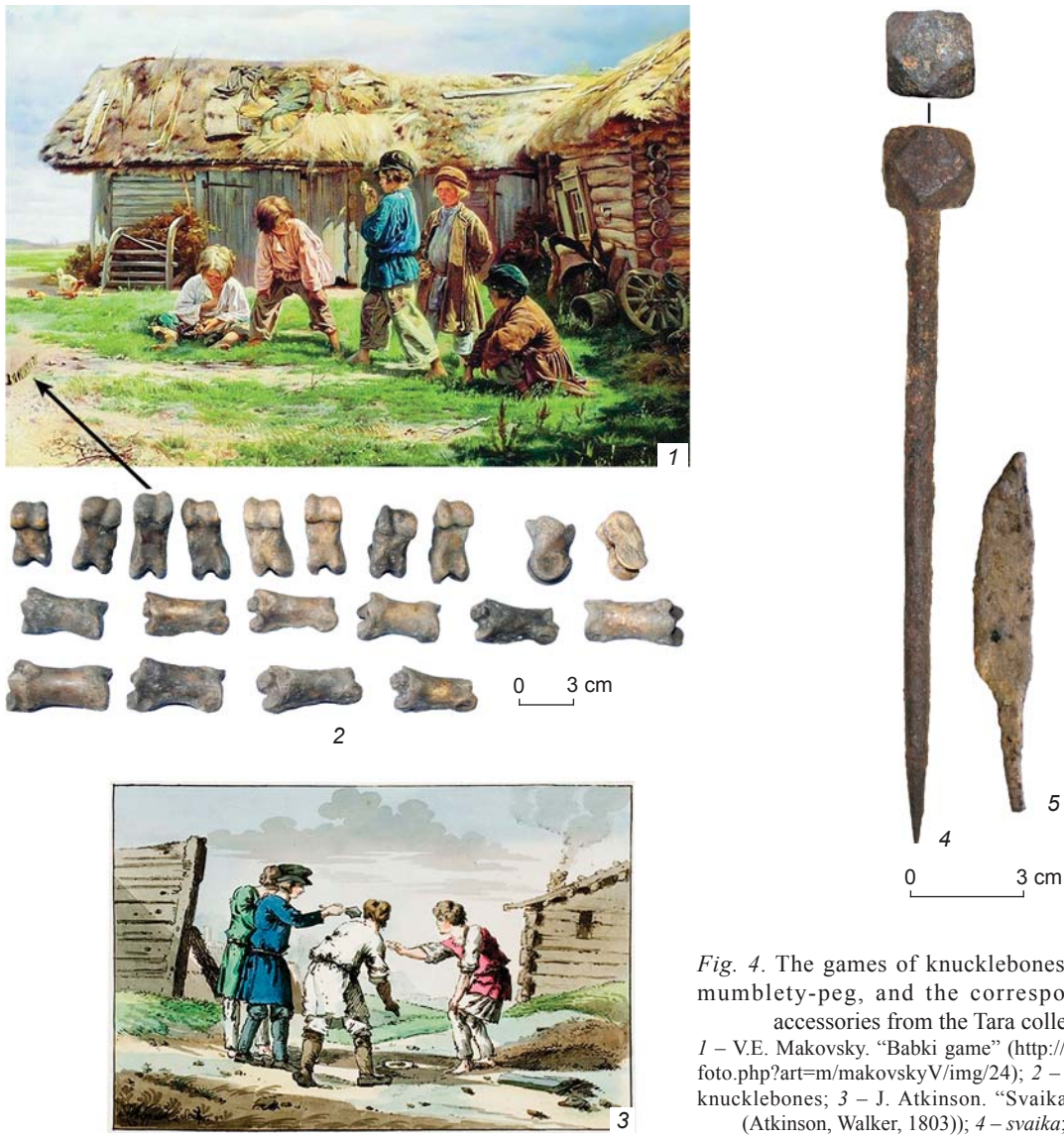

Fig. 4. The games of knucklebones, *svaika*, and mumblety-peg, and the corresponding game accessories from the Tara collection.
1 – V.E. Makovsky. "Babki game" (http://www.artsait.ru/foto.php?art=m/makovskyV/img/24); *2* – set for playing knucklebones; *3* – J. Atkinson. "Svaika Game" (after (Atkinson, Walker, 1803)); *4* – *svaika*; *5* – knife.

who must have endowed them with new meaning, and included them into the circle of their own experiences, fantasies, interests, and relationships (Osorina, 2000: 98, 138, 139). Precious glass-pieces became not only the objects of bargaining and exchange, but, stimulating imagination, helped children to create their own world, constructed by the child-creator from broken pieces of adult things. Noteworthy is the aesthetic component introduced by girls into the game. They examine, lay out, and cherish fragments that fascinate them with their beauty and uniqueness, and try to decorate dolls or themselves. A fragment of a composite birch-bark strap found on the territory of the homestead may have also belonged to the available "designer" means for the girls of that time (see Fig. 3, *12*).

The location pattern of children's games based on the excavated homestead can be extended to the town as a whole, since homesteads were the main habitation type. Children played in the houses, in the backyards, and on pasture lands. It was difficult to find other areas for playing because of the density of buildings, small width of streets and mud on them, in which horse teams would get stuck even in the early 20th century (Tarskaya mozaika…, 1994: 22). Children could play outside of fortification walls only under the supervision of adults when they went to do concrete jobs.

Space constraints limited locations for team games. The space between the homesteads could have served this purpose. *Svaika* was one of the truly popular team games both among adult men and teenagers. A *svaika*—a sharpened iron pin with a massive head (length 18.7 cm, stem diameter 0.8 cm, 12-faceted head with each facet being 2 cm wide), has been found in the fortified part of Tara (Fig. 4, *4*). The essence of the game was to throw the *svaika*

into a ring or several rings lying on the ground. Foreigners also noticed fascination with this game, "Boys play with sharpened pieces of iron, trying to throw them into a ring lying on the ground" (Reitenfels, 1905: 149). J. Atkinson left a drawing (Fig. 4, *3*) and a detailed description, "This is a game of dexterity peculiar to the Russians. A small iron ring of about an inch and a half in diameter is laid upon the ground, and thrown at with a heavy iron pin, with a large round knob at the top of it cut into octagon facets like a diamond. The player lays hold of the pin or svaika, by the point, and throws it in such a manner, that in whirling round the point sticks in the earth in the middle of the ring. If he misses, he is obliged to hand round the svaika to the rest of the players, till another misses and relieves him in his turn" (Atkinson, Walker, 1803).

A *svaika* was also a cold throwing weapon capable of penetrating the strongest armor. Sometimes it "weighs up to 4 and 5 pounds… some claim that they may weight up to half a pood…" (Tereshchenko, 1848: 54). The methods of throwing the *svaikas* in the game and in battle were the same; teenagers could master them together with their parents—the servicemen. People loved traditional games. Semi-sport, semi-military games (wrestling, running, horse riding, archery, tug of war with a stick or rope) raised courage, endurance, and dexterity in young people (Leontiev, 1977: 64, 65).

Miniature (about 11 cm long) knives have been repeatedly found in Tara (Fig. 4, *5*). They were intended for sharpening goose feathers and were also used for games by teenagers. The game "mumblety-peg" was a later development, a specialized version of the *svaika* game. It belongs to an extensive class of competitive games "with a thing" (knucklebones, *chizh*, games with soft balls (*myachi*) and hard balls (*shary*), *lapta*, *svaika*, dice (*kosti*), jacks (*kameshki*), pick-up sticks (*biryulki*), *peregon*, etc.) (Toporov, 1998: 251, 252, 269, 270). The mumblety-peg game had a long history from among Russian games and helped young people to acquire skills of using knives both in everyday life and military service.

An interesting find is a copy of a scythe reduced in size (Fig. 2, *10*): its length was 27 cm; width was 2 cm; the height of the strengthening rib was up to 0.4 cm. Judging by the strong wear of the blade, it was intended for acquiring the skill of working with a real scythe in a game form.

The assortment of toys was similar in the homestead of the high-status person in the center of Tara and in the fortified part. The differences were observed only in details. For instance, the runner from a sled, which was found on the homestead (Fig. 3, *10*), was cut from a coniferous board, and had a mount for the backrest. Toy sleds from the fortified part, just like real sleds, had bent runners made of purple willow or birch. A whistle bird from the fortified part of Tara (Fig. 3, *1*) is unglazed as opposed to the glazed whistle bird from the homestead. The morphological and technological diversity of toys resulted from the individual style of their creators and local traditions. There was no rigid social hierarchy of toys; most of them were intended for children of different classes. Even royal children in the 17th century played both with expensive German dolls and popular toys bought at the market (Zabelin, 2014: 588).

Conclusions

The analysis of the archaeological collection of toys at the level of the layout of the homestead has made it possible to establish the places of children's games, which were an accessible and constructive way for children to undergo socialization, adoption of their inhabited space, and to create their own microworld in it. The influence of the environment on a child through the use of toys is extremely strong, since learning about the world by people starts from random objects (stones, pine cones, sticks), and proceeds to using discarded and outdated things of the "adult world", and further to specialized toy craftsmanship (Tseretelli, 1933: 21; Glinyaniye igrushki…, 2002: 3). Adults (parents, grandmothers, grandfathers, and toy-makers) acted as senior partners of the children, making the toys for them to play.

The game culture vividly manifests the opposition between living popular practices and spiritual instructions together with rules of a righteous life of the 16th–17th centuries with detailed regulation of every aspect, strict requirements for everyday life, and imposition of a behavioral principle: "Our days are not the days of joy, but the days of weeping", urging people not to laugh but to "disdain" children's games, in which passions begin to show their destructive power already starting in adolescence, and giving instructions to raise children "with prohibitions" (Yakovleva, 2000: 10, 15, 19).

In living practice, games and toys are an essential part of everyday culture. Traditions, skills, and the art of making toys were transmitted from generation to generation within the family and at the level of toy-making craftsmanship, which is reflected in archaeological materials starting from Old Rus until the ethnographic present time. From infancy, games and toys entertained, taught, and cultivated children, helped them to grow up and explore the world around them. Through games, social and everyday concepts were embedded into the minds of children; the range of these ideas grew along with expanding the boundaries of sociocultural space inhabited by the child, going beyond the limits of the family structure and reaching the social order. Undoubtedly, the "good doctor" and teacher E.A. Pokrovsky, who wrote a wonderful book about children's games, was right in saying, "Of course, with our game we also serve the Fatherland!" (1895).

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On the Methodology of Studying Palimpsests in Rock Art: The Case of the Shalabolino Rock Art Site, Krasnoyarsk Territory

This article addresses the main problems in assessing the stratigraphy of superimpositions in rock art. When a petroglyph is overlain by one or several others, this may provide important chronological information not only about single images but also about entire stylistic traditions. Existing methods used for evaluating the relative chronology of the parts of petroglyphic palimpsests are discussed, and a new approach is proposed, combining high-resolution three-dimensional visualization at the macro level with traceological analysis. The article focuses on the characteristics of the pecked surface in the area outside the palimpsest and that of the overlap zone. The comparison of these parts makes it possible to reveal the traceologically informative features in the palimpsest areas, indicating the sequence of superimposed petroglyphs. This approach is illustrated by the analysis of one of the palimpsests at the Shalabolino rock art site in the Krasnoyarsk Territory. Images representing various stylistic traditions are stratigraphically associated in a complex way. The sequence of three main figures (the bear, bull, and elk) in this multilayered composition has been reconstructed. The results of the analysis cannot be used as an argument for attributing these petroglyphs to vastly different chronological periods. Rather, they provide new information relevant to the debate over the age of the Angara and Minusinsk petroglyphic styles in the Minusinsk Basin.

Keywords: *Rock art, petroglyphs, palimpsest, traceology, 3D, photogrammetry, Shalabolino rock art site, Krasnoyarsk Territory.*

Introduction

In rock art studies, palimpsests are one of the most sophisticated research objects, since the same intensity of desert varnish on superimposing representations complicates establishing the sequence of their creation. Meanwhile, the analysis of some palimpsests makes it possible to clarify the relative chronology of not only individual images belonging to various pictorial traditions, but also of entire cultural and chronological layers. Researchers have repeatedly encountered such situations when a detailed study provided qualitatively new information about the age of representations with typical features of a specific style (Podolsky, 1973: 269–270, fig. 4; Kubarev, 1988: 141–142; 2013: 24; Molodin, Cheremisin, 2002; Novozhenov, 2002: 27, 36, 37; Sovetova, 2005: 18–20, figs. 4, 5; Molodin, Efremova, 2010: 166; Kovaleva, 2011: 31; Devlet E.G., Devlet M.A., Pakhunov, 2016: 523, 527). In some cases, on the contrary, it was possible to establish that the petroglyphs made by various authors belonged to a single stylistic tradition (Molodin, Efremova, 2010:

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167–168; Miklashevich, 2012: 182). Sometimes, there was a tendency to deliberately superimpose some images on other representations in semantically integral compositions (Craig, 2009: 284–285). All these observations give grounds for further interpretations, and this is why it is so important to establish with confidence the sequence of the petroglyphs that constitute the palimpsests. Sometimes, multilayered compositions make it possible to detect even such subtle nuances as changing ideological or religious views within genetically related or completely different visual traditions (Nash, 2012; Geneste, 2017: 35).

The study of palimpsests has been given a prominent role in the literature. In the 1970s, A.D. Stolyar and Y.A. Savvateev proposed the method of "topographic layout", which involved identifying the sequence of creating the petroglyphs and filling free space on the surfaces (Stolyar, Savvateev, 1976; Stolyar, 1977: 25–34, 34–36). These scholars proceeded from the assumption that the largest images were created first, but this idea was later not confirmed (Lobanova, 2007). In his study of palimpsests appearing among the Karakol materials, V.D. Kubarev paid attention to the orientation of the images relative to each other and to the position of the slabs *in situ* (1988: 94). This argument was one of the most important points for establishing the reuse of slabs with petroglyphs, which turned out to be placed upside down in the burials. Both approaches to analyzing multilayered compositions in rock art can be described as indirect, since the arguments focused not so much on the intersection of images, but on the context of discovering the palimpsests. Unfortunately, not in all cases is it possible to rely solely on this aspect.

Sometimes, scholars have considered the depth of petroglyph pecking as the main criterion of stratigraphic analysis. According to this logic, the subsequent image should be deeper than the preceding image. This is not entirely true, since the rock crust within which pecking is usually done, has certain limitations in thickness. Therefore, after the crust was pecked to the main substrate, further processing in this area becomes very difficult. Experiments have shown that it is impossible to make the next petroglyph deeper in the intersection area if pecking of the initial image completely broke the fragile surface layer.

Quite often, the literature only makes mention of palimpsests, according to which it is not possible to get an idea of the criteria for analysis and arguments in favor of the authors' point of view on stratigraphy in each particular case. This usually results from a different purpose of the majority of publications (cataloging, summarizing works, etc.) (Lobanova, 2014: 33). There are very few specialized studies dedicated to specific instances of palimpsests, which reasonably substantiate their stratigraphic sequence (Lobanova, 2007: 129). Sometimes, the sequence of rock art images is established by the eye. Even if it is the eye of a specialist with many years of experience, one cannot ignore different perceptions of petroglyphs given changes in lighting, as well as the fundamental subjectivity of human perception.

Specialists have achieved tremendous results in studying the most complex palimpsests at the famous site of Fariseu (valley of the Côa River, Portugal) thanks to the use of an integrated research approach, which involved geomorphological analysis of surfaces with petroglyphs taking into account chronological dynamics, and correlation of figurative elements with variability of the rocky surface resulting from peeling (Aubry, Santos, Luis, 2014). This allowed scholars to establish the sequence of the multilayered composition, and assign various groups of petroglyphs to different periods of the Late Paleolithic (Ibid.: Fig. 5).

Y.A. Sher pointed to the possibility of refining the data on palimpsests by studying the density of desert varnish and specific features of tool marks (1980: 172–173). In some cases, it is easy to see that the degree of patination on various petroglyphs that constitute multilayered compositions is not the same. Thus, at the site of Baga-Oygur I (the Mongolian Altai), the stylized representation of a goat is superimposed on a group of two mammoth-like zoomorphic figures facing each other (Cheremisin et al., 2018: Fig. 4). The conclusion that the goat image was created much later is based on the much lesser degree of its varnishing as compared to the paired figures. However, desert varnish is caused by many factors, and in the cases when its intensity is approximately the same for all elements of a multilayered composition, it is almost impossible to distinguish between earlier and later petroglyphs.

Sher's idea of comparing the traces of tool marks in the areas of intersecting images (1980: 172–173) seems very promising. In addition, modern equipment and methods of recording have significantly expanded the opportunities for their research and comparison. This article proposes a way to study palimpsests on the basis of trace analysis of such marks and non-contact recording using 3D visualization with the photogrammetry technique.

Research methods and equipment

The proposed approach to the study of multilayered compositions is based on the analysis of the pecked surface in the areas of intersection between representations, and comparison of the trace features in such zones with the most typical pecked areas of each petroglyph of the palimpsest. This fairly simple principle makes it possible to identify the main features of each image, and establish which of them prevail in the intersection area. The presence of features specific for the pecking of one

image, and absence of the features of the other image in the intersection area indicates that the former was superimposed on the latter.

This approach is based on classical principles of trace analysis of petroglyphs made in the pecking technique (Girya, Devlet E.G., 2010, 2012). Three-dimensional high-resolution visualization at the macro level serves as an auxiliary tool for objectifying observations made during the traceological study. Pecking traces were reconstructed using cloud photogrammetry. For obtaining high-precision 3D models (over one million points per 3–5 cm^2), a full-matrix Nikon D750 camera with an AF-S MICRO Nikkor 62 mm macro lens and a ring flash providing uniform maximum illumination of the item, was used.

Pecking features in plan view were analyzed using a portable microscope with 20× magnification (Nikon 11470 NS). For obtaining data on pecking features in profile view, 3D models of zones relevant in terms of their trace evidence, were analyzed. For analyzing metric parameters of indentations in plan and profile view, as well as the morphological features of pecking traces (based on 3D models), various analytical tools, such as MeshLab, Blender, and Geomagic Studio, were used.

A Nikon D750 camera with various lenses (AF-S Nikkor 14-24 mm, AF-S MICRO Nikkor 105 mm, AF-S MICRO Nikkor 62 mm) was used for recording rock images at various scales (from the general view of the surface to details of the petroglyphs of 1 cm or less in size). Macro photography was carried out using a Canon EOS D1000 camera with a Canon EF-S 60 mm f/2.8 Macro USM lens with macro extension tube, tripod, and macro rails.

For summarizing the data obtained, the palimpsest was drawn (in the field) using a microscope (Nikon NS 111470, 20×), which captured the topography of the traces forming the images. Later, this drawing was corrected and supplemented on the basis of orthophotography from the 3D model of the surface. Such documentation has made it possible to obtain not only the stratigraphy of individual areas with relevant trace evidence, but to represent the entire picture.

Palimpsest analysis

For testing the proposed approach, one of the most interesting palimpsests was chosen. It includes three stylistically very expressive images (Fig. 1), and is located on plane No. 22 of section 4 (Uchetnaya karta…, 2010: Pl. 128, *1*, 129, *1*) (or on stone No. 14 after (Pyatkin, Martynov, 1985: 30, fig. 29)) of the Shalabolino rock art site, located in the Kuraginsky District of the Krasnoyarsk Territory, 0.6 km southeast of the village of Ilyinka, on the right bank of the Tuba River (tributary of the Yenisei), opposite the village of Tes (Vyatkina, 1949; Pyatkin, Martynov, 1985; Uchetnaya karta…, 2010: 2, pl. 1–2). Strictly speaking, this palimpsest consists of eight pecked petroglyphs. However, only three images (the bear, bull, and elk) have intersection points (Fig. 1, 2). The remaining petroglyphs are peripheral, since each of them contacts only one of these three.

This multilayered composition has been repeatedly copied by contact and contact-free methods, has been

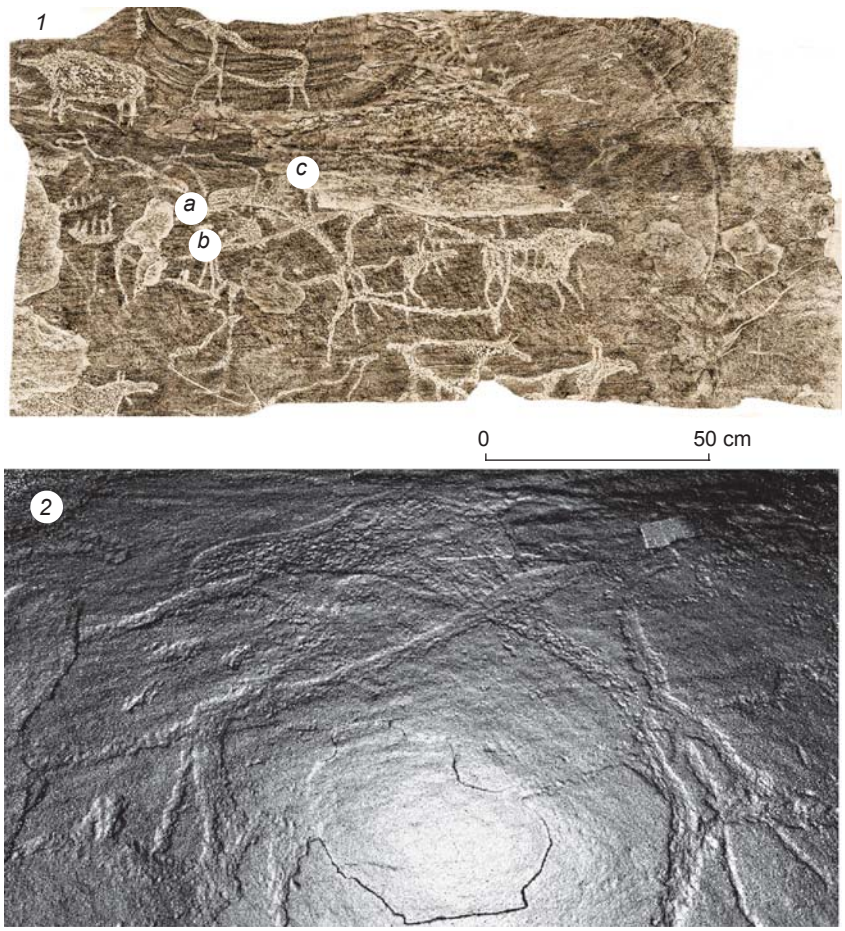

Fig. 1. Surface with the palimpsest.
1 – copy of rock images on mica-coated paper (Collection of the Museum of Archaeology, Ethnography, and Ecology of Siberia at the Kemerovo State University, No. 38/14; author V.F. Kapelko); *2* – fragment of the 3D model of the surface with the palimpsest.
a – representation of the bear, *b* – bull, *c* – elk.

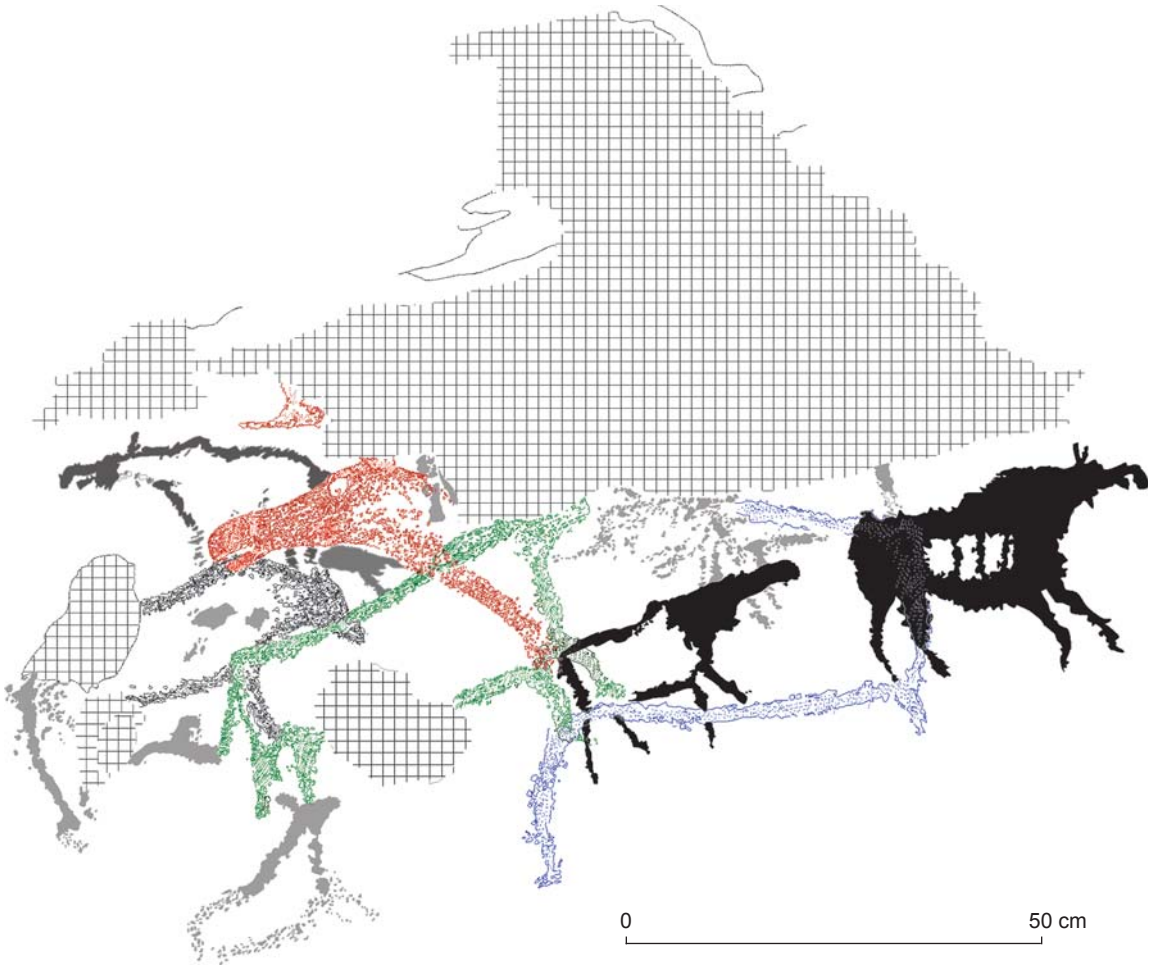

Fig. 2. Tracing of the palimpsest made with a microscope (20× magnification) and supplemented by orthophotography from the 3D model of the surface.

studied by various scholars, and has been described in the literature (Pyatkin, Martynov, 1985: 160, pl. 14, *8*; 178, pl. 32, *3*). B.N. Pyatkin and A.I. Martynov described the following stratigraphic sequence of this palimpsest, "…part of the muzzle and its front legs [the bear's – *L.Z.*] overlap the image of the bull, made in outline, with the head to the right" (Ibid.: 31). However, it can be seen on the drawing (Ibid.: 178, pl. 32, *3*) that the image of the bull overlaps the remaining images, and rather the image of the bear is the earliest.

The surface with our multilayered composition is located more than 2 m above the level of the present ground surface. Therefore, for studying the palimpsest during the field seasons of 2017 and 2018, special scaffolding was made and dismantled each time after completion of the work, in order to restrict tourists' access. This unique composition is in a deplorable state of preservation: upon tapping, peeling of the rock crust is observed virtually over the entire plane. Extensive losses of rock crust are also visible, including losses on the palimpsest, which include the end of the bear's torso, belly, and partly the head of the bull, horns and partly the back of the elk (Fig. 2).

Traceological analysis of petroglyphs on the palimpsest has shown the following results. The image of the bear can be divided into dense superficial (head contour), and deeper (torso contour) pecking areas, and more sparse (filling of the head) pecking areas (Fig. 3, *1*). The first area is distinguished by very shallow traces of small depth, very rarely legible; the outer contour is very even, but some traces of dents are visible, since the surface was not polished (Fig. 3, *a*, *b*). There was light direct pecking in the filling area, and indirect pecking along the contour. It is not possible to establish the material of the tool because of the pecking density. In the second area, the pecking is less dense, becoming sharply more prominent around the center of the head. The dents are fairly legible, deeper, approximately of the same sizes in plan, from sub-triangular and sub-round to wavy shapes. Chains of tightly adjacent dents are visible (Fig. 3, *c*). The lines are

quite wide (in some areas, over 1 cm); along the contour, there are many traces protruding beyond it. This makes it possible to conclude that pecking was done directly with a stone tool. Stylistically, this image looks quite uniform, so it is doubtful that the bear's head and torso could have been made at different times. Different pecking in these two areas could have resulted from the use of different techniques rather than different tools.

The image of the bull (Fig. 4, *1*) reveals a fairly homogeneous pecking, with marks typical of a stone tool, including pronounced traces of oblong shape with torn jagged edges (Fig. 4, *b*, *c*). In some areas (for example, the hind legs and tail), the dents are especially large; they have rough outlines, sub-triangular shapes or shapes similar to sub-triangular in plan (Fig. 4, *d*). The lines are very wide; sometimes they consist of two parallel pecked lines (the back and hump). Their boundaries are in most cases irregular; many individual dents protrude beyond them, especially along the internal contour. Despite greater density, pecking is deeper as compared to the image of the bear. Apparently, the figure of the bull was made in the technique of direct pecking with a stone tool. Traces of polishing (linear smoothness) over the pecked relief are very pronounced on the back of the animal (Fig. 4, *a*). Because of this, some features of the pecking are illegible, although the traces of the pecking are still clearly visible on the periphery. The contour of the lower lip and outer contour of the hump and beginning of the bull's back are absolutely even. Polishing must have been intended precisely for smoothing the boundaries of pecking.

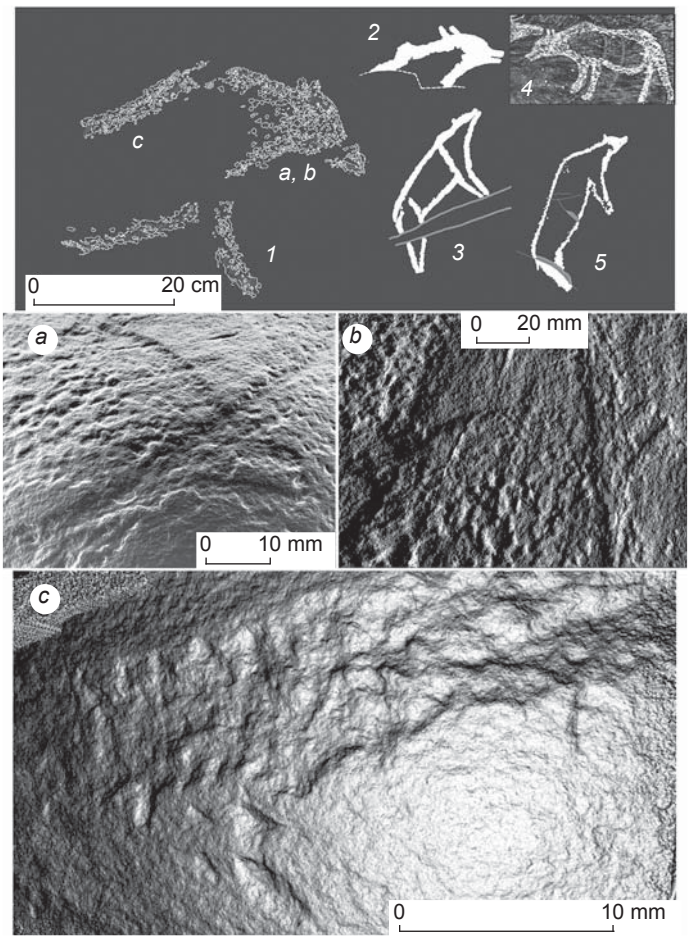

Fig. 3. Bear representation.
1 – tracing of the image and fragments of the 3D model: *a*, *b* – the bear's head, *c* – back; *2–5* – parallels: 2, *4* – Shalabolino; *3* – Tepsey I; *5* – Oglakhty VI (after (Zotkina, Miklashevich, 2016)).

The representation of the elk was made in a distinctive technological manner (Fig. 5). Relief along the contour of the muzzle was heavily evened up owing to high pecking density; there were no dents protruding beyond the contour (Fig. 5, *g*). The treatment of the horns is identical to the execution manner of the head and eye (Fig. 5, *c*, *d*). The external boundary of pecking looks very clear, and this is why the traces are not always very legible. The inner filling is more sparse, especially in the area of the neck (Fig. 5, *a*, *b*). This makes it possible to reconstruct the strategy behind the execution of the representation: dents of indirect pecking were made in parallel rows along the contour, especially the external contour, because the traces are arranged in even chains virtually without deviations; they are of equal size and approximately the same offset (Fig. 5, *a*, *b*, *g*). Almost every dent is legible. Along the internal contour, they are located less evenly (Fig. 5, *a*). This was possibly how the artist outlined the future boundaries of denser pecking. The outlines of the image were first indicated by wide lines made with indirect pecking and then treated with direct pecking. The shapes of dents in the area of sparse filling range from oblong and sub-triangular to sub-circular and sub-square (Fig. 5). In the area of the muzzle they are larger than in the area of the neck. Very distinctive torn and wavy edges of pecking dents and amorphous contours occur (Fig. 5, *c*, *d*, *g*). The inconsistent features indicate the use of a stone tool possibly rejuvenated several times, or even different tools.

Such distinctive dents do not extend beyond the neck. The contours that can be considered to represent the body of the elk are very different from the head and neck in terms of techniques and trace features. The dents are very large, of stable shape in almost all areas, very deep (much deeper than those which form the image of the head and neck), rounded or teardrop-shaped, with smooth edges (see Fig. 5, *e*, *f*), which indicates the possible use of a massive metal tool. At the same time, a large number of dents protrude beyond the outline of pecking making the outline not smooth, which is completely unlike the

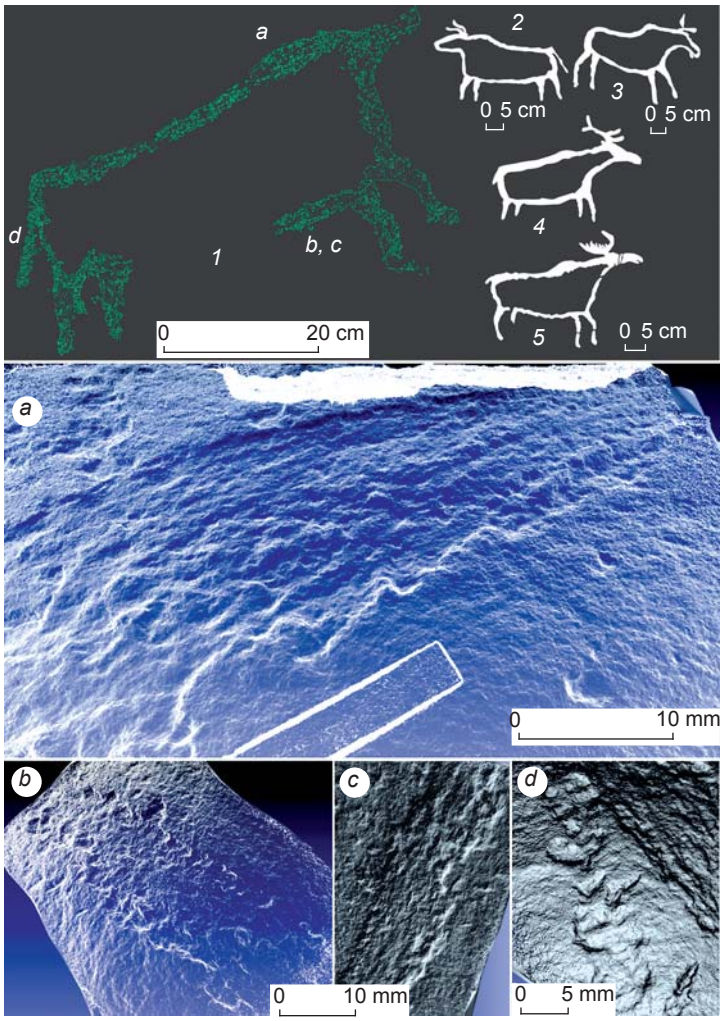

Fig. 4. Bull representation.
1 – tracing of the image and fragments of the 3D model: *a* – back and hump of the bull, *b*, *c* – belly, *d* – tail; *2–5* – parallels, Shalabolino rock art site (after (Pyatkin, Martynov, 1985)).

previous area. Traces are legible only in the area of the front leg; lines of the torso are heavily damaged by peeling; the features of dents can be observed only along the contours of pecking, and the lines inside look like deep, weathered grooves. Nevertheless, it is obvious that the nature of pecking over the entire body is the same as in the area of the front leg.

Judging by the pronounced differences, it can be assumed that initially the image of the elk was partially done, and the contours of its body were added later. This is suggested by much rougher marks, generally less careful pecking, and completely different style. It is unlikely that the torso was created earlier, with the image of the elk's head added to it.

It can be seen from the above descriptions that the technological aspects of all three images are different, sometimes even within the same figure. Such diversity suggests that specific features could be established at the intersections of the petroglyphs of the palimpsest. Five intersection points were selected: the front paw of the bear and rump of the bull (Fig. 6, *a*, *b*); the muzzle of the bear and back of the bull (Fig. 3, *a*, *b*); the hump of the bear and muzzle of the elk (Fig. 6, *c*, *d*); the back of the bull and neck of the elk (Fig. 6, *e*, *f*); and the beginning of the bull's front legs and end of the elk's neck (Fig. 6, *g*, *h*).

It is difficult to analyze the first area (the front paw of the bear and rump of the bull) because of great similarity in trace features belonging to both images. Nevertheless, the 3D model clearly shows that small traces and dense filling, which are more typical of the pecking on the bull's rump rather than on the bear's front paw, can be found in the intersection zone (see Fig. 6, *a*, *b*). In the second area (the muzzle of the bear and back of the bull), the following features were observed. As mentioned above, the depth of pecking on the representation of bear was generally smaller than in the lines forming the bull's figure. In the area of intersection, the pecking was deeper as compared to the image of the bear. The line of the back of the bull was polished, and at the intersection, linear smoothing of the pecking relief is observed, which is oriented perpendicular to the bear's muzzle and parallel to the contour of the bull's back (see Fig. 3, *a*, *b*). Thus, these two zones indicate that the image of the bear was earlier.

Clear boundaries of the pecked surface are visible in the next area (the hump of the bear and muzzle of the elk). Dense pecking that forms the lips of the elk is located within the line of the bear's hump and is deeper than the surrounding relief. The nature of traces in the intersection zone (leveled relief and small overlapping dents) is absolutely identical to that on the entire surface inside the contour of the elk's muzzle. Sparser pecking with legible traces of a stone tool, forming the bear's hump in this case acts as a "background" (see Fig. 6, *c*, *d*). Thus, the representation of the elk, like that of the bull, is later than the figure of the bear.

In the fourth area (the back of the bull and the beginning of the elk's neck), the following features have been observed. At the upper boundary of the line of the back, where the relief was leveled by polishing, an accumulation of traces typical of the representation of the elk have been found; these traces were not smoothed (see Fig. 6, *e*, *f*). Even assuming that abrasive treatment was a later addition, pecking dents relating to the figure of the elk still cover the relief smoothed by polishing. This means that the image of bull was created before

the image of elk. The area of intersection between the front legs and sparse pecking at the end of the elk's neck show no traces of polishing; several expressive individual dents are observed, which are deeper and more rounded in profile view than the traces of dense pecking that form the outline of the bull (see Fig. 6, *g*, *h*).

The analysis has shown that the image of the bear was superimposed on the image of the bull, and they were created earlier than the image of the elk, whose torso was an even later addition.

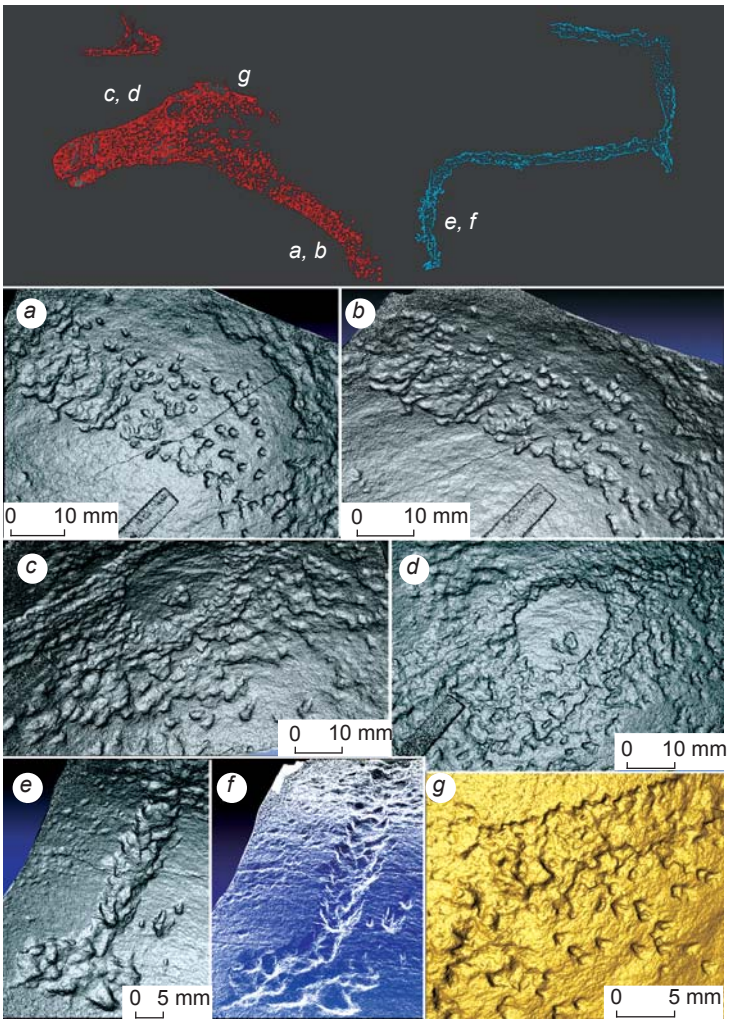

Fig. 5. Tracing of the elk representation (head and torso separately) and fragments of the 3D model.
a, *b* – neck; *c*, *d* – eye; *e*, *f* – front leg; *g* – outline of the muzzle.

Discussion

Stylistic attribution of the constituent images plays a crucial role in the analysis of palimpsests similar to the one described above. Even the proof of a certain stratigraphic sequence is not the endpoint in the establishment of chronology. In the composition under discussion, consisting of three figures, the representation of the bear shows the most distinctive stylistic features (see Fig. 3, *1*), including a head with small ears and elongated muzzle, an oblong body in a certain position, and a specific position of the front paws. Such features are typical of the Minusinsk style (Podolsky, 1973) (see Fig. 3, *2–5*). This stylistic tradition does not have any exact chronological framework. Some scholars attribute it to the Afanasievo period (Esin, 2010), others to the Neolithic. Even the possibility of its earlier dating cannot be excluded (Sher, 1980: 190). However, most scholars agree to a relatively early age of this style, closer to the Neolithic (Sovetova, Miklashevich, 1999: 47–74).

The image of the bull (see Fig. 4, *1*) also reveals very specific features: with a generally static posture of the animal, its legs are shown in perspective, in a special manner typical of the Angara style and the transitional forms between the Angara and Minusinsk traditions (Podolsky, 1973: 271, fig. 6). The image is oriented to the right, slightly upward and diagonally (Fig. 4, *2–5*). The head of the bull is preserved only partially, which does not make it possible to fully analyze the style. The presence of polishing, which overlaps pecking, is a fairly common feature of the Angara-style petroglyphs. However, owing to the significant expanding of the body of sources, the ideas about the boundaries of the Angara and Minusinsk stylistic traditions have become ambiguous in recent years. Our image of the bull can be considered a transitional form. Notably, this issue requires further special study.

The image of the elk in our multilayered composition deserves special attention. From the preserved fragment of the horn, it can be assumed that precisely this animal was represented (see Fig. 5, *1*). This petroglyph has a number of stylistic features typical of the Angara tradition (Okladnikov, 1966; Podolsky, 1973: 269; Ponomareva, 2016). Thus, the details of the head (lips, highlighted by the counter-relief of the eye) are typical of this style (Fig. 7). The combination of methods for producing the contour and coarser and parser filling creates the effect of "low relief" (Okladnikov, 1966: 112–113), which is also typical of the Angara representations of elk. However, the torso and legs belonging to this figure not only show completely different technological features, but also stylistically differ from the head and neck. Indeed, the Angara style is distinguished by its dynamics; the legs are usually rendered in perspective, and the torso looks more lean (Fig. 7). In our case, the figure is in static posture; two legs are shown, and not four; the

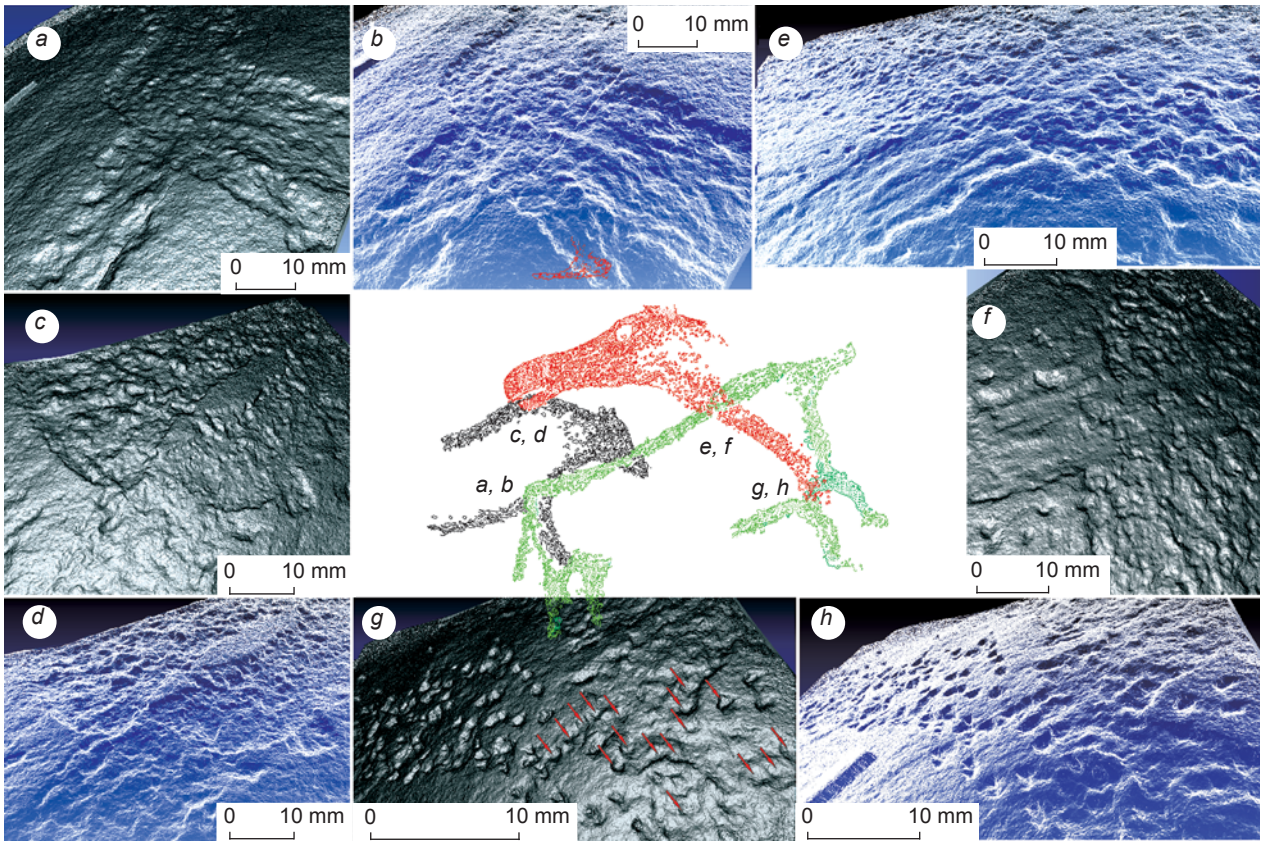

Fig. 6. Tracing of the multilayered composition of three images and fragments of the 3D model (areas of intersection between the images):
a, *b* – intersection between the bear's belly and front paw, and the bull's rump; *c*, *d* – intersection between the bear's back and elk's muzzle; *e*, *f* – intersection between the polished line of the bull's back and elk's neck; *g*, *h* – intersection of the base of the bull's front legs and end of the elk's neck.

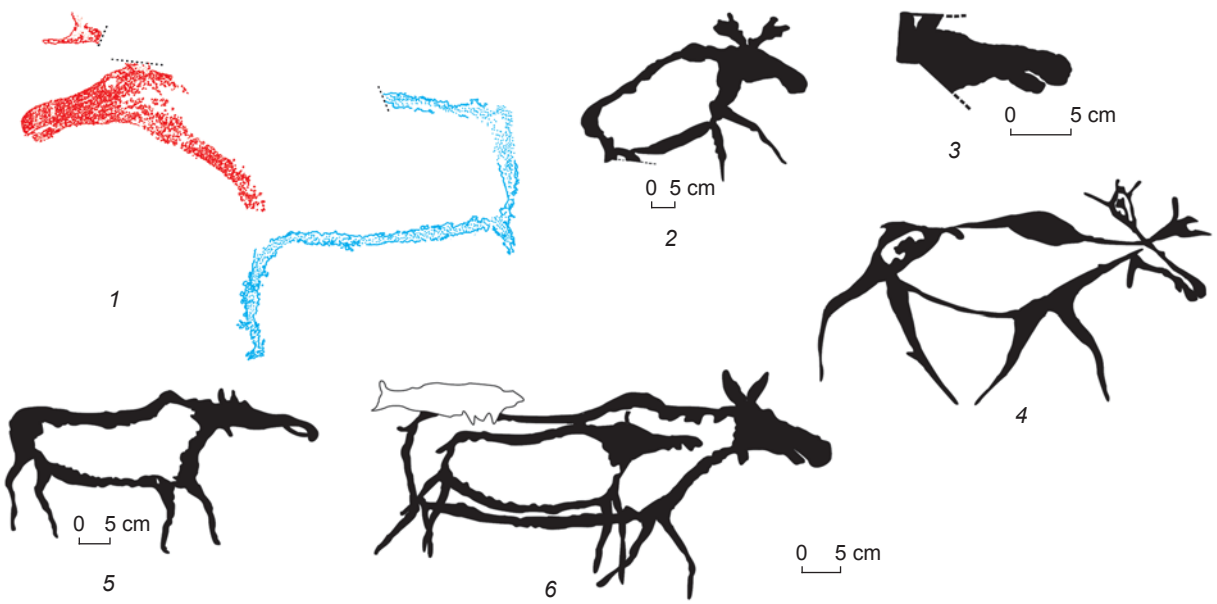

Fig. 7. Elk representation.
1 – tracing of the image; *2–6* – parallels, Shalabolino rock art site (after (Pyatkin, Martynov, 1985)).

body is quite bulky. Thus, these two elements (head-neck and torso-legs), which at first glance seem to belong to a single image, are either asynchronical, or were definitely made by different people.

Conclusions

Comparison of the data obtained from the traceological analysis of the palimpsest and its stylistic parallels suggests the following chronology of this multilayered composition. The very first image was the representation of the bear, which belongs to the Minusinsk style, presumably of the Neolithic. Further, it was covered over by the figure of the bull, which could have occurred in the same period or several millennia later, since the image can be attributed to both Minusinsk and Angara traditions, that is, probably, to the final Neolithic or the Early Bronze Age. The endpoint in the stratigraphy of this palimpsest was the figure of the elk (head, neck, and horn), made in the Angara style. It is curious that the image of the elk in completely canonical Angara style covers the transitional Angara-Minusinsk image of the bull. This can serve as an additional argument in favor of the hypothesis about the coexistence of these traditions on the territory of the Minusinsk Depression.

It has been established that all three petroglyphs were made with stone tools, although the techniques, intensity, and depth of pecking are different. In addition, the last image was complemented later, and obviously not by its original author, as evidenced not only by its stylistic, but also technological features shown by the outline of the body of the animal.

Since the complex palimpsest under study includes several more images, which require special research, the question of its stratigraphy should not be considered settled. This is the task of further research and the subject of future discussions.

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The Use of Remote Sensing, Geophysical Methods and Soil Analysis in the Study of Sites Disturbed by Agricultural Activity

This study is based on an interdisciplinary approach to the prospection of archaeological sites impacted by modern agricultural plowing activity. We applied remote sensing, combined with geophysical, geochemical, and archaeological methods at Kushmanskoye III—a medieval Finno-Ugric site in the Cheptsa River basin, northern Udmurtia (9th–13th centuries AD). As a result of many years of plowing, the site cannot be visually demarcated, and visual traces of its extent have been obliterated. Scientific methods included aerial photography from unmanned vehicles (visual range, thermal, and multispectral imaging), geophysical techniques (resistivity and magnetometry surveys, ground penetrating radar, and electrical resistivity tomography), and soil studies (grain size composition, micromorphology, and chemical and biological analyses of soil cores). As a result, we effectively traced the boundaries of the site and of its "household periphery", delineating areas with various degrees of disruption. Our research identified two lines of defensive constructions, previously invisible on the surface. Our findings have enabled us to initiate revision of the site's status in the register of state-protected archaeological resources. The location of geophysical anomalies, caused by buried features, reveals a regularized row layout to the site. The results are supported by those of archaeological surveys.

Keywords: *Medieval sites, agricultural damage, boundaries, layout, aerial photography, geophysics, geochemistry.*

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Introduction

Intensive farming in the second half of the 20th century resulted in destruction of large number of archaeological sites across contemporary Russia. Plowing flattens terrain features of settlements (ramparts, ditches, foundation pits, etc.), intensifies erosional processes, and contributes to displacement and eventual obliteration of cultural layers. Such destruction commonly impacts medieval sites of the Polom (late 5th to early 9th centuries) and Cheptsa (late 9th to early 13th centuries) cultures located in the Cheptsa River basin in western Russia, where more than one hundred such sites exists (Ivanov et al., 2004: 53–55). Research in the region has shown that settlements destroyed by plowing can be subdivided into several zones: those with a superficially disrupted cultural layer, whose lower part is preserved in situ; those where cultural layer has been completely replaced so that only bottom parts of structures are preserved, partly overlaid by a thin cultural lens; and those of the "household periphery", where neither cultural layer nor structures are visible, but the plow layer and the one underlying it nonetheless contain artifacts. Two first zones delimit the area of settlement, while the adjoining "household periphery" marks the boundaries of the archaeological site in terms of historical and cultural heritage preservation. Interdisciplinary studies of Kushmanskoye III—a medieval Finno-Ugric settlement in the Yarsky District, Udmurt Republic, shows the successful application of this scheme in tracing settlement location in agricultural zones.

Preliminary archaeological investigations

Kushmanskoye III was discovered by G.T. Kondratiyeva in 1959 (Ibid.: 202–203). The absence of terrain features, and its proximity to a large medieval fortified settlement at Uchkakar suggested that the site was an unfortified village. In 2012, a test pit measuring 1 × 1 m was made in the site's center (Fig. 1). The pit revealed a cultural layer up to 0.7 m thick, containing artifacts of the 9th–12th centuries AD. Its upper portion was destroyed by many years of plowing, while its lower part remained intact (Kirillov, 2013: 45–47, fig. 88–96). This settlement was attributed to the Kushmanskoye complex of sites, which includes the fortified settlement of Uchkakar, three unfortified settlements, and a burial ground (Ivanova, Kirillov, 2012). On the basis of landscape features, the spatial extent of the site was tentatively assessed (Fig. 1).

Aerial photography from unmanned vehicles

Remote sensing methods can significantly aid the search for archaeological sites (Borisov, Korobov, 2013: 52–58; Garbuzov, 2003; Zhukovsky, 2010). Under optimum flying altitude and weather conditions, unmanned aerial vehicles or drones allow task-oriented aerial photography of specific areas.

We conducted aerial photography to assess the Cheptsa culture area, totaling over 70 km^2, orthophotographic mapping, and digital modeling of landscape and relief using the MSK-18 coordinate system (Vorobieva, Zhurbin, Knyazeva, 2016). The orthophotomap was then correlated with data obtained through thermal and multispectral imaging.

Thermal imaging survey records land surface temperature distribution, which reflects the thickness of the overlying humic soil layer. To process the images we employed a Gaussian filter, piecewise linear transformation, background subtraction, and band-pass filtering (Fig. 2, *a*). Sections of the replaced cultural layer appear as high-contrast (light areas of the image) in the promontory part of the settlement, while remains of the superficially disrupted cultural layer are most visible in its central part (dark areas). Differences between these zones are otherwise untraceable in terms of surficial terrain or vegetation.

Multispectral imaging allows us to receive similar information on the basis of phyto-indication. We classified vegetation areas on the basis of Shannon-Kotelnikov wavelet data. Features were based on average values and standard deviations calculated from a 2D discrete wavelet-transformation (Nazmutdinova, Milich, 2016). Areas of the superficially disrupted cultural layer correspond to higher values of characteristic features, such as compact contours of images with local phyto-indication attributes (Fig. 2, *b*). Comparison with geophysical data corroborates this observation (Nazmutdinova, Milich, Zhurbin, 2017). We found good agreement between the results of thermal imaging survey and multispectral imaging with regard to location of thick areas of organic-rich soil.

Complex geophysical and soil studies

Aerial photography shows contrasting areas of a thick humic layer that could reflect either natural soil accumulation in negative relief forms or human activities (cultural layer). Pairing our analysis with geophysical methods decreases ambiguities in the interpretation of this aerial photographic

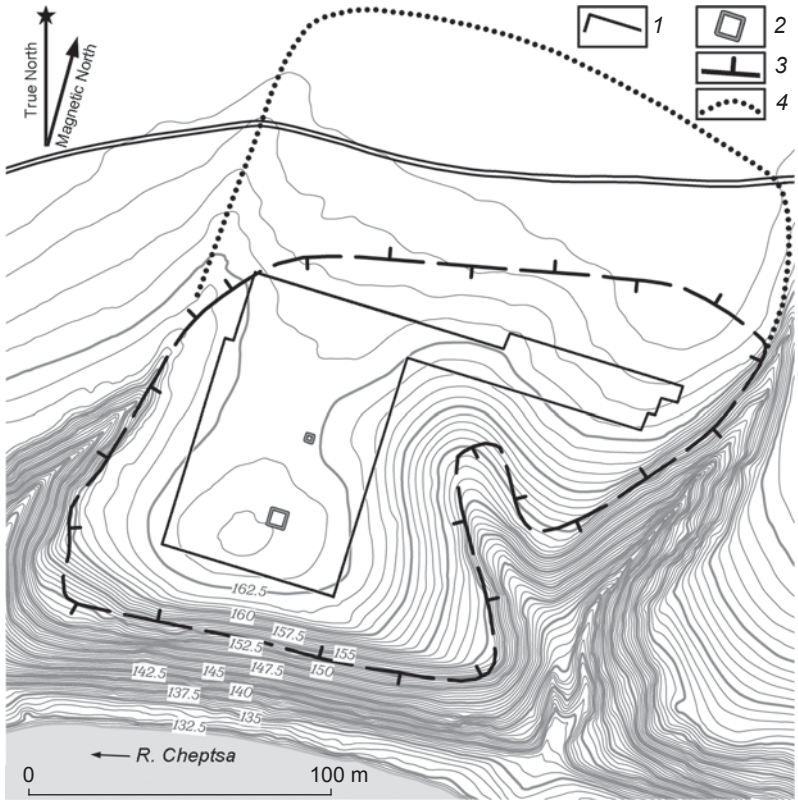

Fig. 1. Topographic plan of Kushmanskoye III (based on the plan by LTD "Finko", corrected and supplemented by R.P. Petrov). Contour interval is 0.5 m; the system of elevations is conventional.
1 – boundaries of the resistivity survey area; *2* – test pit and excavation; *3* – boundaries of the settlement after (Kirillov, 2013: Fig. 84); *4* – boundaries of the settlement according to the results of multimethodological investigations.

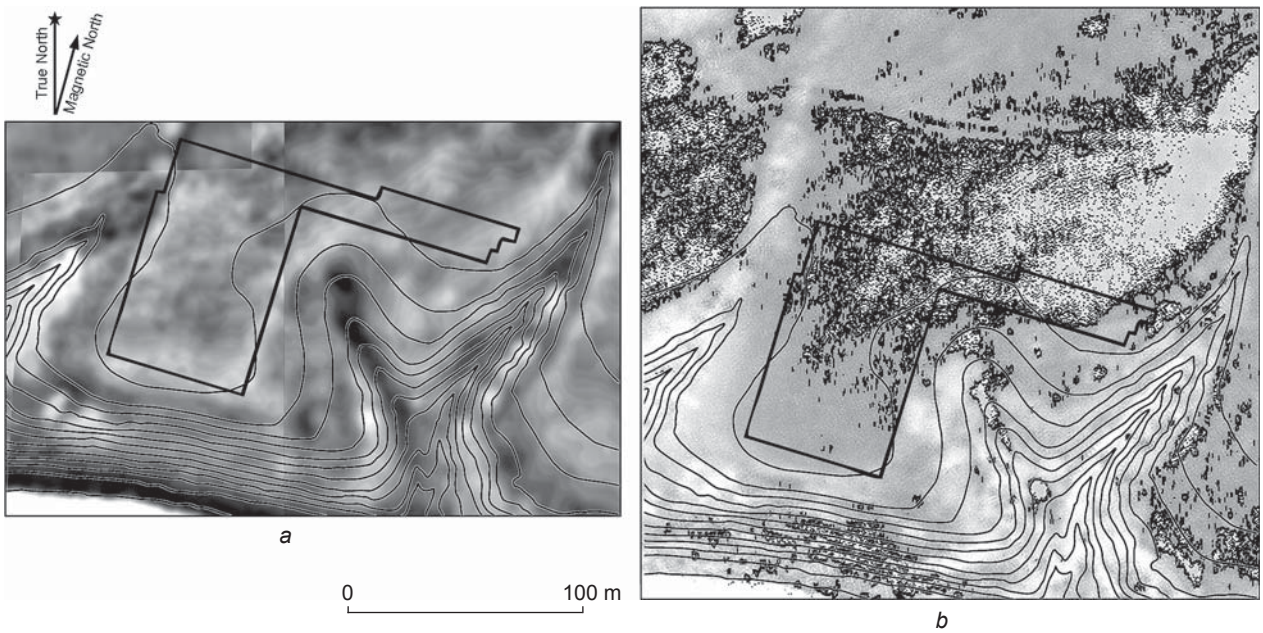

Fig. 2. Maps showing the thickness of humic layer according to thermal imaging survey (*a*), and areas with characteristic features according to multispectral imaging (*b*), with indicated area of resistivity survey.

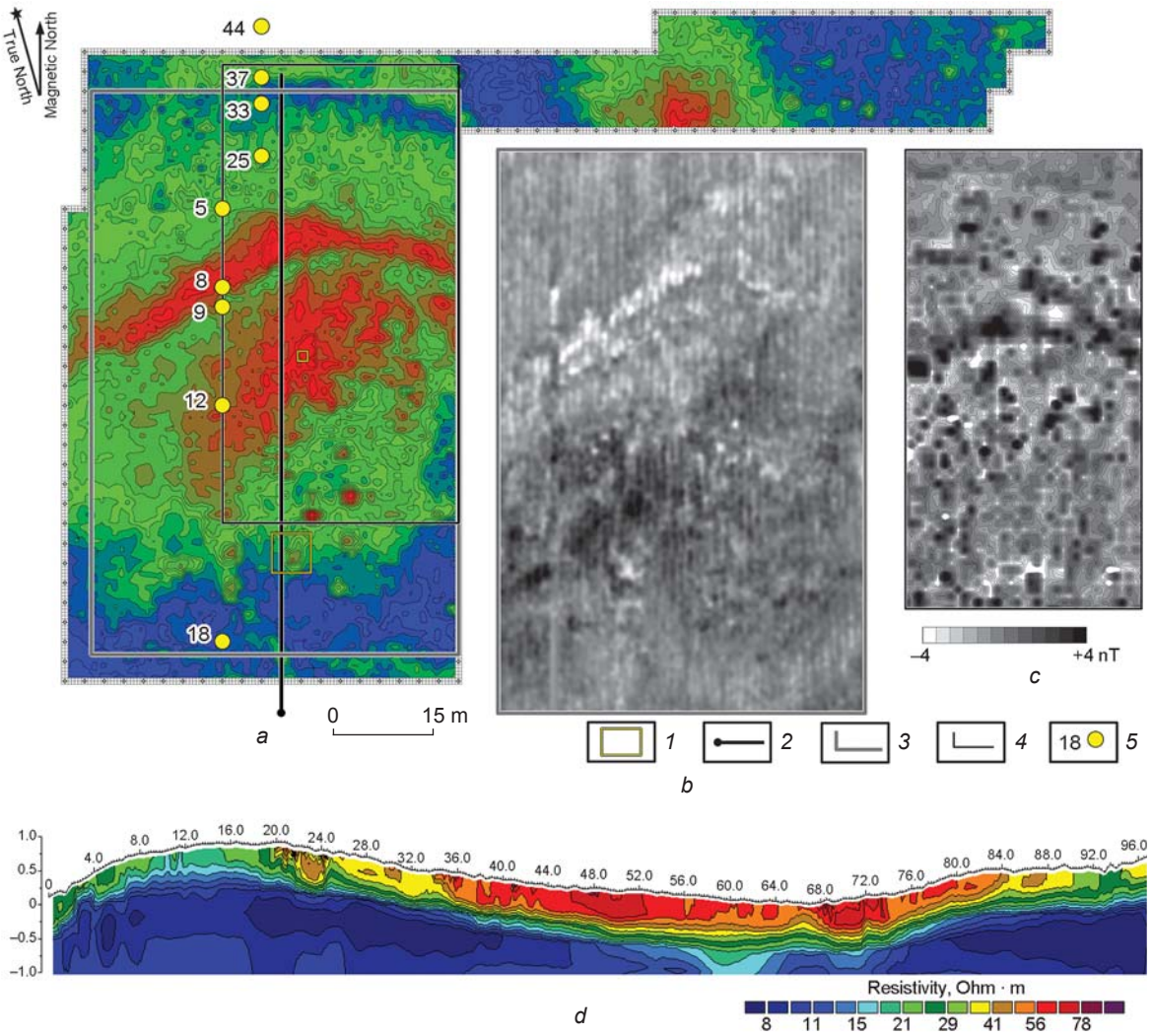

Fig. 3. Results of geophysical studies.
a – resistivity survey; *b* – ground penetrating radar (calculated depth, 0.77 m); *c* – magnetogram; *d* – geoelectric section.
1 – test pit and excavation; *2* – electrical resistivity tomography profile; *3* – boundary of the ground penetrating radar survey; *4* – boundary of the magnetometry survey; *5* – soil drilling.

data. Specifically, the integration of geophysical methods (resistivity and magnetometry surveys, ground penetrating radar, etc.) is often required when geological background is heterogeneous or noise/interference is high (Geophysical Survey…, 2008: 13–18; Lockyear, Shlasko, 2017; Mozzi et al., 2016). At Kushmanskoye III, we conducted geophysical investigations across the whole area suspected of yielding archaeological features*. On the basis of this work, we identified two lines of defensive constructions, previously invisible on the terrain surface, and assessed differences in the thickness of cultural deposits across the site.

Defensive constructions appear to delineate the boundary and physical structure of the settlement. Resistivity survey revealed a ditch serving as an inner fortification line, represented by an arc-shaped high resistivity zone traversing the site area from west to east (Fig. 3, *a*). Ground penetrating radar (Fig. 3, *b*) and magnetometry (Fig. 3, *c*) surveys, and electrical resistivity tomography (range of 68–74 m in Fig. 3, *d*) corroborated inferences of the presence of a ditch. Results of geophysical surveys agree with data obtained through soil analysis (Fig. 4,

*Resistivity survey was performed by the Udmurt Federal Research Center of the Ural Branch, Russian Academy of Sciences; magnetometry and ground penetrating radar surveys were conducted by the Laboratory of Archaeological Geophysics (Rostov-on-Don) and supervised by V.G. Bezdudny.

core 8)*. The ditch in the outer fortification line is less pronounced. It appears in the data as an arc-shaped high resistivity zone "connecting" mouths of ravines (Fig. 3, *a*; Fig. 4, core 37). Ramparts appear in the geophysical survey as elongated areas with rather stable physical parameters. The base of the inner rampart is located across the 64–68 m range, while that of the outer rampart is within 90–96 m (Fig. 3, *d*). Soil cores also corroborate the presence of the ramparts (see Fig. 4, cores 9 and 33).

The fortifications are thus located between ravines that delimit the territory of the settlement from west and east. Such an arrangement of fortifications is typical of fortified settlements associated with the Cheptsa culture and located on promontories. Characteristic features include the incorporation of natural landscape boundaries and the construction of fortifications on gradual slopes along the settlement's unprotected side (Ivanova, 1998: 214–225; Ivanova, Zhurbin, 2015). At present, fortifications of Kushmanskoye III appear to have been near-completely obliterated through plow activity.

Data obtained through geophysical, soil, and archaeological investigations made it possible to reconstruct the layout of the settlement (Fig. 5, *a*). Excavation in the zone of the replaced cultural layer (Fig. 3, *a*) revealed lower portions of three non-contemporaneous constructions (Ivanova, 2016: 51–63). The archaeological assemblage recovered from this area is typical of medieval Finno-Ugric sites of the early 2nd millennium AD.

Resistivity and ground penetrating radar surveys also clearly show areas of superficially disrupted and fully replaced cultural layers. The configuration of the high resistivity zones coincides almost perfectly with corresponding sectors in thermal and multispectral images (cf. Fig. 2 and 3, *a*). Data from electrical resistivity tomography also support these observations (Fig. 3, *d*), showing a thick and organic-rich layer at across the range 34–84 m. On this matter, geophysical data also agree with the results of soil drilling. The cultural layer is nearly absent in the highest elevation portion of the site, where a plowed layer overlies bedrock (see Fig. 4, core 18). Then follows a section of well-preserved cultural layer composed of gray loam with charcoal, fragments of burnt clay, and artifacts (see Fig. 4, core 12). The original test pit that confirmed the presence of the settlement is located within this deposit (see above). This deposit extends up to the inner fortification line. North of it,

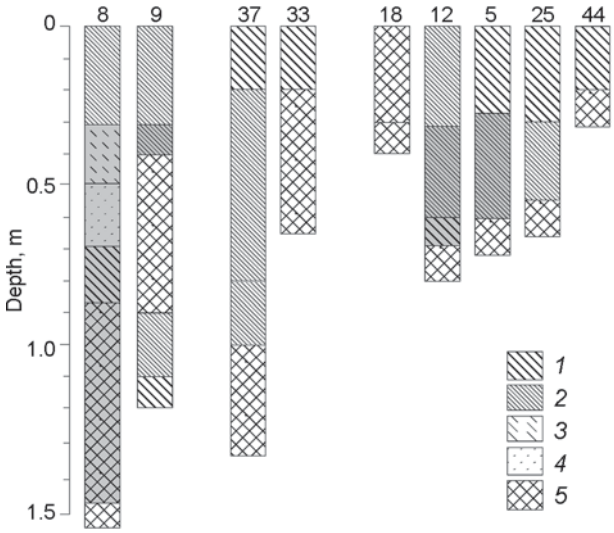

Fig. 4. Lithologic structure of the cores.
1 – heavy loam; *2* – light loam; *3* – sandy loam; *4* – sand; *5* – subsoil clay. Shading points to the presence of archaeological remains (ceramics, bones, etc.).

the thickness of the cultural layer diminishes to 0.3–0.4 m (see Fig. 4, core 5). However, magnetometry survey recorded several anomalies in this part of the settlement (Fig. 3, *c*). Presumably these are associated with traces of ground-based constructions annihilated by plowing. It is possible that the boundary between zones of the superficially disrupted and replaced cultural layer occurs near the location of this soil core, as no archaeological remains were found in cores taken in front of the inner fortification line (see Fig. 4, core 25). This pattern is also visible in the thermal image, but it is indistinct in the multispectral image and barely traceable in geophysical data. Outside the outer fortification line, the plowed layer overlies subsoil clay (see Fig. 4, core 44). Thus, the comparative analysis of several lines of parallel data demonstrates the presence of the cultural layers and helps to define their borders at the site.

Geochemical and microbiological studies

In order to assess the extent of the cultural layer outside the settlement, soil samples from plow and subplow horizons were taken every 10 m in catena across the site and adjacent areas (see Fig. 5, *b*). We estimated magnetic susceptibility, content of phosphates, and viable microbial biomass (Fig. 6). High concentration of phosphates serves as an integral indicator of anthropogenic impact, while magnetic susceptibility can reveal accumulations of pyrogenic matter in the

*Numeration of soil drilling units as in (Ivanova, 2016: Suppl. 3).

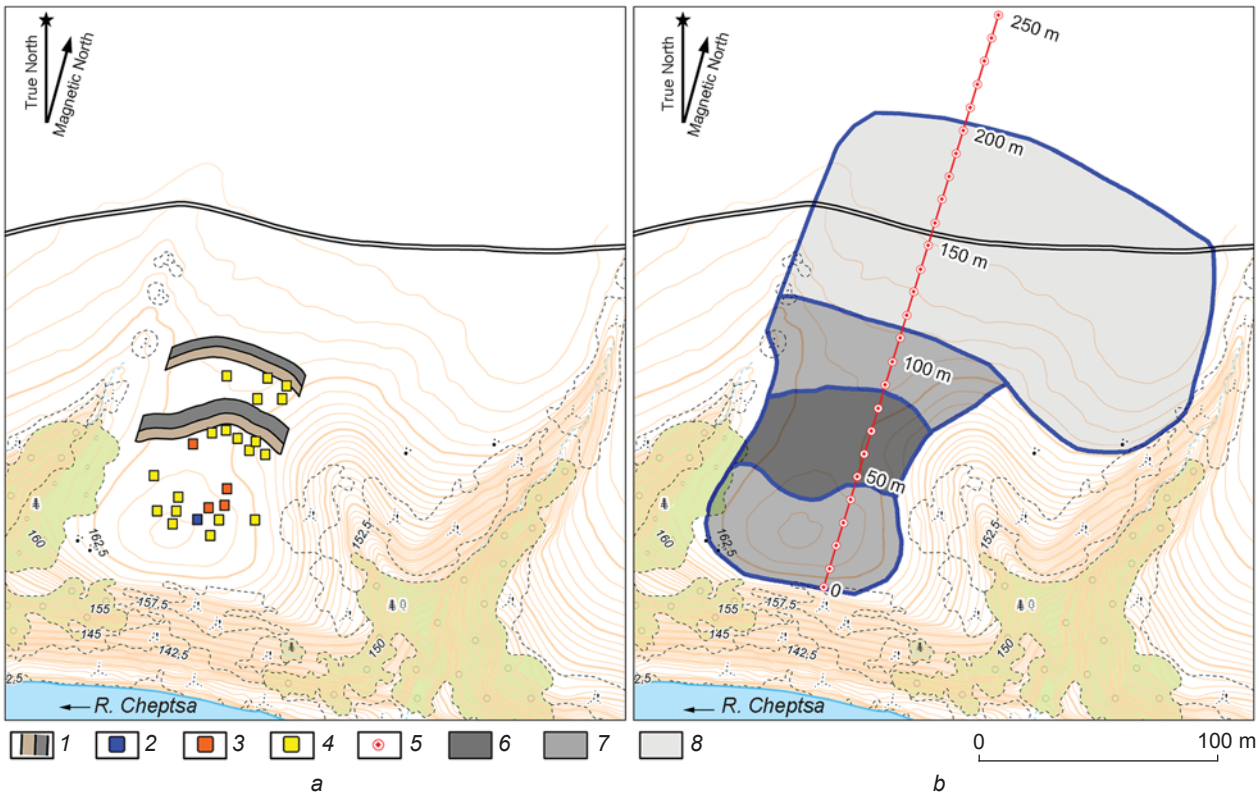

Fig. 5. Layout of the settlement (*a*), and areas with various degrees of disruption of the cultural layer (*b*), according to the data of interdisciplinary studies.
1 – defensive constructions; *2–4* – features revealed through geophysical investigations, including *2* – confirmed by excavations, *3* – confirmed by soil drilling; *5* – soil drilling; *6* – area of the superficially disrupted cultural layer; *7* – area of the fully replaced cultural layer; *8* – "household periphery".

soil. Finally, viable microbial biomass can point to the influx of anthropogenic organic substances into the soil. In our analysis, the content of phosphorus was determined by extraction of 2N HCl, while magnetic susceptibility was evaluated by means of kappameter KT-5, and viable microbial biomass was estimated using the substrate-induced respiration method (Anderson, Domsch, 1978).

The boundaries of the areas with high phosphate content in the plow layer correspond precisely to the boundaries of the settlement established by aerial and geophysical data. High phosphate content is also observed outside the outer fortification line. It is possible that during the Middle Ages, human activities proceeded far beyond the boundaries determined by fortifications (see Fig. 5, *a*) and landscape features (see Fig. 1).

Analysis of microbial biomass in the plow layer, particularly within the subplow layer, also led to the same conclusion. Areas with high biomass concentration were recorded outside the defensive constructions. High values of microbial biomass in the subplow layer in some units far from the site suggest an influx of large amounts of organic matters into the soil (Chernysheva et al., 2014).

A concomitant increase in the amount of phosphates and in magnetic susceptibility clearly points to the presence of the cultural layer and an anthropogenic soil change far from defensive constructions in the subplow layer across the 170–190 m range. In this lower, undisturbed area of the soil, it is likely that original anthropogenic soils are still preserved. We suggest to term this area "household periphery" of the settlement (see Fig. 5, *b*), and to attribute it to the object of historical and cultural heritage (see Fig. 1).

Significance of multimethodological investigations

Areas where the cultural layer is only superficially disrupted are best revealed by thermal and multispectral images (see *Table*). The "warmest" zones and areas displaying phyto-indication features with an

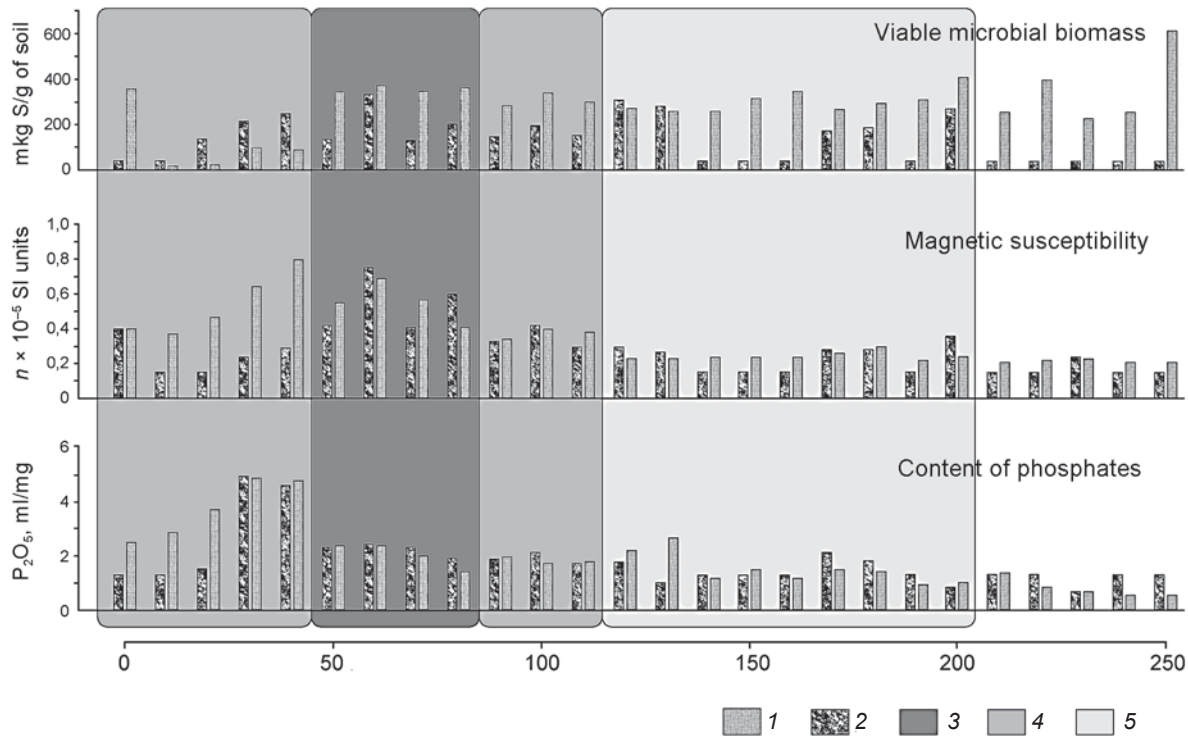

Fig. 6. Chemical and microbiological properties of the plow and subplow layers.
1 – plow layer; *2* – subplow layer; *3* – area of the superficially disrupted cultural layer; *4* – area of the replaced cultural layer; *5* – "household periphery".

The informative potential of various science-based methods for assessing the structure of archaeological sites

Methods	Zones		
	superficially disrupted cultural layer	replaced cultural layer	"household periphery"
Aerial photography in the visible range	±	±	–
Thermal imaging survey	+	+	±
Multispectral imaging	+	+	–
Resistivity survey	+	+	–
Magnetometry survey	+	+	±
Ground penetrating radar	+	±	–
Electrical resistivity tomography	+	+	–
Analyses of grain size distribution and morphological properties of soil	+	+	–
Geochemical and microbiological soil analyses	+	+	+

Note: "+" denotes a nearly universal efficiency; "±" efficiency in combination with other methods; "–" efficiency under certain conditions only.

inhomogeneous structure correspond to the thick organic-rich layer. This approach can distinguish clearly between zones of the superficially disrupted and fully replaced cultural layer, but fails to indicate the "household periphery" in a distinct way (see Fig. 2). The application of geophysical methods allows us to outline the region more accurately. A well-preserved cultural layer is traceable as a structurally heterogeneous zone with higher values of physical parameters (Fig. 3). Morphological and chemical

properties of soils in the zones of geophysical anomalies provide help to differentiate the contribution of the site layout from that of ground composition (Fig. 4), while electrical resistivity tomography reveals both physical parameters of archaeological features and the boundaries of superficially disrupted and replaced zones in the cultural layer (see Fig. 3, *d*). These data supplement significantly the information received before.

Data obtained through thermal imaging survey and multispectral imaging are also useful for identification of replaced areas in the cultural layer. The "coldest" zones and areas showing no distinct local phyto-indication properties correspond to areas of thin organic cover. Using contrast changes in these thermal and multispectral images, the boundary between superficially disrupted and replaced zones of the cultural layer in the promontory part of the settlement can be accurately defined (Fig. 2). Resistivity and magnetometry surveys show this boundary as a field with a relatively uniform structure, while local anomalies are associated with layout features (see Fig. 3, *a*, *c*). Electrical resistivity tomography (Fig. 3, *d*) combined with soil analyses (Fig. 4) makes it possible to determine the source of geophysical anomaly (properties of parental rocks or anthropogenic impact) and enables us to assess the preservation of cultural horizons.

The "household periphery" can be reliably identified only with the aid of geochemical methods and microbiological soil analysis (see Fig. 5, *b*; 6). However, an indirect indicator of such an area may be heterogeneous patterning on the thermal image, correlating with irregular geophysical anomalies, which together indicate accumulations of pyrogenically transformed soil and subsoil, caused by plowing and erosion.

Conclusions

Comparative analysis of data received through aerial photography, geophysical studies, soil analysis (grain size distribution, morphological, geochemical, and microbiological properties of soils), and archaeological excavations, enable us to establish the layout of Kushmanskoye III. We successfully delineated areas with various degrees of disruption of the original cultural deposit, documenting the site's broader extent for the purposes of historical and cultural heritage preservation. In sites that have been significantly disturbed through agricultural activity, individual methods are only indirectly informative with regard to the preservation and structure of the cultural layer. The collation of various data makes the information about the archaeological sites more and more accurate, and the reconstruction thereby becomes more and more reliable.

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Miklouho-Maclay's Legacy in Russian- and English-Language Academic Research, 1992–2017

This article provides an overview of recent research dedicated to the legacy of the Russian scientist and traveler Nikolai Miklouho-Maclay. The first part deals with the so-called "classic" approach of the second half of the 20th century, which tended towards a mythologized and idealized portrait of Miklouho-Maclay, as evidenced by the publications of D.D. Tumarkin and the second edition of the Complete Works of N.N. Miklouho-Maclay, published in the 1990s. The second part addresses articles published during the 1990s and 2000s that have sought to "demythologize" and reevaluate standard perspectives on Miklouho-Maclay. Some authors, rather than overestimating his achievements, tend to understate the impact of his work. The third part deals with English-language articles about Miklouho-Maclay's legacy. These are mostly translations of Miklouho-Maclay's archival texts from Russian, with scholarly commentary. However, an ongoing Australian research project conducted by Chris Ballard and Elena Govor has begun a sustained program of fieldwork with descendants of the Melanesian source communities with which Miklouho-Maclay worked, seeking new insights into his texts and especially his drawings as a form of dialogic approach to culture. We propose to study Miklouho-Maclay's legacy using modern approaches to anthropological theory. This will hopefully result in a unified image of the scientist, rather than separate images of an anthropologist, an artist, a humanist, etc. Also, the use of Miklouho-Maclay's drawings, in addition to his texts, will be an important step toward a dialogic study of Oceanic cultures.

Keywords: *Miklouho-Maclay, mythology, ethnology, dialogic studies, Soviet ethnography.*

Introduction

Nikolai Miklouho-Maclay can be considered with some justification to have been a champion of the Papuans, the first resident researcher of New Guinea, an outstanding ethnographer, anthropologist, and explorer. In Soviet scientific circles, a specific cult of this scholar was formed. He was thought to be a pioneer globally of ethnographic science, having conducted field studies in Melanesia 50 years before B. Malinowski. The name of Nikolai Miklouho-Maclay is given to the Institute of Ethnology and Anthropology of the Russian Academy

of Sciences, and also to one of the most honored scholarly awards in the field of ethnography. The study of Miklouho-Maclay's legacy emerged as a special research area—"Maclay studies", involving reputable scientists such as N.A. Butinov, B.A. Valskaya, A.Y. Massov, B.N. Putilov, E.V. Revunenkova, and D.D. Tumarkin.

This article is devoted to historiographical analysis of the relevant publications that have appeared over the 25-year period from 1992 to 2017, building on a titanic archival-heuristic textual research work: the first edition of Miklouho-Maclay's collected edition, which was released in 1950–1954, in what was apparently the "golden age" of Maclay studies. After the collapse of the USSR, Soviet mythologization of Miklouho-Maclay began to weaken, and a large number of more critical articles were published. At the same time, new myths began to be constructed; in particular, there appeared articles about his sexual relationships with inhabitants of the South Seas. Currently, interest in the "Maclay theme" in the Russian academic community is decreasing. Notably however, interest is arising among Australian researchers.

The aim of this study is to offer a critical assessment of the scholarly and non-scholarly literature on Miklouho-Maclay produced over the period in question in the Russian and English languages. Of special interest is a comparison of the differing approaches of Russian and Australian researchers to this topic. In terms of studying the legacy of Miklouho-Maclay, the "Russian-language" and "English-language" traditions are approximately equal as regards the number of publications and the available body of research literature. This situation seems to be uncommon for other branches of ethnographic (anthropological) knowledge. The present paper was prepared by an international team of researchers from Moscow and Canberra, with the goal of identifying the strengths of both approaches, and proposing future research directions.

Traditional approaches in Russia to Miklouho-Maclay's legacy

Publication in six volumes of the second edition of the complete works of Miklouho-Maclay, which was undertaken from 1990 to 1999, became the most significant event in the field of studying the scientist's legacy. D.D. Tumarkin, who headed the team, together with B.N. Putilov, N.A. Butinov, M.A. Chlenov, I.M. Zolotareva, I.M. Meliksetova and V.I. Belikov from Russia, H. Merkel from Germany, and R. Maclay, L. Bushell, and T. Flannery from Australia participated in its preparation. The six-volume edition includes earlier unpublished texts, with field notes and more than 200 new drawings. A number of dates significant for the understanding of the scientist's life journey were refined. The compilers conducted a very important textual work: later alterations were removed from the earlier published texts; in case where different editions of the same articles existed, the main text was revealed, and meaningful discrepancies were given in footnotes; all studies were accompanied by detailed commentary. The first and second volumes include materials from expeditions, field journals and notes; and the third and fourth ones contain scientific papers by Miklouho-Maclay for a wide range of issues "concerning man and nature", including anthropology, ethnography, linguistics, meteorology, biology, and botany. The scientist's drawings were also published in these volumes.

The fifth volume, devoted to the epistolary heritage of Miklouho-Maclay, became a real scientific event. It includes 552 letters, among which 239 are published for the first time. Both Russian texts and translations from German, Dutch, French, and English are presented. A considerable amount of work in preparation of this volume was carried out by Putilov. The sixth volume contains photos of items from the ethnographic collections gathered by Miklouho-Maclay, and the drawings that were not included in the previous volumes. Four times as many photos were included as in the 1950s edition, with a total increase from 260 to 818.

At the same time, while discovering new areas of expertise, documents, and details of the scientist's biography, the compilers of the second collected edition, like their predecessors, were very cautious about assessments of Miklouho-Maclay as a man of science. The edition is an excellent source-study, praised by the reviewers (Komissarov, 1998; Nikolaev, 2002); however, it remains difficult to see the real Nikolai Nikolaevich Miklouho-Maclay behind all the documents. This approach in Maclay studies, which we call "classic", has persisted in a series of articles.

Among other works in this vein, there is a paper by a St. Petersburg researcher of culture of Indonesia and the Malay Peninsula, E.V. Revunenkova, "N.N. Miklouho-Maclay on the indigenous peoples and Malays of the Malacca Peninsula" (1994). Starting from the 1980s, she participated in the production of the "Complete Works of N.N. Miklouho-Maclay". It was the first time an expert of Indonesia and the Malay Peninsula had taken part in preparing commentary on his texts. The paper by Revunenkova, published in the *Etnograficheskoye Obozreniye* journal, represents a scientific interpretation of the scientist's contribution to the study of this region. Earlier, Miklouho-Maclay had been known largely as a researcher of the Papuans of New Guinea and other Melanesian islands (Stanyukovich, 2010).

In 1997, *Etnograficheskoye Obozreniye* published a selection of articles associated with the 150th anniversary of the birth of Miklouho-Maclay. The most notable among them is the publication "'Second life' of N.N. Miklouho-Maclay: Myths and Legends about a Russian Scientist in Papua New Guinea" by Tumarkin. The interest in legends about the scientist ("the second life of a white Papuan") arose as early as the beginning of the 20th century. In 1903, a German doctor, B. Hagen, published brief recollections about how the scientist was described in the oral traditions and stories of the Astrolabe Bay people (1903). In the middle of the 20th century, Butinov reviewed a range of the available English and German publications in his article "Recollections of Papuans about Miklouho-Maclay according to the later travelers' evidence", which was included in the first edition of the collected works (1950). Exactly this line of research is continued by Tumarkin. He relies on information given by Australian and American travelers. In particular, the article presents the notes of an American Lutheran missionary, E. Hannemann, who worked in Astrolabe Bay in the 1940s. Tumarkin refers to "an undated typescript text, a mimeographed copy of which is kept in the library of the University of Papua New Guinea, Port Moresby" (1997: 67). The collection of this information can be approximately dated to the early 1940s, since the *Newsletter of the Miklouho-Maclay Society of Australia* contains a small report "Concerning Maclay" by E. Hannemann (1983). In this report, there is a note made by R. Sheridan: "E.F. Hannemann. Grager-English phrasebook, Columbia, Ohio, the Board of Foreign Missions of the American Lutheran Church, 1945, p. 28. A story told by a local inhabitant named Borlo was written by Hannemann. Borlo was born in the Balambi village (Sio language). He was about 32 years old in 1974" (Ibid.: 8). Most probably, this is a mistake, and the last date should be read as "1944". Other notes of legends about Miklouho-Maclay belong to R. Sheridan, the chairman of the Miklouho-Maclay Society of Australia, who visited Bili Bili Island in 1959, and described his trip in detail. Oral traditions recorded by folklorist M. Mennis and published in the journal *Oral History*, together with materials collected on the Astrolabe Bay islands by other researchers, are drawn upon.

Tumarkin not only introduced English-language sources into scientific use in the Russian language, but also subjected them to detailed analysis. At the same time, we should be critical about the methodological message of the article, stating that these stories are historical sources of information about the life of Nikolai Miklouho-Maclay, and that "at the mundane level, the folklore tradition concerning Maclay starts retreating and changing under the weight of real historical knowledge" (Tumarkin, 1997: 165). As will be shown hereafter, consideration of these stories in the context of a dialogue of cultures can be much more productive.

In 1998 and 2000, articles by L.A. Ivanova were published that provided a new attribution of certain artifacts from the collections of Miklouho-Maclay. This researcher re-defines one item designated as "a bamboo case containing two spines of skate" in the museum description as a "quiver for poisoned arrows" for the *blahan* weapon—a pipe for blowing darts, similar to the *sumpitanu* used by Dayaks (Ivanova, 1998); she also identifies the regional source of the purchase and the presenter of the *pahu* drum and the *ataakakiko* stand (Ivanova, 2000).

In 2011, a biographic monograph by D.D. Tumarkin "The White Papuan: N.N. Miklouho-Maclay in the Context of His Epoch" was released. This book marks a sort of a final point within the framework of this direction. It gives an extremely detailed description of the scientist's life journey. The author leads us, following Maclay, along the narrow streets of German university towns, the deserts of Morocco and the Arabian Peninsula, the wilds of tropical forests, and the embankments and sand coasts of Sydney. Along with the protagonist, we meet important figures in English and German science. But the following question keeps worrying us till the end of the book: who is the man we are traveling with? What is he thinking about?

Critical reflections on Tumarkin's book are offered in a review by B.N. Komissarov. First, he is surprised at the absence of generalizations, asking why "the information scattered over many pages of the monograph is not concentrated by him into two formidable and oppressive realities—'the scientist and pain' and 'the scientist and hardships'"? Second, the reviewer points with regret to some awkwardness in debunking the scientist's cult, which risks creating a new mythologized image of Miklouho-Maclay as a Don Juan of the South Seas. This is "an excessive striving by the author [D.D. Tumarkin] to 'physiologize' the image of Miklouho-Maclay, i.e. to reveal and describe with a misplaced methodicalness all cases of the explorer's sexual contacts, and moreover, to pinpoint even quite platonic episodes when the latter, gazing at persons of the opposite sex, possibly experienced some erotic feelings" (Komissarov, 2013: 356). Paradoxically, this declared ultimate impartiality initiated the transformation of the old myth into a new form.

Attempts to revise the traditional view of the image of Miklouho-Maclay

A second approach to the study of Miklouho-Maclay's legacy, which emerged during the 1990s, can be

referred to as "revisionist". One of the first works in which researchers tried to depart from the perception of Maclay as a specific cultural hero from the "dreamtime of ethnography", was the paper on "Ballal-Maklai" ('The Word of Maclay') by V.I. Belikov (1997). The author cast doubt on the claim that Miklouho-Maclay had created an accurate dictionary of the Bongu language. The scientist knew "no more than about 350 words" and, in Belikov's opinion, "the Bongu vocabulary contains a thousand words at most". Belikov believes that the explorer probably used a simplified form of the language, "a peculiar pidgin", rather than Bongu itself. Its lexis traced its origins to standard Bongu, but it contained "misunderstandings, quite natural for such complicated communication, multiplied by the prestige value of Maclay's speech in the eyes of the Papuans". The author of the report draws parallels with the Motu language of the southern coast of New Guinea.

On the one hand, the Russian pioneering explorer, who did not have language fixation skills, was unable to create such an *ad hoc* methodology in the field, and his linguistic achievements should not be overestimated. On the other hand, further contacts between Europeans and Papuans on the Maclay Coast, and particularly in Bongu, established that it was Miklouho-Maclay who provided the foundation on which subsequent dictionaries were compiled by linguists. For example, unlike A. Hanke, who proposed that all languages of the Maclay Coast could be divided into two large dialects, like "Swabian and Bavarian" (1905), the Russian scientist supposed that each village had its own language. Though accepting the conclusions that the meanings of the words written by Miklouho-Maclay were inexact, and that some of them pertain to a certain "researcher's idiolect", rather than to the Bongu language itself (Stanyukovich, 2016), there is no sense in agreeing with the undervaluation of the linguistic aspects of his fieldwork in general (Tutorsky, 2018).

Another "revisionist" article written by a professor of the Ethnology Department of Moscow State University T.D. Solovey is devoted to the scientific strategy of Miklouho-Maclay. The author proceeds from the statement (known since the time of N.V. Kaulbars, who was the first to work with the explorer's archive after his death) that Miklouho-Maclay was not a scientist in the true sense of the word, and that he failed to generalize and develop a theoretical understanding of the empirical material gathered on his expeditions. The prime consideration of Solovey is the absence of any theory. In her opinion, the "journeys to Oceania that put Miklouho-Maclay on a pedestal as a hero cannot be called a studious and consistent research program by any stretch of the imagination" (2011: 74). Solovey suggests an idea (apparently, her own scientific creed) that "contrary to popular belief… facts by no means precede a theory but quite the reverse: a scientist approaches facts already having a theory or hypothesis that can be expressed in a clear and consistent manner…". And further: "Since rejection of any theory was generally the consistent position of Maclay, this devalued his interesting and comprehensive observations to a large extent…" (Ibid.: 80). His unwillingness to use theory to generalize about facts is, in the author's opinion, the main reason why Miklouho-Maclay never managed to write his "magnum opus—the summarizing book" (Ibid.: 82). This conclusion cannot be accepted without comparing the scientist's studies with the academic works of his contemporaries. In what follows, we return to the issue of the presence of theoretical ideas in his studies.

The productive aspect of the article is the author's desire to deconstruct the Soviet myth about Maclay as a "cultural hero", a kind of ethnography creator in general. For instance, the author emphasizes that "Miklouho-Maclay developed the plan of a journey to Oceania in 1869, i.e. at the age of 23". In other words, he was a student who had recently got an education in European universities, rather than a fully formed scientist. Solovey points to the psychological make-up of the researcher: "His dominant psychological trait (craving for solitude) had a decisive influence on the life and exploratory activity of Maclay". And further: "…not coincidentally, somber Schopenhauer was his favorite author" (Ibid.: 76). These facts provide further insight into the scientist's personality and his scientific views.

At the same time, Solovey falls into some inaccuracies. For example, she writes that "after putting ashore, Maclay stayed alone in an absolutely unfamiliar environment for long months" (Ibid.: 77). This is not quite true because Olsen, a Swedish seaman, and a Polynesian named Boy (who later died) lived together with the scientist at Garagassi Point. Besides, local inhabitants, often from very remote villages, came to the scientist's house time and again. Another improper generalization proceeds from the logic of stereotyped views about acculturation processes. Solovey writes: "As the Papuans became better acquainted with him, Maclay's human traits strengthened in their perception of his image" (Ibid.: 79). In general, the article raises an important question as to whether the modern papers about Miklouho-Maclay provide a distinct portrait of the scientist. We have to deal with ideology-driven texts and cultural myths. At the same time, the article by Solovey, despite correct articulation of the problem, lacks proper argumentation.

A paper written by St. Petersburg professor A.Y. Massov is extremely interesting and pioneering. It

is devoted to a brochure presented by Miklouho-Maclay to Grand Duke Konstantin Nikolaevich of Russia at the beginning of 1887. This was a gift to his friend at court in the form of a work containing "a description of his (Miklouho-Maclay's) scientific contributions, being largely complete at that time" (Massov, 2013: 112). Of primary importance for studying the scientist's creative work is the fact that the brochure contains corrections made in his own hand that very distinctly show the social and scientific views of Miklouho-Maclay.

Analyzing the text and the author's corrections, Massov came to several important scientific conclusions. First, it appears that a mistake was made in the *Complete Works* published in the 1990s: this text should have been reproduced using the publication not in the *Golos* newspaper, but in the journal *Russian Geographical Society Herald*, from which it was reprinted to release the abovementioned brochure (Ibid.: 114). Second, in the phrase "among the interesting and little-known inhabitants of New Guinea, a New Guinea aborigine, homo papua, appears the most interesting to me", the scientist corrected the word "inhabitants" to "animals", which reflects not a racist but rather a "naturalistic" understanding of humans, widely accepted in the 19th century (Ibid.). And finally, third, using the term "Polynesian race" (which included the Papuans) by Miklouho-Maclay was not an error, but a special feature of the terminology employed at that time (Ibid.: 115).

The general conclusion of the article is also important for us: "Unfortunately, the domestic literature still lacks any well-founded studies of the scientific beliefs and socio-political preferences of N.N. Miklouho-Maclay". And further: "In 2011, D.D. Tumarkin in his monograph 'The White Papuan' made the first serious attempt to trace the scientific beliefs and evolution of the political views of the Russian explorer. However, this theme is not the main one in the work by D.D. Tumarkin; his book is primarily a scientific biography of N.N. Miklouho-Maclay" (Ibid.: 116).

Another innovative work is a collective monograph "The Old and the New in Research on the Ethnographic Work of N.N. Miklouho-Maclay" prepared by researchers of the Kunstkamera Museum and Moscow State University. Of particular importance for us are the first and second chapters of this book, written by a Russian expert in Australian studies and researcher of Melanesia, P.L. Belkov. In the first chapter, devoted to the development of Miklouho-Maclay as a man of science, the author suggests rejecting the joint consideration of his scientific and social views that is typical of conventional studies. A detailed description of these views pushes the scientific creed of the researcher into the background. Belkov points out that the myth about the naked empiricism and atheoretical nature of the Russian explorer has its origin in statements of a German ornithologist, a New Guinea company's officer, O. Finsch (*Staroye i novoye*…, 2014: 17). Judging by the "Ethnologia" notebook started by Miklouho-Maclay before his travel to Pacific islands, he was familiar with ideas of many English-speaking (J. Rowford, G. Law, J. Prichard, A.R. Wallace), French-speaking (E. Renan), and German-speaking (T. Waitz, E. Gerland, K. Semper, F. Müller) theorists of the science of peoples. Belkov argues that we need a radically different approach to studying the scientist's legacy—"research in infrared light" (Ibid.: 23) or, according to T. Kuhn, the one based on a search for the "enduring elements" in the earlier science (1962), i.e. for the idea of scientificity at that time. Finishing this chapter, the author writes: "Separate publication of the anthropological and ethnological notes by Miklouho-Maclay… became the first document in scientific history to establish the independence of the subject matters of these sciences" (*Staroye i novoye*…, 2014: 50). Thus, Belkov emphasized that the scientific activities of Miklouho-Maclay have their own theoretical significance.

The third chapter of this paper is an extremely interesting example of "focus replacement"; the focus of history or philosophy of science, rather than the ethnological focus. The author proceeds from the thesis he had already advanced, that theoretical (and also practical, in this chapter) ideas were present in Miklouho-Maclay's work even if researchers could not always detect them. He does not agree with the traditional specialists in Maclay studies who think that Miklouho-Maclay's scientific work on the ethnology of the Melanesians has never been written or has been lost. Belkov suggests a challenging idea that it is already well known to us: these are the "two ('thick') notebooks (ARGO. F. 6, Inv. 1, D. 24; D. 70)" (Ibid.: 99). Maclay himself characterized his drawings and collections of items as "the 'program' or 'table of contents' of a large work on the ethnology of the Melanesians that he planned" (Ibid.: 101). Thus, the scientific work by Miklouho-Maclay exists; moreover, it is almost ready for publication. All we need to do is to find a congenial "publisher", who will be able to combine the notebooks with drawings and collections and, what is most important, to understand all information contained in the "field notes and drawings". This thought is consistent with the ideas put forward by C. Ballard, who cites the example of returning Maclay's drawings to Lelepa Island (Vanuatu).

Finishing our review of "revisionist" studies of the Miklouho-Maclay's legacy, it should be noted that many ideas proposed as "new" in the Russian-language space will turn out to be "preliminary" or "traditional" in

the English-language one. Meanwhile, truly new ideas, such as those expressed by Massov about revision of our concepts of the scientific status of knowledge at the end of the 19th century, and by Belkov about drawings (but not the text) as the main form of Maclay's scientific work, find substantiation in studies by Australian researchers.

Articles about Miklouho-Maclay in English

The 1980s emerge as a particularly "golden decade" in English-language Maclay studies. In 1984, the most comprehensive English-language biography of the scientist was published, "The Moon Man" by E. Webster (1984), and the *Newsletter of the Miklouho-Maclay Society of Australia* was issued 4 times per year in Sydney throughout the entire decade. In subsequent years, the number of publications fell; however, some of them provided conceptually new approaches to studying the scientist's legacy. We set aside the studies where materials collected by Miklouho-Maclay serve as a kind of introduction to the theme, such as the article by A. Street about hospitals (2016) and the publication by D. Gaffney about potters of the Madang District (2018).

From the second half of the 1990s, articles began to appear regularly in the English-language space, introducing the materials of Miklouho-Maclay into scientific discourse. Mainly, these are articles relating to certain geographic areas (the Torres Strait, Palau, Lelepa) and containing translations of the scientist's texts that had previously been published in Russian only. Notably, having started from the simple translation of Russian-language articles (such as the publication by R. Parmentier and E. Kopnina-Geyer), the publications were subsequently accompanied by extensive historical and cultural comments (the article by A. Shnukal); and later, materials by Miklouho-Maclay became an independent target of research (article by C. Ballard). By way of exception, we shall focus on the general study devoted to Miklouho-Maclay and written by S. Fitzpatrick, since it is very similar to the article by A. Shnukal in terms of presentation.

In 1996, *Isla: A Journal of Micronesian Studies* published a translation of the Russian-language article by Miklouho-Maclay "The Palau Archipelago. Sketches of Travel in Western Micronesia and Northern Melanesia", made by a postgraduate student of the University of Amsterdam, E. Kopnina-Geyer. The article is introduced by R. Parmentier, a researcher of Micronesia, who offers important comments on the work of Miklouho-Maclay on Palau Island. The author sees as his main purpose the introduction of materials published in Russian into the scientific discourse of the English-language academic community (Parmentier, Kopnina-Geyer, 1996: 72).

Without giving a direct assessment of Miklouho-Maclay's work in Micronesia, Parmentier nevertheless notes the following: "Unfortunately, the studies conducted by N.N. Miklouho-Maclay coincided with the time between the periods of scientific activities of such giants as J.S. Kubary and A. Krämer" (Ibid.: 75). The opposition of ordinary "research" to the work of "giants" suggests that the author does not value highly the Russian scientist's contribution to the study of this region. However, in the next paragraph, Parmentier reckons him as one of the first researchers who tried to study the "local view of customs" and to employ the "reflective anthropology" method. The Dutch scientist writes that Miklouho-Maclay prefigured the anthropological revolution conducted by B. Malinowski (Ibid.: 76). A very high assessment of the theoretical and methodological elements of his research, as well as non-recognition of the empirical aspect, contradict the "traditional" description of Miklouho-Maclay's legacy in the Russian literature, where writers praise the empirical aspect and deny the significance of the theoretical.

In 1998, an overview by an Australian researcher A. Shnukal was published on Miklouho-Maclay's approach to research on the islands of the Torres Strait. This region is often identified as a "site of origin of field ethnography", the Cambridge expedition to the Torres Strait being considered the point of departure for scientific ethnographic studies in the field (Herle, 2012; Nikishenkov, 2006: 140–144). This publication is divided into several topical sections, each covering one aspect of Miklouho-Maclay's activity. The "Edwin Redlich and Jimmy Caledonia" section provides the Russian scientist's reports about discussion of the possibilities for commercial pearl-fishing in the strait by these people. The next section is devoted to calculation of the population size on the small island of Erub (now known as Darnley Island). The sections titled "Cranial deformations in the Torres Strait islanders" and "Biology of the dugong's brain" contain the relevant materials provided by the scientist. The next section is almost completely represented by a translation of Miklouho-Maclay's description of mother-of-pearl fishing in the Torres Strait.

The last section concludes with the following comment of Shnukal: "I was disappointed having found, not the new information I had hoped for, but a distillation of de Hoghton's substantial report on the fisheries" (1998: 43). A similar thought concludes the whole publication: "However, while this conforms to and confirms existing material, as a source for the

contemporary researcher of Torres Strait, Maclay's writings are limited in novelty, quantity, and scope." (Ibid.). The author neither gives an assessment of the scientist's methods of work nor describes his theoretical ideas that may stem from the local features of the material. However, the empirical value of the studies conducted by Miklouho-Maclay is given a low assessment, as in the previous case.

The publication by Shnukal is in line with the paper of the well-known Australian researcher of Soviet history S. Fitzpatrick, issued in 2012. The latter proposes a peculiar "fan" or spectrum composed of each of Miklouho-Maclay's various interests. The author of the article identifies seven "roles" or "identities" of the scientist: traveler, humanist, Tolstoyan, socialist, imperialist, scientist, and "white Papuan". Characterizing the internal contradictions amongst these incarnations, she mentions the following fact: Miklouho-Maclay "suggested to Ferdinand von Mueller, German-born director of the Melbourne Botanical Gardens, that at the forthcoming Melbourne Exhibition, he might include a set of Aborigines—'just one representative of male and female sex and two children'"… Not for the entertainment of the audience, but for purposes, so that "'detailed scientific descriptions' of the subjects could be made and photographs taken" (Fitzpatrick, 2012: 175–176). The citation should be made more accurate using Miklouho-Maclay's own text: "Delivery of one each ♂, ♀, and two children from each of the northern, southern, eastern, and western parts of Australia as examples of the Australian species of the genus Homo will be of great interest for an anthropologist, and their detailed scientific description accompanied by a series of photographs would most certainly fill up a gap in the anthropology" (1996: 241). Undoubtedly, the use of living people as exhibits contradicts the ideal of humanitarianism; at the same time, the Russian natural scientist explains that this would be done in the name of science. Here again, we are faced with a fact similar to that mentioned by Massov. It is not that easy to reconcile these differences.

The last study to introduce Russian-language materials by Miklouho Maclay into the scientific use of the English-language community is the recently published article by E. Govor and S.K. Manickam, "A Russian in Malacca: Nikolai Miklouho-Maclay's Expedition to the Malay Peninsula and the Early Anthropology of Orang Asli" (2014). It gives an overview of the Russian scientist's travels across Melanesia and the Malacca Peninsula, as well as of his publications (predominantly in German) about the study's results. The authors note that the materials provided by Miklouho-Maclay can hardly be related to some definite "anthropological tradition", but at the same time, his gaze—focused on searching for "the Melanesian" in the culture and racial features of the Malay Peninsula's inhabitants—represents an interesting approach seldom encountered in the anthropological and ethnographic literature of that time. The article contains a translation with commentary of the most significant extracts from the diary entries made by Miklouho-Maclay during his journey across the peninsula. In conclusion, the authors point out that the scientist's materials are important for the history of views on the Malay Peninsula people, rather than for modern study of the Orang Asli. In addition, these entries reflect their everyday life. Thus, Nikolai Miklouho-Maclay is regarded as one of the travelers whose materials should also be taken into account in bona fide research, and not as a theoretician or a founder of a new direction in science.

The article "The Return of the Past: On Drawing and Dialogic History" by Ballard (2013) should be considered separately from other papers. It develops the ideas of a report first presented at the 18th conference of the Pacific History Association (Suva, Fiji, 2008) jointly with E. Govor. Its main idea is that the key element in Miklouho-Maclay's legacy is his drawings. The scientist worked in those years when the canon of ethnographic or anthropological knowledge was just being formed. In many cultures, drawings are also considered knowledge. The anthropological community has underestimated their significance as a research method until recently. A "graphic turn" in anthropology, relating to studies conducted by W. Gunn (2009), M. Canfield (Field notes…, 2011), M. Taussig (2009), and other scientists, allows us to look at the roles of drawings in the field notes of researchers in new ways. Within this context, a real discussion opens up about the role and significance of drawings. Ballard observes: "How well at home Miklouho-Maclay would have felt in this discussion, as a field researcher whose drawings became not just a central component of his observational technology, but also a vital strategy in his engagement with host communities and the subjects of his sketches" (2013: 140). Translating this assertion into the Russian-language science discourse, it can be said that the issue of Miklouho-Maclay's absent "magnum opus" is related to the inability of modern ethnographers and anthropologists to "read" everything that was created by him.

An example of how Miklouho-Maclay's drawings can be read was proposed by Ballard with the use of several sketches made on a small island of Lelepa, near the coast of Efate Island, where Port Vila (the capital of the Republic of Vanuatu) is situated. At the end of the 19th century, Havannah Harbour, located between the islands of Efate, Moso, and Lelepa, was the main

port of the island. Starting in 2001, the communities of Lelepa and Mangaliliu (a part of the same community that resettled to Efate Island, opposite Lelepa, in the 20th century) set out to inscribe "Chief Roi Mata's Domain", a cultural landscape including a cemetery on Artok Island, rock art in Fels Cave on Lelepa Island, and the historical site of Roi Mata's settlement, on UNESCO's World Heritage List. Inclusion of this site on the World Heritage List involved the use of archival materials. To this end, Ballard brought "prints from glass plate negatives, maps and aerial photographs, transcripts of missionary diaries containing local birth, marriage and death registers, photographs and details of artifacts" to the Lelepa community (Ibid.). The most "intensely discussed" and "widely prized" of these materials were precisely the sketches produced by the Russian scientist, which contained not only representations of items, but also detailed trace drawings of ornaments, and the local names of their elements. Indeed, the drawings made by Miklouho-Maclay inspired a revival of wood-carving skills in the Lelepa community, lost after missionaries had destroyed slit drums they considered to be idols. In 2006, a wood-carver by the name of Manearu carved two slit drums that were subsequently installed in Chief Roi Mata's Domain. In 2008, this site was inscribed on the list of UNESCO World Heritage sites.

It should be noted that the "dialogic" aspect of drawing was also important for Ballard. The point is that the researcher's field notes are seldom read by the persons being studied at the time; what is taken home often remains incomprehensible to the subjects of enquiry, and perhaps incorrect from the viewpoint of scientific objectivity. In the case of drawings, a dialogue is possible: if a researcher draws something incorrectly, local inhabitants can point this out and correct him. That is why drawing can be a more respectful method of research, involving the people being studied in the scientists' work.

Conclusions

Analysis of the above articles brings us to the following conclusions. Nikolai Miklouho-Maclay was a highly unusual person for his time. The history of his travels to New Guinea became the basis for myths circulating, not only among the Papuans, but also in the Russian and European communities of that time, as well as in modern scientific circles. The reviewer of an English-language monograph about Miklouho-Maclay, A. Chowning, wrote: "Not surprisingly, considering the degree to which Maclay had become as such a mythological figure to members of his own society as to New Guineans, Webster perhaps over-emphasises his failings. Reading her book, it is difficult to understand why so many people admired and revered him, or even why his wife was so devoted" (Chowning, 1986: 149). In other words, apart from the Papuan legends about Maclay and the Soviet myth about the scientist and humanist, there is a myth about Maclay being a failure, which is typical of the English-language literature. During "Perestroika" in the USSR, this assessment was uncritically introduced to the Russian-language space. Another approach was laid down by G. Stocking, who described N. Miklouho-Maclay, B. Malinowski, and J. Kubary as "archetypes from the dreamtime of anthropology" (1992). Thus, the mythologization is related not only to Soviet cultural propaganda, but also to the fact that the scientist acted before the canons of anthropological science were established, and actually created them himself. Studying the mythologization of his image in various communities can become an independent goal of research, and comparison of its vectors will probably contribute to understanding of the essence of this phenomenon.

Judgements about the apparent absence of any theoretical basis in the studies and findings by Miklouho-Maclay is a result of this anti-mythologization process. The scientist's materials are open to new forms of interpretation within the framework of postmodern concepts. First of all, this concerns drawings as a special method of dialoguing with the people of Oceania, which in terms of modern sociological method is much more inclusive than interviews and description. Today, when audiovisual anthropology, studying soundscapes and various sensitivities have become a real alternative to the "text-oriented translations of culture", the theoretical relevance of the studies conducted by Miklouho-Maclay needs to be revisited. There is reason to hope that an illustrated work on the ethnology of Melanesians conceived by the scientist will be finally published, relying upon the approach of modern visual anthropology.

Who then should paint the portrait of Miklouho-Maclay in the context of his epoch, as proposed by many of the authors discussed here? Massov believes that this can only be done by a team of professionals from various disciplines. His opinion seems correct in terms of epistemology, since it is exactly such a team that will be able to gain insight into the scientist's creative work, and understand the different facets of his interests. However, it is not quite correct from the standpoint of didactics (in the philosophical sense). Miklouho-Maclay was a whole person. Only a team of scientists united by a similar education and a common view of science can understand and communicate this notion to the readers. In our opinion, one of the most promising approaches to studying the legacy

of Miklouho-Maclay is the anthropological method within the framework of several concepts. Cultural criticism will assist in comparing publications about the scientist and texts about the people of Oceania written by various researchers at the end of the 19th century with each other. Return of their cultural assets to the communities where studies were conducted will provide the possibility of involving the local inhabitants in the interpretation of the scientist's materials. Visual anthropology will make it possible to discern in his legacy not only texts, but also numerous drawings. A historical concept will permit tracing the evolution of the views both of the scientist himself and of the whole anthropological community.

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Remnants of the Snake Cult Among the Khakas (Late 19th to Mid 20th Century)

On the basis of folklore and ethnographic data, some of which are introduced in this article, the Khakas mytho-ritual complex relating to the snake is reconstructed. It is demonstrated that these beliefs were central to the traditional Khakas worldview, and that the snake was endowed with elaborate symbolic meanings. It was a sacred animal, associated with ideas of life and death. It played a key role in mystical initiation practices, including those related to shamanism, and it was perceived as a guardian spirit. Among the Khakas' traditional beliefs was the idea that the elect could marry snakes, which turned into beautiful girls. Such a union, short-lived as it was, brought wealth and luck. The snake was also associated with elements and landscape features, such as water and mountains, linked to the ideas of a sacred center, fertility, and the ancestor cult, which were central to the Khakas worldview. This reptile was often believed to be a mountain spirit, a mystical patron, and a donator of magical capacities. Thus, beliefs about snakes were part of Khakas folk medicine and domestic magic.

Keywords: *Khakas, folk culture, religion, folklore, mythology, ritual, symbolism, image, snake.*

Introduction

The snake (Khakas 'chylan') is one of the most famous representatives of the fauna that inhabits the entire territory of Khakassia. In the early 20th century, while describing the animal world of this region, A.V. Adrianov emphasized that "among the reptiles, various species of lizards, snakes, toads, frogs, tritons, etc. abundantly occur" (1904: 16). The multiplicity of snakes, as well as their peculiar appearance, contributed to the fact that snake played a special role in the traditional worldview of the Khakas. The image of the snake has always been surrounded by a mystical aura. Many ethnographic and folklore materials indicate that in the past, the cult of snake was widespread in the spiritual culture of this people.

For the first time, this article reconstructs the set of Khakas beliefs associated with the snake and based on a wide range of folklore and ethnographic sources, including those which have been previously unknown. The purpose of this study is to describe the snake cult in the traditional worldview of the Khakas.

Folklore and ethnographic evidence, some of which is published for the first time, constitute the source of this study. Folklore evidence include myths, fairy tales, and legends in the Khakas and Russian languages. This work cites published and unpublished texts that were found in the National Archives of

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the Republic of Khakassia (NARKh. F. 558, Inv. 1, D. 115). Field materials of the authors collected during the expeditions to Khakassia in 2002–2005 and to the Altai in 2002 serve as ethnographic sources. The ethnographic materials of the local historian S.E. Karachakov (2004) and the historian-archaeologist Y.I. Sunchugashev (1991), published in the Khakas language and containing the records of informants about traditional ritual practices associated with the snake, were also used in this study. These materials are published for the first time in our translation.

The chronological framework of this study covers the late 19th to mid 20th century. The choice of these chronological boundaries is primarily determined by the state of the sources associated with this research topic. Notably, field ethnographic materials were collected by us in the early 2000s, but the information recorded reflects events and phenomena relating to the mid 20th century.

This study is based on historical and ethnographic research methods. The relic method, relying on the remnants of the past surviving in myths and rituals, allows a conclusion to be drawn about the situation in the society at an earlier historical stage; while semantic analysis makes it possible to uncover the deeper meaning of a specific mythological image and ritual activities associated with it in the culture of the people under study.

Mystical marriage of man and snake, and the cult of mountain

The presence of the snake cult among the Khakas was observed by some scholars of the 19th century (Kastren, 1999: 221; Latkin, 1892: 148). Individual Khakas *seouk* clans perceived the snake as their totemic animal. According to specialists, this reptile suborder was the symbol of the Yzyr *seouk* (Butanaev, Torbostaev, 2007: 27). The motif of kinship and marital relationship between people and snakes became widespread in the Khakas folklore (Katanov, 1907: 515–521; and others). We should note that the issue of interaction between man and nature was manifested in a veiled form. This can be explained by its certain esotericism, as well as the rethinking and even playing down of certain mythological ideas associated with this issue. Nevertheless, the analysis of folklore texts and ethnographic evidence, using the relic method, may allow us to reconstruct the beliefs and rituals associated with the snake.

In the traditional beliefs of the Khakas and other Turkic peoples of Southern Siberia, luck, supernatural abilities, and the shaman's gift among people were attributed to their active interaction with the world of deities and spirits. Marital union between humans and otherworldly beings was a form of such interaction (Dyrenkova, 2012: 340–341; Potapov, 1991: 64–83; Burnakov, 2006: 31–42), and was mentioned in many myths. We have discovered a version of such a myth written in the Khakas language, in the National Archive of the Republic of Khakassia; it is published for the first time in our translation. "Once, three brothers went hunting. [In the taiga, already close to the evening] one of them returned to his *odag* hunting hut earlier than the others, and found that a huge snake had wrapped itself around it. The man did not understand the snake's language [and did not know what to do]. The snake, hissing, crawled closer to him and spat out its saliva [in the form of foam] onto the ground. The hunter swallowed it. After that, he began to understand the language of snakes and other animals. [Then] the snake said to the hunter: 'Tomorrow on that ridge [it showed the ridge] I will fight the Khan of frogs. You have to shoot my enemy. As a reward you will receive a happy life from me'. The next day, closer to noon, a fight between the khans of snakes and frogs began. The hunter took aim and fired – he hit the frog in the forehead [and it fell dead]. After that, the Khan of snakes crawled up to the man and said: 'Now let us go to my dwelling. I want to thank you. I will give you whatever you ask, because you saved my life [literally, *soul*]'. The snake placed him on its back and rushed off swiftly [literally, *ran in a trot*]. They arrived and started to go inside some mountain. Suddenly someone invisible whispered in the ear of the hunter: 'Don't take anything from that which the Khan of snakes will offer you as a reward, just ask for a puppy'. Soon, the Khan of snakes began to offer him various gifts. The hunter flatly refused everything, and only asked for a puppy. The master had to fulfill the guest's wish. Passing the dog into the hands of the man, he warned him: 'Do not offend this puppy. Feed him with whatever you eat'. The hunter fully agreed to fulfill this wish.

After returning home, he began to take care of the puppy exactly as he had promised the Khan of snakes. Once the hunter went to taiga. Having returned home in the evening, he found a lot of varied and delicious food on the table. The man thought, 'What miracles are happening? Where does all this come from?!' He tasted the food. He decided to find out everything. The next time, having pretended to go hunting, he hid and began to watch what was happening in his house. Suddenly, he saw that a beautiful girl appeared in his house and started to do housework. The man immediately hurried into the house. The beautiful woman did not expect to see him, and told him reproachfully, 'You came at a moment when I had not had time to braid my hair completely. Therefore, we are not destined to live

together all our lives'. Yet after that, they still began to live as a married couple. They had two children. However, soon the attitude of the wife to her husband changed. She no longer wanted to associate her destiny with his, and one day she said, 'Can a snake live with a human?!' Then the woman grabbed her two children under her arms and went to the river. Her husband accompanied her. They reached the bank of the Abakan River. The woman said, 'Children born from a human are pitiful'. [It turned out] that one of the children was called *Kizirlen*, and the other *Khazyrgan*. The mother took the two children and threw them into the middle of the river. After that, having turned into a snake, she dived into the waters of the Abakan River. And her husband remained on earth" (NARKh. F. 558, Inv. 1, D. 115, fols. 92–93).

The outstanding Russian folklorist V.Y. Propp, in his study *Historical Roots of the Fairy Tale* (2009), has analyzed the folklore of various peoples of the world, and has shown that many works of oral folklore—in particular, fairy tales—contain information in the relic form about archaic mythological beliefs and rituals, which were determined by social institutions, the way of life, economic structure, stereotypes and norms of behavior, etc. In that study, Propp has also analyzed the image of the snake. In his opinion, this image was directly related to archaic initiation rituals. We believe that the Propp's approach can be applied to Khakas folklore, also. It seems that the above myth in the relic and relatively veiled form also presents information on the archaic initiation/transition ritual, which was most likely shamanistic.

The folklore and ethnographic information makes it possible to suggest the following reconstruction of the Khakas worldview. It is known that the ritual of initiation is inseparable from beliefs concerning death. According to tradition, when young men reached the age of maturity, they were necessarily subjected to testing, including tests associated with their future activities as hunter, warrior, etc. These tests were extremely painful and tormenting, and sometimes took the tested person to the edge of death. However, after the young men successfully overcame them, they became peers and full-fledged members of the clan, military, or some other social structure. Also, any initiation symbolized the death of the individual in his previous status and his birth in the new status. Such a meaning was present in the shaman's initiation, too. During this ritual, the neophyte "died" (often several times), that is, lost the qualities of an ordinary person, and was revived for the society in the form of a shaman—a person endowed with sacred powers. After the ritual of initiation and until the end of his life, he was bound by certain obligations to the otherworld and its inhabitants.

If we consider the above myth in this context, the Khan of snakes may be identified with a guardian spirit. The following detail is notable: full-fledged communication between snake and human happens only after the human swallows snake saliva—a particle of the animal. As Propp noted, "swallowing in these cases is associated with initiation" (Ibid.: 196). This action may also be interpreted as absorption of snake venom and magical partaking of the inner essence of the snake, which inevitably entails the symbolic death of the man as a representative of the profane world. At the same time, this act fully contributes to a "new" birth of the person—his inclusion into the sacred world. The person comes to a kind of insight—he instantly receives the capacity to understand the language of snakes and other living beings.

Then, the person is tested for his capacity to shoot accurately and hit the target. The hero coped with this task, that is, he successfully passed that stage of testing, too. The final stage of his initiation was marriage with a representative of the sacred world—a snake.

The myth in question is interesting not only because it conveys the plot of the marital union between man and snake, but also because it unambiguously denotes the traditional Khakas belief concerning the mystical connection between this reptile and the image of the water element and mountain. In addition, some toponymic data are indicated in this text in a veiled form. The snake acts in the text as a mother (the progenitor of two rivers) the Kizir and Kazyr. We should add that the folk heritage of the Khakas also includes other versions of this myth, in which the toponymic subject is revealed more fully (Katanov, 1907: 515–521; 1909: 282).

Notably, in the above myth, the episode connected with the entry of the man into the mountain where the Khan of snakes lived, is obviously not accidental. The cult of mountains is widespread in the Khakas culture. These natural features are perceived as some sacred fertile centers and continuous sources of life. On the mountains, major collective rituals of sacrifice were performed, such as *tag taiyg* ('sacrifice to the mountain') and *tigir taiyg* ('sacrifice to the sky'). During these rituals, people asked for well-being and happiness, as well as the elimination of all kinds of suffering. They believed that the spirits of mountains could summon future shamans to shamanistic service and determine their attributes, including their shamanistic drums. Cemeteries where ordinary people were buried were most often located in the mountains. Therefore, it was not by chance that almost every Khakas *seouk* clan revered a certain mountain as a holy object.

In the traditional worldview of the Khakas, the spirit-lords of mountains—*tag eeleri* ('mountain lords') or *tag*

kizileri (‘mountain people’)—were perceived as distant ancestors with a significant influence on human life and destiny. The Khakas believed, and still continue to believe, in the possibility of marriage between ordinary people and mountain spirits. It is assumed that the mystical mountain maidens or women are most often the initiators of this relationship. According to the traditional beliefs, for people engaged in hunting, such marital union guarantees success in their professional activities, and the reception of material benefits. At the same time, in the traditional consciousness of the people, mountain spirits could appear both in anthropomorphic and zoomorphic guise. Among the latter, snake-like creatures were the most common.

Mountains, rocks, stones, and caves are favorite habitations for snakes. It is quite natural that in the mythological beliefs of the Khakas, mountain spirit and snake are characters which are difficult to tell apart. Moreover, they often merge into a single image.

In Khakas folklore, the image of the mountain spirit in the form of a snake is widespread. The protagonist of the fairy tale “The Golden Chalice” assisted the Khan of snakes, who was simultaneously the Lord of the Mountain. As a reward, the protagonist received a magic colt and the right to marry the sister of the Khan of snakes. He was granted a dignified and comfortable life (Zolotaya chasha, 1975). In the legend of the mighty woman Payan Khys, the protagonist saw a prophetic dream of her upcoming marriage to the Lord of the Mountain. The groom appears to her in the form of a snake (Payan Khys, 2006). In the tale “Tabanakh Matyr”, the daughter of the Lord of the Mountain Kara-Taskhyl appeared before the protagonist in the form of a viper (Tabanakh matyr, 2014). In the fairy tale recorded by Prince N.A. Kostrov among the Khakas in the 19th century, a character named Taganak-Matyr went to the Snake King to complain about a wolf that bit to death his favorite horse (1884). This plot reflects the traditional beliefs of the Khakas that all wild animals belong to the *tag*/*taigy eezi* (the Lord of Mountain/Taiga) and obey him without question, while he is responsible for them. In accordance with such beliefs, during the ritual of sacrifice to this deity, the believers prayed to him that he would not allow predatory animals to kill their livestock. Therefore, the conclusion of the folklorist P.A. Troyakov that the Khan of snakes is a folklore image that is associated “in its origins with a sacred idea of the Lord of Mountain, who has acquired fabulous qualities” (1991: 316) appears to be quite reasonable.

The analysis of these folklore texts has made it possible to identify and reconstruct the traditional beliefs of the Khakas about the snake not only as a sacred animal, but also as a sacred marriage partner of the elect people, including shamans. In the Khakas culture, the image of this reptile was directly related to social practices of initiation and the shaman’s dedication. In the traditional view, the snake was associated with lord-spirits of water and mountain.

The snake as sacred benefactor, and its wondrous attributes

In the Khakas worldview, individual mountains/rocks with huge caves are the headquarters of *Chylan Khan* (‘the snake king’). The people called these headquarters *chylan ordazy*. It was believed that such sacred places could be recognized by clouds of steam issuing from them (Butanaev, Torbostaev, 2007: 27). In Khakas folklore, the topic of a hunter who gets lost in the taiga owing to bad weather or other circumstances, and accidentally falls into a deep cave in a high mountain or rock, is quite common. In this cave, the snake horde is situated. The snake khan appears before the hunter sometimes in the form of a huge snake, and sometimes of a giant man. He not only does not hurt the hunter and saves his life, but even generously allows him to spend the winter in his cave with the snakes. Moreover, he promises to help the hunter to return home. To avoid dying of hunger, the hunter is offered the chance to lick the white stone *akh tas* or *chylan arbyzy* (‘snake’s fortune’) three times. The man follows this advice, and is miraculously delivered from hunger. In addition, he immediately begins to understand the language of all animals, including snakes. So, he spends the winter in friendly communication with the snakes. In the spring, *Chylan Khan* brings the man on his back to the surface of the earth—to the taiga—but demands a promise that he will not tell anyone about what has happened. The snake king warns the hunter that if he tells anyone, he will die.

Having found himself in the taiga, the man thinks about not returning home empty-handed, and begins to hunt. He becomes extremely surprised that by some miracle the animals start to come into his hands on their own. The hunter shoots many animals and goes home with a good kill. He returns to his home and finds that people are commemorating his death on that day. Seeing the man alive and unharmed, his relatives are very surprised. Delighted, they gave the hunter much araka to drink and begin to ask him about his adventures. In a state of deep drunkenness, the man reveals his secret completely. The next morning, after waking up and realizing what has happened, he decides to go to the taiga to meet with *Chylan Khan*, and takes a large supply of araka with him. Soon the meeting takes place. The khan of snakes is enraged because of the

broken agreement, and at first tries to kill the hunter. The hunter, having deeply and sincerely apologized to *Chylan Khan*, complains that he was drunk and therefore could not control himself. The hunter offers the snake a drink of araka to test its strength. He agrees and drinks everything that the hunter brought him. Having become quite drunk, the snake king suddenly shows his wild temper and begins to smash down the taiga. This lasts for three days. Then *Chylan Khan* gets tired and sleeps for three days. When he awakes, he realizes what happens to a drunk, and forgives the man. After that, the hunter becomes very successful, and always hunts many animals. And he begins to live in prosperity and peace (Okhotnik…, 2006).

In this myth, the traditional conceptual idea of death and rebirth is expressed. Moreover, the acquisition of new status, as can be seen from the text, results exactly from the sacred interaction between man and snake. When the hunter finds himself in a cave (the inside of a mountain), the sacred center where the snake horde is located, he actually enters the otherworldly space. Full participation in that sacred location and change of mythological status occur only when the hunter, along with other inhabitants of this world (snakes) licks, three times, a white stone—the personification of serpentine vitality. Y.V. Chesnov pointed out that images of stone and snake constitute a comprehensive worldly universal: snakes are born from stone, interact with it, and contact with stone is similar to a snake's bite (1993).

Notably, the protagonist, after undergoing the initiation, receives a supernatural gift from the snake: he starts to understand the language of animals, and subsequently becomes a successful hunter. The text emphasizes his status as "deceased" to the profane world. This status is indicated in the episode when the living relatives commemorate the death of the hero. Furthermore, the myth states that the hunter is forbidden to speak about what happened. Semantically, this can be expressed by the phrase, "the dead do not speak".

According to the story, the violation of the ban results from drinking the araka. The image of araka in this narrative is obviously not accidental. It is known that in ordinary consciousness, alcohol is one of those "miraculous" means via which a person sheds many inner inhibitions. In a state of drunkenness, there appear euphoria and the illusion of freedom, which allow the person to violate taboos. In the mythological perception, alcohol acts as a bridge transporting the person closer to the otherworld. The vast majority of the Khakas traditional rituals, including the shamanistic rituals, were performed using alcoholic beverages. In this regard, it would be appropriate to cite the Russian idiom "be so drunk as to see devilkins", which indicates a state of extreme alcoholic intoxication. Meanwhile, in the mythological perception, such a state might have looked like contact with the other world. Because of its special mythological status, araka was believed to have been able to lead the folklore hero beyond the limits of life or death. In our case, araka almost led the man to his death, and likewise it was araka again, which, tried by the snake, saved the hunter from an inevitable tragic fate.

In mythological beliefs, the snake's connection with alcohol and even a certain association with it became reflected in a common idiom of "zelenyi zmiy" ("the demon alcohol", lit. 'the green snake'). This is probably no coincidence. In the traditional worldview, the snake, owing to its natural features, is the embodiment of the mythological concept of death and rebirth. For instance, its regular physiological process of molting (skin-shedding) was perceived in the archaic consciousness as death and rebirth. As a result, it became endowed with certain transcendental features. Such qualities with a certain degree of conditionality are also attributed to alcoholic beverages. This may have contributed to the convergence of their images.

In the folk tradition of the Khakas, there are subjects that reflect the snake's propensity to drink araka. In some Khakas fairy tales, a snake, in order to increase its powers, drinks ten barrels of araka at a time (Katanov, 1907: 400–402). We discovered one such mythologized narrative in the Khakas language in the archive: "Not far from the village of Verkh-Askiz, in the mountains of *Chiti khys* ('Seven maidens'), a shepherd was grazing cattle at night. Suddenly, he noticed that there was something black near him. He came closer and saw that there lay something black and very large. And [suddenly] it spoke: 'I, Chylan Khan, am the King of Snakes. I will come back [here] in three days, and you will bring me araka'. The shepherd fulfilled the wish of the snake. He came to the specified location at the appointed time. Chylan Khan says to him: 'It turned out to be cold on the bank of the Abakan River, and now I am heading along this side [that is, up the Askiz River]'. As a reward for treating it to araka, the snake presented the shepherd with a hat" (NARKh. F. 558, Inv. 1, D. 115, fol. 78).

In the oral folklore of the Khakas, the subject of a man meeting the King of Snakes was very widespread. The appearance of the King of Snakes is usually described extremely concisely, mentioning only his blackness and huge size. Sometimes, there occur very original and specific data regarding the appearance of the King of Snakes. One of such descriptions in the Khakas language was recorded by the local historian S.E. Karachakov. We will give it in our translation: "My uncle Yasa (Vasily Vladimirovich Borgoyakov) since his youth worked as a hired worker. He used to go to various places. One day, he [along with other people]

was walking through unfamiliar terrain, and saw how snakes were crossing the path [near them]. Having seen the people, the snakes wanted to attack them and sting them. At that time, one very large snake, as large as a thill, with a golden cross on its forehead [head], struck the ground several times with its tail [and stopped the snakes]: 'You must not touch [people], you must not' – it seemed to tell them. It was *Chylan Khan*—'the King of Snakes'. The snakes [then] moved to another location" (Karachakov, 2004: 36).

In the traditional beliefs of the Khakas, meetings with snakes of unusual type (for example, white, "with dark fur", etc.) meant happiness and good luck for the person. According to the informants, all the men who encountered snakes on their way returned home from World War II unharmed, without a single scratch. People explained such luck by a meeting with these reptiles and by their mystical benevolence. It was believed that if one caught such a reptile, removed the skin from it, and hid it in his dwelling in a chest or another place, happiness and well-being would surely come to the house (FMA. 2004. Recorded by A.A. Burnakov).

In the Khakas tradition, not only skin removed from reptiles, but also any snakeskin that had been shed (*chylan kibi*) was endowed with sacred properties, including the producing and apotropaic qualities. It was considered great good luck if a person found a shed snakeskin that was oriented with its head to the east. Its mystical power was believed to contribute to a multiple increase in livestock and the overall well-being of people. There were relevant folk signs: if a skin is found intact, then the person who discovered it will live a long life; if a skin is found by a traveler in torn clothes, his life will be of average length. People used to suspend snakeskin sewn into white fabric from a child's cradle and used it as an amulet (Butanaev, Torbostaev, 2007: 28).

The Khakas believed that some snakes had horns (*chylan muuzi*) on their heads, but only a happy person could see them. It was also believed that these horns were endowed with magical qualities; they brought happiness and wealth to their owner, "they paralyze greed in people. If you show mythical snake horns to any miser, he will disburse any of his savings without regret" (Ibid.). The beliefs concerning magical snake horns are also reflected in Khakas folklore, which mentions that these were used in manufacturing deadly weapons—sabers and spears (Devushka…, 1975; Doch starika, 2014).

Red coral *chylan sury* was considered to be a snake's attribute. According to popular beliefs, it was present only in white snakes, and was located under their tongues. There was a belief that if a person managed to procure a *chylan sury* and put it under his own tongue in the same way, he would become invisible (Butanaev, Torbostaev, 2007: 28).

This folklore and ethnographic evidence indicates that the culture of the Khakas manifested widespread ideas about the interaction of people with snakes and their chief *Chylan Khan*. It was believed that the results of such contacts were usually favorable for people. They became the owners of supernatural gifts—started to understand the language of animals, received various material benefits, and their efforts were always successful. However, the positive outcome of this interaction was largely determined by the tradition, mainly by gift-exchange. A person received all sorts of benefits in return for his services, or for sacrificial offerings to the snakes.

The snake in folk medicine

The sacralization of snake contributed to its widespread use in folk medicine. The Khakas believe that there are special snakes in nature, which are mysteriously associated with specific people. If such a person gets sick, they come to his aid and heal him. This is told in the following folk story: "One person became very sick. One summer afternoon, he fell asleep in the forest. At that time, a man was passing by. And he suddenly noticed a white snake crawling out of the sleeping man's mouth. It moved to the grass with flowers and, squirming strongly, began to rub its skin against them. This continued until it had cleaned itself back to its natural black color. [It turned out] that because of the internal mucus [that is, illness] of the person, the snake had absorbed it into itself and turned completely white. In order to clean the insides of the person one more time, the snake again penetrated there through his mouth. [After some time] it crawled out again. It was also whitish, but not as brightly white as the first time. The snake began to clean its skin again, rubbing itself against grass and flowers, until it turned black. When it tried to get inside the sleeper for the third time, the person who was watching all this, scared it away. Then he woke the sleeping person up and asked what dream he was having. He replied that in a dream he drank a lot of cold water. He noted that never [in his life] had he drunk such cold water. The eyewitness told the man what he saw—how the snake crawled twice into his mouth and crawled out of there, having changed its color. As a result, after some time, the person who was directly in contact with the snake was completely healed of his illness" (FMA. 2004. Recorded by A.A. Burnakov).

In the traditional Khakas beliefs, the image of the snake healer was so developed that virtually its entire body, especially the skin, bile, fat, blood, etc., was endowed with miraculous healing properties. People

believed in the magical and healing power of the skin shed by a snake. It was used during attacks of malaria (tied to the neck) and back pain (applied to the relevant area) (Butanaev, Torbostaev, 2007: 28). People believed that snakeskin had sacred properties and helped women in difficult childbirth. "Childbirth happens much more easily if you place across the back or belly a whole snakeskin found in the steppe or mountains" (Katanov, 1899: 394). Notably, for this purpose not only a shed snakeskin was used, but also skin specifically removed from a snake for this purpose. Our informant reported: "When people saw two snakes entwined in intercourse, they killed them. The snakes were skinned, and skins were dried. When a woman gave birth, the skins were placed on her. In this case, delivery was easy and fast" (FMA. 2005. N.T. Borgoyakov, born 1931, the village of Askiz, Republic of Khakassia. Recorded by V.A. Burnakov). In some cases, in the absence of skin of this reptile, it was permissible to use a belt that had once been used for separating the intertwined snakes (Ibid.). Such traditional Khakas beliefs were based on their faith in imitative and contagious magic: just as a snake sheds its old skin without any difficulty, so a woman can deliver a child easily. The birthing mother in this case was identified with the image of a snake. It was believed that to facilitate childbirth, it was enough for a woman to come into contact with snake skin.

Deep faith in the mystical connection between women giving birth and snakes has also been observed among the Northern Altaians. The speed of childbirth for a woman was believed to be directly dependent on the speed with which a man separated two mating and interwoven snakes met on his way (FMA. 2002. E.S. Tagyzova, the village of Kebezen, the Altai Republic. Recorded by V.A. Burnakov).

The ethnographic literature mentions that earlier the Khakas shamans treated eye diseases with the help of snakes (Ivanov, 1955: 213; Potapov, 1991: 194). Unfortunately, the authors did not describe such treatment in detail; so it is unclear what exactly caused the healing—the shamanistic ritual, when the spirit-helper of the shaman in the image of snake achieved the result in a mystical way, or the use by the shamans of specific remedies made of snake skin or snake venom. Neither method can be excluded. We may find a partial answer to these questions in the work by Y.I. Sunchugashev "Kham Seousteri (Shamanic Words)" (1991). As the author noted, the Khakas sincerely believed that eye diseases were sent by specific spirits. At the same time, they used to treat eyes with rather rational medical methods: for example, anointing the diseased organs with snake bile (Ibid.). Detailed data on the use of snake bile for treating various eye diseases in traditional Khakas medicine are presented in the field materials gathered by the local historian S.E. Karachakov. "An old woman named Tokhlakh lived in the aal of Kyzlas. [At some time in her youth] a leukoma appeared in her eyes, and she began to lose her vision. [At that time], her father, in order to heal his daughter, [deliberately] caught a snake. He killed it and took out its gallbladder. He brought this to the sick eyes of his daughter and carefully opened it. Bile began to flow directly into her organs of vision. Soon, her eyes began to itch strongly. She couldn't stand it, and started to rub them. When she did this, [at some moment] a film peeled off from her eyes, resembling a membrane of raw [chicken] egg. In this way, her eyes began to see again" (2004: 38).

In folk medicine, the Khakas also widely used the blood and fat of snakes, usually applying those externally for treating skin and other diseases. In the late 19th century, the Minusinsk Regional Head Prince N.A. Kostrov, referring to this topic, reported that the Khakas "rub warts with snake blood" (1884: 245). Snake blood and fat were used as a remedies for scrofula (a peculiar manifestation of tuberculous infection in children), by anointing sore spots (Karachakov, 2004: 39). For healing scrofula, other methods of "snake treatment" were also used; for example, the dead snake was entirely applied to the afflicted part of the body. Karachakov wrote the following about such "treatment": "I was still young. Even before [World War II], we worked in a team. It was hot in the summer. At that time, I fell ill with scrofula. It was impossible to touch my neck with my hand, [it hurt] as if fire was burning on it. I could not sleep at night because of the terrible pain. I did not know what to do. It was a good thing my older brother helped me out. In the evening, he brought me a snake he had killed. And at night, before going to bed, he put it on my neck, like a bandage. Oh, oh, my! How nice and well I suddenly started to feel! It cools! It chills! As I hadn't managed to sleep the previous nights, I slept like a log, [the feeling was] as if I hadn't even breathed. After that, the heat in my body abruptly subsided (my older brother said that the peak of the disease happened at that time). Then [for a while] he anointed my neck with snake blood. Soon everything went away! Look, not even the scars are visible!" (Ibid.). We should add that "snake treatment" was also widely used in folk veterinary medicine (Ivanov, 1955: 213; Potapov, 1991: 194).

Thus, in the traditional beliefs of the Khakas, the snake is endowed with healing power. People believed that this reptile had a mystical connection with certain people, and could save them from illness. Sacralization of snake has led to the emergence of beliefs about the healing properties of its skin, fat, bile, etc., and their wide use in traditional medicine.

Conclusions

The snake played one of the most important roles in the Khakas culture. Its image occurs widely in popular beliefs and folklore. Diverse symbolism was associated with the snake in the Khakas tradition. This representative of the reptiles was elevated to the ranks of sacred animals; it was associated with ideas of death and rebirth, and mystical initiation, including that of a shaman. The snake was conceptualized as a guardian spirit. The mythological consciousness of the people allowed for the possibility of marriage between some elect humans, and snakes in the form of beautiful maidens. It was believed that such a union brought the man material wealth and success, but usually was short-lived and was not always a source of happiness. All this testifies to the fact that in the traditional worldview, the snake appeared as a being from the other world, and therefore it could not be domesticated and fully subordinated to the humans. Moreover, the snake was consistently identified with some natural elements and features, such as water and mountains. In oral folklore, the images of spirit of the mountain and snake often merged. The snake was often perceived as a mountain spirit. Notably, the cult of the mountain was one of the structural elements of the Khakas worldview. A number of beliefs relating to the idea of sacral center, fertility, and ancestor worship were associated with its image. The snake was included in the circle of these beliefs. It was the embodiment of the idea of life and death, and served as a symbol of fertility.

One of the fundamental principles in the relationship with nature-spirits in the traditional worldview of the Khakas was gift-exchange. Any appeal to nature-spirits was accompanied by sacrifice in various forms. For example, for obtaining material goods, ensuring success in affairs, etc., supernatural beings demanded from a person some services or sacrifices. Such an approach was fully manifested in the relationship between human and snake, which became reflected in folklore.

Folk medicine played a key role in improving the health of people in the traditional Khakas culture. There were both rational and irrational methods of treatment. The most important role in these was played by the snake. Even killing this reptile was allowed in order to treat the patient. Because of the sacralization of its image, everything relating to its body and organs was endowed with magical healing power, and was used in folk treatment of various diseases, etc.

This article has addressed only a few, mainly positive, aspects in the perception of the image of the snake in the Khakas culture. However, in the traditional worldview of the Khakas, the interpretation of this image was ambiguous. Moreover, the snake stands out as having an extremely complex, multifaceted, and contradictory nature as compared to other animals involved in the ritual sphere. According to Propp, "the snake cannot at all be subjected to any single explanation; its meaning is diverse and versatile" (2009: 221). Therefore, the study of the snake image in the Khakas worldview and ritual practice is far from being complete. The present work has barely discussed the questions relating to the image of the snake in shamanistic practices and paraphernalia, its connection with the Lower World and the concept of death, the issue of snake fighting, etc. The study of these issues is a prospect for further research, and will be continued in subsequent works.

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"Taiga" and "River" Components in the Nanai Socio-Tribal Organization at Lake Bolon, the Lower Amur

This study explores the socio-tribal organization of the Nanai living near Lake Bolon, with reference to environment and migration, using published and unpublished sources, S.K. Patkanov's statistical materials, and our field data. We employ D.N. Anuchin's spatial distribution and variation method for reconstructing the pattern of settlement and assessing the socio-tribal structure with regard to the contacts between sedentary and nomadic populations in the Lower Amur region. The Lake Bolon area was a transit territory traversed by reindeer herders and hunters on their way to the Pacific coast, and the place whence the Amur natives migrated in various directions. This is where the herding, hunting, and fishing traditions merged. The Nanai settlers selected places that matched their economic specializations, and these places eventually acquired symbolic functions. Small populations merged, and borrowed the names of large territorial groups. Marital contacts and kinship ties are analyzed in detail. Social relationships were regulated by the Dokha institution: clans concluded alliances based on mutual aid. Intermarriage was allowed only after several generations. The analysis of exogamous clans such as Khodzher, Odzyal, Kile, and Beldy, which had settled near the lake, and the interviewing of the natives suggest that along with the Tungus patrilineal kinship, the matrilineal system predating the Tungus expansion was still practiced.

Keywords: *Lake Bolon, Nanai, socio-tribal organization, Tungus, Amur component, migration, settlement.*

Introduction

The development of the Middle Amur Lowland is one of the issues in studying the Tungus migration to the Pacific coast. This study aims at revealing the causes of movement of taiga hunters and reindeer herders to the area of distribution of people who were traditionally engaged in river fishing and hunting sea animals. The territory adjacent to the Amur River, with its numerous rivers associated with lakes, should have met the requirements for a taiga hunters' resource base. When considering the issue in this respect, it is important to study the natural potential of this space that is required to reproduce the established economic practices.

On the basis of ethnographic and anthropological materials, L.Y. Kastren, L.I. Shrenk, S.M. Shirokogoroff, and N.Y. Bichurin have established that groups of the Tungus moved across a vast territory, heterogeneous in terms of climatic and natural conditions. The nomadic routes of the migrants passed through the forest-steppe, mountainous areas and plains covered with mixed and coniferous forests, which determined the forms of their economic activities and social life (Bichurin, 1950; Koshkin, 1927; Titov, 1926; Shrenk, 1883; Shirokogoroff, 1926). Archaeological studies conducted by A.P. Okladnikov in the Angara-Lena region established an ancient origin of the Cis-Baikal peoples. A resemblance between the artifacts from Neolithic sites belonging to the

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Glazkovo and Serovo cultures and the household items of the local Tungus was revealed (Okladnikov, 1950, 1955). Relying upon archaeological and ethnographic data, G.M. Vasilevich has proved that a birch-bark dugout canoe, smoking vessels, a portable dwelling in the form of a chum tent, and a portable oval crib with high bumpers are not only elements of the economic and cultural activities of taiga hunters, but also markers of the area of distribution of the Cis-Baikal tribes (1957). A.V. Smolyak has discovered very much in common between the language and culture of the Amur-Sakhalin peoples and those of the Evens. For example, the fishing and hunting terminology of the Amur inhabitants has preserved a trace of the pre-Tungus influence. In antiquity, settlers from Eastern Siberian taiga improved a number of fishing implements and renewed their fishing-techniques owing to interaction with the Pacific Coast population (Smolyak, 1980). M.M. Khasanova, relying on the results of her ethnolinguistic research, assumed that the period of the Eastern Siberian community's adaptation to the new conditions was short. The core groups of modern Tungus-Manchu population started coming to the lower Amur territory, which had become deserted for various reasons, in the 17th century, and this process continued till the beginning of the 20th century (Khasanova, 2007: 186–187).

At present, taking into account the study of the ethnic history of the peoples inhabiting the south of the Russian Far East, the need arises for detailed consideration of intercultural contacts in the Lower Amur region. The variability of the characteristics of a culture on a spatial scale can be traced using the research approach developed by D.N. Anuchin. He suggests tracing the geography of the distribution and spread of characteristics inherent in certain anthropological and cultural types. In his opinion, the "points of support" can be the places of settlement, archaeological and natural sites containing information of interest to ethnographers, anthropologists, historians, folklorists, and archaeologists. According to the scholar, mapping certain features (such as lexical forms, burial details, ornamental motifs, etc.) allows tracing of regularities in the distribution of people and in the mutual influence of cultures, i.e. the process of mergence, mixing, and domination (Anuchin, 1902: 11–28).

The configuration of the Middle Amur Lowland area the Tungus expanded into may be exemplified by their distribution along the coast of Lake Bolon. Early in the 20th century, there were four large clans in the Nanai community: Kile, Khodzher, Odzyal, and Beldy. The locations and characters of residential zones are the main elements in reconstruction of their living environment. Unlike those of sedentary populations, the lifestyles of hunters and fishers depend on the environmental conditions. The factual material pertaining to the period before the 1920s is the most informative with respect to reconstruction of the remote past.

In reconstructing the Amur social environment, determination of its composition is the most difficult task. The majority of ethnographic studies devoted to the Nanai consider the clan organization of the people; therefore, we need to define the concept of "clan" as applied to the Bolon Nanai society (Sem, 1959; Smolyak, 1970, 1975; Shirokogoroff, 1926). The most challenging problem, according to Smolyak, is to distinguish a social unit of the Amur environment, and to determine its parameters in line with the classic definition of a clan (1970: 274; 1975: 76–79). According to the concept accepted by Russian and foreign researchers, a clan as a social institution had its source in early human society, and was an association of relatives descended from a common ancestor (Girenko, 2004: 82–83; Kozlov, 1970). In the Lower Amur clans, noteworthy are also other forms of family and kinship relationships and labor relations within a community or settlement. The Tungus-Manchu territorial formations at Lake Bolon could have had traits typical of the sociocultural communities of Siberia and the Far East; consequently, the development of their clan institutions was exogenous.

Lake and river space as an area of economic and cultural contacts

The division of the Lower Amur population into groups was caused by the natural features of the territory (alternation and structure of landscape zones, the type of Amur hydrosystem). The left tributaries of the Amur served as routes of communication: moving along them, Siberian Tungus-language tribes reached the main bed of the river. It is in the lower part of the Amur region that the Siberian taiga is connected with the Amur floodplain via rivers with sources at the Bureinsky (the Amgun River) and Badzhalsky (the Tunguska and Gorin rivers) ridges. The foothills on the left-bank part of the Amur region became a zone of contact between the taiga people and sedentary fishermen (Okladnikov, 2003: 393–412). The Evoron and Bolon lakes, with a network of rivers running into the large river, form a connecting link in the Amur floodplain. These are important for maintaining the ichthyofauna balance of the Amur ecosystem. Freshwater lakes with moderate currents serve as places of reproduction for many species of resident (nonmigratory) fish. In spring, the bodies of water are filled with ordinary fish, such as rudd, carp, crucians, Amur catfish, and pike, which come there to spawn and feed. Channels that are filled not only with freshwater species but also with anadroms (salmonids) during the spring-autumn season are of most importance to fishing (Goncharova, 2003; Novomodny, Zolotukhin, Sharov, 2004: 6–15, 35–39; Ozero

Bolon…, (s.a.)). Archaeological finds from the banks of the Tunguska, dating back to ca the 7th century AD, suggest that this area was penetrated by the Tungus, who preserved the taiga fishing traditions in their new environment. The presence of self-activating fishhooks for fishing-rods, boat-hooks, harpoons, and lures for winter and summer fishing among these artifacts points to the fact that small group fishing was practiced in shallow rivers. The organization of fisheries and fishing tools of the ancient inhabitants of Tunguska have much in common with those of Siberian peoples; in particular, the Evens (Zolotukhin, 2013).

Fishing in a large river differs from doing so in the lake and flow-type ones. Studies conducted among the Amur Nanai during the summer fishing season have demonstrated the importance of river islands for fishery. Chum and humpback salmon shoals migrate in a deep water zone, often in midstream. At high water levels and a wide river bed, trailing and fishing of stocks require a good physical state, patience, dexterity, and skill in handling a watercraft in strong currents (FMA, August 2011, observations in the Verkhny Nergen village, September 10–11, 2011). The Amur River bed is not uniform: being squeezed between the spurs of Sikhote Alin and Badzhal, it is divided into arms and small winding rivers, and forms island areas, marches, and floodplain lakes. The value of deep-water places for the vital activities of the Amur population was noted by K.I. Maksimovich (1861–1862) (Maksimovich Karl Ivanovich…, (s.a.): Fol. 2, 16). Areas of land covered by shrub vegetation in the middle of the river have bedrock (flood-free) coasts, sometimes concave; fish often accumulates in the river pools. These water nooks often form backwaters convenient for spawning; a large depth is also favorable for the transit of salmonids. Before the 20th century, nomad camps with boats moored to the opposite low-water (frequently flooded) coasts were often located on small islands in zones with cliffed coasts (FMA, the Naikhin village of the Khabarovsk Territory, informants R.A. and A.K. Beldy, August 2011). The inhabitants of these nomad camps had a direct access to fish resources, and had no need to travel a long way to fishing places. The life strategy of the Amur valley population was based on the experience that presumed knowledge of the river water regime, the species composition and life cycles of ichthyofauna, navigation, ability of handling a boat in various currents, and using specific fishing tools and techniques (Brazhnikov, 1900: 5–61; Lopatin, 1922: 128–129). The fishing equipment of Amur fishermen was more complicated than that of taiga hunters or reindeer herders. The latter needed time to acquire new professional skills. Channels that connect lakes with the river, and through which ordinary fish run to the river and travel along the way of salmonids, are most suitable for fishing. People living in the taiga band and in the valleys of big rivers developed their fishing techniques on the channel's banks.

Fig. 1. The territory of settlement of the Amur and Bolon Nanai.

The means of water transport employed by the population of tributaries and main stem of the Amur River is light small craft, which can be easily carried over. While maneuverable in shallow waters, they proved to be inefficient in open waters with strong currents. These were mainly dugouts or birch-bark canoes designed for a single rower, and intended for rafting down mountain rivers, sometimes against the current (Sem, 1973: 146–147, 153–159). Similar boats were probably used by the Tungus penetrating into the Amur valley. Subsequently, development of new expanses by newcomers became possible through borrowing the Amur design for boats (Ibid.: 151).

The Gorin Nanai retain a memory about their travel route to the Orochis living on the coast of the Strait of Tartary. At first, they moved in birch-bark canoes along the Gorin, a tributary of the Amur River. Having passed through the mouth of the Gorin, the Nanai went down the river to the mouth of the Amur, and reached Langr Island, "simultaneously visiting all their relatives" who had settled along the banks of the great river (Samar, 1990). During travel, boats adapted for small river navigation were at first replaced by large Amur vessels, and then by stout sea-going vessels. The stories told by informants furnish insights into the degree of integration of the Lower Amur peoples, which was determined by their experience of living in taiga conditions. The taiga with its "small fast-flowing rivers", being the major

spatial references, formed familiar surroundings for hunters on foot and reindeer herders. But a large river with its powerful current frightened them. Having left the taiga, its inhabitants settled near the channels and branches of the Amur River, related to a group of lakes (Evoron, Bolon) (Khasanova, 2007: 187). These territories were the resource base and launching pad for the development of the Amur valley, a place for interpenetration of traditions between the taiga hunters and the Amur fishermen.

Settlements and clan composition of the Nanai living in the lake space on the left bank of the Amur River

The system of settlements and the family composition of the inhabitants are the evidence of their migratory activities in the area adjacent to Lake Bolon. The most informative source is the data collected by S.K. Patkanov with respect to the Khabarovsk Okrug of the Primorye, and presented in the 1897 Census. The nomad camps with the Goldi population registered by him, such as Zhape (Dzhape), Nemaso, Somoomo, Khutun, Gogda-Mungali, Pudi (Puddi), Kherelgu, Khevechen, Seporyuna (Seporelo), were located on the left coast of Lake Bolon; the Nergul and Bolon nomad camps were on the left bank of the Khaunsi channel; the Utku nomad camp was on the left bank of the Nadki channel; and the Nadki nomad camp was on the right coast. The names of the Ordan, Tyrkel (Khulusen), Oita (Oitada), and Limpan settlements are given in the list with no indication of their location (Patkanov, 1912: 959–960). On average, five or six households with a population size of 33 persons were recorded in each settlement. Bolon, the largest settlement, comprised 26 households, with a population of 116 persons; while Oita, the smallest nomad camp, consisted of 1 household and 6 persons (Ibid.). The clan composition of the population of the said nomad camps is interesting. In the 1897 Census, in this area, the Nanai clans of Beldai (Beldy), Kilen (Kile), and Khodzyar (Khodzher) are listed, which represented the intertwining of various genetic lineages. In each of the nomad camps, there lived members of various clans. The locations of certain settlements are hard to determine, because some of them disappeared, and many others were renamed and relocated to flood-free areas later, when collective farms were created. At the time Patkanov collected his data, the biggest group was composed of temporary settlements that, judging by their population size, were founded by associations of fishermen and hunters. The results of recent interviews with of old residents from among the Bolon Nanai living in the Achan and Dzhuen villages have given the overall picture of the Bolon shore development. On the left shore of the lake, each cape (Saktakhonko, Yapankakhonko, Nuchikhonko, etc.) was occupied by a separate nomad camp (FMA, the Amursky District of the Khabarovsk Territory, informants I.V. Gaer, V.M. and L.A. Kile, June 23, 24, 2016). Patkanov mentions numerous representatives from various Nanai clans, who resided in this zone of nomad camps. In Zhape (Dzhape), the fishing team included members of the Beldai/Beldy (32 persons) and Kilen/Kile (15 persons) clans, while the one in Somoomo included members of the Beldy clan (14 persons). All other sparsely populated villages on the left bank were founded by the Kile people. Apart from the Kile and Beldy clans, a Khodzher group settled along the channels that connected the lake with Amur. Notably, the members of the Kile clan (184 persons) inhabited Seporyuna/Soporelo, one of the most heavily populated settlements located on the left bank, and representatives of the Kile (12 persons) and Khodzher (104 persons) clans lived along the Khaunsi channel (Patkanov, 1912).

Fig. 2. The area of the Lake Bolon valley. Black dots indicate nomad camps of the Odzyal, Kile, and Khodzher clans.

In the 1970s, a researcher of figurative words in the Tungus-Manchu languages, N.B. Kile, tried to determine the semantics of certain toponyms in the Lake Bolon area. His report, currently stored in the archive of the Institute of History, Archaeology and Ethnography of the Peoples of the Far East FEB RAS, provides the already changed names from the terrain adjacent to the lake, which are more consonant with modern cartographic toponyms. The list of clans compiled by N.B. Kile is supplemented by the Odzyal clan; the list of nomad camps specifies Bolan (Bolon), Zuen (Dzhuen), Ordan, Yapan, and Nergul. The area of distribution of the Kile, Khodzher, Beldy, and Odzyal clan groups includes the Natki, Simin, and Kharpi rivers. According to N.B. Kile, the reduction in the number of settlements recorded in the last third of the 20th century should be associated with the disappearance of small settlements, the merging of temporary nomad camps, and the consolidation of inhabited localities along the Amur in the course of the collectivization and commercial development of the territory. In his report, N.B. Kile points out that in the 1930s, Nanai clans were resettled to the Bolon and Dzhuen villages (1977: Fol. 47–48). In 1977, the Bolon village was renamed as Achan. As it follows from the report by N.B. Kile, an Odzyal nomad camp was earlier located near the Serebryanaya channel, at the foot of the Gokdakta mountain (referred to as the Kadan Khonkoni by the author of the report (Ibid.: Fol. 49)). Another name of the Kadan Khonkoni oronym is Ozal Khonkoni ('Odzyal cliff'); this is encountered in the records by R.K. Maak made in 1855 (1859: 192–193). A Khodzher nomad camp was located along the Nakka River, and a Kile camp near the Nergul promontory. Before the 20th century, clans lived separately. The choice of settlement location near a channel connecting the lake with the river was dictated by the settlers' economic activities. The subsistence of local communities was based on catching both lake and migratory fish (FMA, the Achan village, the Khabarovsk Territory, informants L.A. and V.M. Kile, June 24, 2016).

The results of the detailed analysis of Nanai clan composition conducted by A.V. Smolyak and Y.A. Sem serve as a basis for reconstructing the migratory activities at Lake Bolon. Notably, large tribal coalitions (Khodzher, Beldy, Kile, and Odzyal), which in the beginning of the 20th century were attributed to the Nanai, adopted small territorial groups during their settlement in the Bolon valley. The genesis of the above conglomerates provides the chance to depict the ethnocultural appearance of the Bolon group of local population more accurately. Though separation of clans by territorial principle was not noted in Nanai society, each village was formed as a territorial neighboring community. As early as the beginning of the 20th century, special features of the distribution and migration of the Tungus group could be distinguished, which were determined by economic activities. Studying the Beldy and Kile clans has revealed that their core was formed by descendants from various areas of Asia.

It is necessary to clarify the issues of self-designation and mutual designations of groups. Sem related the word "Kile" to the ethnonyms "Teli", "Tsilen (Kilen)" that trace their origin to the self-designation of a group inhabiting the Ussuri area in the 6th to the beginning of the 7th century AD. In the 8th to 10th century, this community expanded owing to the inflow, to the Amur and Sungari, of Tungus, who could have participated in the formation of the Korean and Northern Chinese populations. The Kile clan was also supplemented by recent resettlers from the Amgun and Bureya rivers, assimilated by the Tungus (Sem, 1959: 6). Interestingly, the researchers of the second half of the 19th to the early 20th century considered the *Kili*, as well as the *Samagir*, a separate ethnic group. They differed from their neighbors in terms of culture and language. Their area included left tributaries of the Amur, including the Kur and Urmi rivers with good hunting lands (Shrenk, 1883: 34–35). A. Lipsky considered the *Kilen (Kili)* an independent community that merged with the Goldi group. The Nanai clans of Udynka, Donka, and Yukaminka were territorial subdivisions of the *Kili*. The researcher outlined territory of their habitat—the Tunguska River and Lake Bolon (the Duncan branch) (Lipsky, 1925). Smolyak also related the ethnonym *Kilor* to the Evens' native name for themselves (1975: 120). This clan was extremely branched and numerous. A large Kile group living in the Dondon, Torgon, and Naikhin villages and recorded in 1897 consisted of two branches. The first branch was formed by several generations of descendants from area of the Amgun River. The second branch consisted of the ancestors of the Kimonko Udege people from the Khor River. Like Sem, Smolyak traces this kindred community to the population of the Ussuri tributaries. In the past, the Ussurian group resettled to the Khor River; having become related to few local Udege, they started calling themselves "Kimonko". Having resettled to the Anyui River, the Kimonko mixed with the Amur Kile and borrowed their name from them (Ibid.: 120–121).

The Beldy conglomerate was also formed in a vast territory. Sem pointed out that initially the Beldai people constituted an independent tribal community, which was enlarged at the expense of adopted groups in the 18th to 19th centuries. Eventually, in this conglomerate, three branches were formed by various territorial subdivisions: indigenous (4 subdivisions), Tungus (30 subdivisions), and those with Ainu admixture (13 subdivisions). When considering the formation of the territorial groups, it is noteworthy that resettlers from the Ussuri merged both with the Beldy and with the Kile clans. The Ussuri migrants were included in the alliance of Solons, who called themselves the "Boral". Later, this kinship community resettled to the Amur.

The Morial group, whose members were engaged in horticulture and fishing, is also related to the Ussuri area. This group is attributed to the descendants of the ancient Mulin/Morin clan, living along both banks of the Ussuri River in the 17th to 18th centuries (Sem, 1959: 8–9). Smolyak gave a list of the territorial Beldy subdivisions, which names correspond to the names of the inhabited localities and channels whence migrants arrived. Sem, attributing the territorial names to the ethnonyms, extended the list of Nanai clans. For instance, Smolyak considered the Morial (Moril) group specified in his list to be territorial. Its name appeared recently, and was not recorded in the 1897 Census (Sem, 1959: 8–9; Smolyak, 1975: 111–112). The issue of the genesis of the Aktanka and Perminka clans remains unsolved. The residents of the Naikhin, Dzhary, and Dada villages argued that the up-river Beldy people call themselves "Aktanka". The Nanai from the Beldy clan considered Perminka to be a subdivision of themselves, rather than an independent clan. According to Smolyak's data, some members of the Aktanka and Perminka clans denied their kinship to the Beldy; i.e. only part of the Aktanka and Perminka joined the large clan (Ibid.: 118–121).

The Khodzher/Khedzher clan, as pointed out by Sem, combined 15 patronymies, and was more compact than the Beldy and Kile clans. Its formation proceeded in the Amur River basin and in the Sungari River valley. Sem considered that its core was formed by the ancient Khechzhery/Khechzhe Manchu clan. Also, one branch and two subdivisions of the Khodzher/Khedzher clan originate from the Dongbei farmers and Chinese of Shandong Province. Upon resettlement to the Amur, these groups became enlarged at the expense of the indigenous population and the Tungus (Sem, 1973: 7). Smolyak distinguished four main branches in the clan's genesis. One of these was formed by newcomers from the Amgun, who divided into two groups, and headed for the Amur Liman and the upper reaches of the Amur. The second one consisted of settlers from the upper reaches of the Amur and Sungari; the third, of migrants from Yakutia. The fourth branch was formed on the basis of the local population living near Bolon Lake, and incorporated representatives of former waves of migration. The Khodzher clan, which was composed of people living in a vast territory, is less scattered than other large Nanai clans, and its members consider the surroundings of Lake Bolon their native land (Smolyak, 1975: 120).

Sem attributed the Odzyal clan, consisting of seven subdivisions, to the Sungari aboriginals that resettled to the Amur at various times. Kindred of Odzyal people can be found among the Koreans and Chinese. According to Sem, the ethnonym Udzi (Utszi) encountered in Manchu documents of the 17th century is directly related to the Odzyal clan (1959: 7). Smolyak has ascertained that migrants from Amgun who blended into the Fuzyal group living in the Nanai region participated in formation of the Bolon and Khungari Odzyal subdivisions (1975: 127–128).

Recently collected field data show that Nanai settlers organized their living space in the Lake Bolon area in accordance with their family economic practices. Before the 20th century, the Kile selected areas suitable for reindeer breeding, while the Khodzher and Odzyal people settled near channels. The toponyms of settlements located on the left shore of the lake and near the Amur reflect special features of the territory's development by these groups. Many oronyms and hydronyms designate details of landscape (they are interpreted as "mound", "cliff", "mountain protrusion", "rock", "promontory", "creek", "river", "lake", "lakelet", "river mouth"), or terrain orientation relative to the cardinal directions ("mountainous", "southern", "northern", "northwestern" side, "southeastern" or "northwestern" wind, location relative to the lake), or indicate a form of subsistence activity (Pun gavoi hureni – 'a mountain at the foot of which fishing sinkers (for seine) are collected'; Teisin – 'a fish processing place'). Analysis of figurative words in the Nanai language, conducted by N.B. Kile, has demonstrated that some toponyms relating to the Bolon Lake area are etched in the legendary history of the Lake Nanai people (1977: Fol. 52–54). The Nergul promontory and the islands of Yadasen, Giudelgien, Piselgien, and Bayan Boachakan serve as the places of shamanic strength, and are mentioned in the legends about "a bald bride and her bridegroom", "walking stones", and "a stone fish". This may be evidence of the Bolon Nanai aboriginal substrate. The islands and area near the Serebryanaya channel, showing a high concentration of legendary places, pertain to the area of distribution of the Khodzher and Odzyal clans, whose ancestors could have been among the first settlers.

Kinship ties and regulation of kinship relationships among the Bolon Nanai

In order to distinguish the first settlers in the Lower Amur group of peoples, it is necessary to study the kinship succession algorithms of local population. The mechanism for strengthening kinship ties and the formation of conglomerate clans was regulated by certain ethical standards and social attitudes, and also depended on natural factors. Researchers N.A. Lipskaya, Y.A. Sem, A.V. Smolyak, and V.A. Tugolukov analyzed such a social phenomenon as the *Dokha* institution, which existed among the Tungus-Manchu peoples living in the lower reaches of the Amur River. Upon penetration of the Manchu into the Amur region in the 16th to 17th centuries, the traditions of ownership of ancestral territories and tribal lands practiced by the local population started

collapsing. The fishing and hunting areas were distributed among separate families, which resulted in competition for the right to hold territories of hunting or fishing value. By the 19th century, a situation had formed in the river valley, whereby families belonging to various clans and unrelated genetically could live within the same territory. Each nomad camp was a territorial neighboring community with common economic territory. The space occupied by clan groups near the Amur coast was rather extensive. Having lost their territorial integrity and ceased to be an economic unit, the Nanai clan survived as a social and religious association. The clan had a common fire (*em tava*) and a common place of burial (*em khumun*), adhered to the rule that prohibited intermarriages (*mendola asi naiva achasi*), and helped orphaned kinsmen in giving large clannish funeral repasts in memory of the deceased* (Sem, 1959: 14). Upon the collapse of kinship communities and with clan segmentation, the *Dokha* relationships also underwent transformation. Before that, the term *Dokha* meant certain responsibilities of the kinship community members; for example, joint participation in the wars between clans, observance of the exogamy rules, etc. After the clan's isolation had been broken, these responsibilities spread also to new clan groups and territorial associations included in the recipient clan. In the opinion of Sem, the *Dokha* relationships were concluded between kinship groups of a single clan, and also between the adopted and adopting groups (1959: 17). The researcher came to the conclusion that the *Dokha* institution was rather a remnant of the Nanai phratrial organization, and corresponded to the social religious brotherhood (*kep bi Dokha* – 'close brotherhood'). Earlier, it regulated the relationships between the filial clans of the brotherhood; later, inside the adopted clans and territorial groups. After the breakdown of phratries, the *Dokha* functions were transferred to the alliance of territorial groups. The large clans of Kile, Beldy, Khodzher, and Samar, which separated out in the 19th century, preserved their phratrial organization (Ibid.: 18). However, Smolyak believed that *Dokha* was only typical of small clan groups, while the relationships in the large Nanai clans were regulated on another basis. Thus, she denied both the relation of this institution to a community, functioning as an alliance of clans, and the remnant type of this social phenomenon (Smolyak, 1975: 130). Tugolukov has identified common ethnic elements in the Tungus-Manchu peoples from the example of the social structure of the Orochis and Udege. These elements, being a result of convergence of various territorial groups, arose from the exogamous bans according to the *Dokha* institution. Members of a blood kinship community avoided marriage, not only with each other, but also with members of other blood kinship communities scattered in a vast territory. In the course of a clan's fragmentation, its exogamous chain lengthened; families and some of their members, having left their initial place of living, acquired new ethnonym at a new place, but maintained ties with their kinsfolk. This suggests that the *Dokha* alliance was initially concluded between kinship communities, and formed the basis of regulation of marital relationships and of establishment and control of social and religious order (Tugolukov, 1972). The *Dokha* alliance was sealed by giving a widow to another clan, after which both clans became twinned with each other ("brotherhood clans"); they undertook a commitment to help each other in economic matters, court trials, and religious events, while observing exogamy (Smolyak, 1982: 241–242).

Within large Nanai clans, members of various branches or territorial groups could enter into marriages. For example, the Bolon Beldy effected marriages with the Amur Beldy. In the Kile clan, members of the Udege and Amgun subdivisions were initially considered to be close relatives. Therefore, in their mutual relationships they adhered to the custom of "lighting the lamp". This custom consisted in keeping alight the common clan fire, to which the members of other clans had no access. Though exogamous relationships were preserved in such a tribal coalition, with time the ban on establishing marriage ties between subdivisions was removed. Another conglomerate (the Khodzher clan) was more compact and was a community of genetically close people. According to Smolyak, in the 1877–1880s, marriages in the area at Lake Bolon were regulated. Husbands from the Khodzher took their wives from the Kile, Odzyal, and Diger clans. The down-river Odzyal maintained exogamous relationships with the Saigor group. Interestingly, the up-river and down-river Odzyal people even never heard of each other (Smolyak, 1975: 117–121, 127–128, 188).

The family and marital traditions maintained by the Lower Amur peoples were regulated by their social and legal attitudes. The procedure of choosing marriage partners and the kinship nomenclature were formed as early as the beginning of the 20th century. Membership of clans among the Lower Amur peoples was determined, not by relation to a particular territory, with its unique environment, but by the features of social and religious ties. There were some differences between the social processes of the groups living immediately in the Amur valley and along the banks of its tributaries. The first-type groups had the developed culture of river fishermen, which included some elements of cultures belonging to the "taiga" East-Siberian population and the "agricultural" southern one. In the culture of the second groups, occupying the area at Lake Bolon with its network of rivers, marital relations were permanently revised. This area was one of the zones of Tungus penetration into this region.

*Archive of the MAE RAS. F. 5, Inv. 2, No. 47, 48, 53.

The results of interviews conducted in 2016 in the Dzhuen and Achan villages allow the conclusion to be drawn that in the territory near Lake Bolon, remains of the pre-Tungus family and marital system were preserved. Some interviewers (76 men and 26 women were interviewed) indicated that before the introduction of a passport system, their last (family) names were inherited through female lineage. This suggests the existence of the matrilineal kinship system in the population of this region. Tugolukov, studying the *Dokha* institution and the levirate among the Orochis and the Udege, pointed to an important aspect: according to the custom, not only a kinsman of the dead husband could marry a widow. Descendants of a woman, even by different husbands, were related by blood, and intermarriages between them were banned. Consequently, the descendants of one woman were related by the same clan ("family") name. This is inconsistent with the patrilineal kinship that became widespread among the Tungus. Exogamous bans through female lineage were observed among the Ainu and Nivkhs (Tugolukov, 1772: 111–112). As studies have shown, the territory near Bolon was a social "refugium" where remnants of the Amur kinship system survived to our days.

Conclusion

The area located in the foothills of the Badzhalsky and Bureinsky ridges, on the periphery of the East Siberian taiga and the Amur floodplain, since olden times has been a zone of contact between the Siberian and Amur peoples. The coast of Lake Bolon, with its channels and a network of rivers, became one of the first places where the Tungus, who migrated to the Pacific Coast and had the skills of hunters and reindeer herders, integrated themselves into the community of fishermen living near large rivers. They developed the new environment by the use of fishing and hunting techniques, and transport facilities typical of small and large bodies of water. The social organization of the Bolon population also underwent changes. The closeness of the river caused an inflow of the Amur population into this environment; however, the remaining cultural and economic differences at first prevented the mixing of these groups. The separate lives of groups with close ties to Siberia or Amur were preserved till the early 20th century. In a social context, the "taiga" or "river" component was present in the genealogy of inhabitants of nomad camps; the origin of their clans was related to the area of Siberia or the Amur basin. Analysis of the system of settlements and kin relationships between their inhabitants has revealed special features in the formation of the population in the Bolon area. This territory was not included in the zone of migratory activities. Its location in the periphery of the Amur basin has determined its role as a unique refugium, where small groups of migrants from various regions of Eastern Siberia and the Amur valley settled. Further studying the gene pool of the Bolon Nanai will help in determining the scale of Tungus expansion in the Amur valley and in refining certain nuances of the familial and marital relationships of the Lower Amur peoples.

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The Armenian Epic "Daredevils of Sassoun" and the Mahābhārata: Similarity of the Ethnographic Substratum

The author summarizes the results of his search for parallels between the Armenian epic "Daredevils of Sassoun" ("Sasna cŕer" which is also called "David of Sassoun"), and the Mahābhārata. The comparative study has revealed considerable similarity in the "ethnographic substratum" of both epics, particularly that relating to the archaic social organization mirrored by the epic. The earliest layer of both the Armenian and the Indian epics preserves the memory of a rural, largely pastoral society, in which an important role was played by young warrior brotherhoods. In the Armenian epic, this is indicated by recurrent motifs: the young heroes' rampage followed by exile, the foundation of their own outpost in the backwoods, young warrior brotherhoods, their defense of herds and warding off enemy attacks, battle frenzy (a common characteristic of all the Sassoun heroes), their immutable mentor and leader ("uncle") Keri Toros, allusions to orgiastic feasts, traces of premarital freedom by young men and women, etc. Among the Armenians, these motifs were supported by the existence until recent times of the institution of youth age-set groups, described by ethnographers. A comparative study of the Armenian epic reveals its hitherto unnoticed socio-historical aspects. Its wider use for studying other epic traditions (not only Indo-European but also those of other peoples inhabiting the Caucasus and the Eurasian steppes) will contribute to Comparative epic studies.

Keywords: Armenian epic, Mahābhārata, Comparative epic studies, ethnographic substratum, age-set groups, youth warrior brotherhoods.

Introduction: Indo-Armenian epic parallels

Our search for parallels between the Armenian epic "Daredevils of Sassoun" ("Sasna cŕer"; in Russia it is better known as "David of Sassoun") and the Indian Mahābhārata was triggered by the example of A. Petrosyan, whose Armenological works (2011, 2014) have already revealed some common motifs and images in both traditions. An attempt at moving in the opposite direction (from the Indian epic to Armenian) will be presented below. As we became acquainted with the Armenian epic texts (unfortunately, only in translation), new parallels soon began to come to light.

The historical contents of the Armenian and Indian epics are equally multilayered. Along with the reflection of a time when large monarchical formations and urban culture emerged in a predominantly agricultural society, the Mahābhārata has preserved the earliest stratum of memories about the time of a tribal society of mobile cattle breeders. Herds were recognized as the highest value in this society, and were the reason for conflicts between tribes. Regular exchange of raids on herds was carried out by *vrātyas*, members of young warrior brotherhoods (*gaṇa* or *vrāta* 'pack'). In Vedic mythology, the reflection of such band of young warriors was the *gaṇa* of the Maruts, deities of the storm, the sons of the fearsome god of cattle-breeders Rudra, brothers of the same age. Their

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common spouse or lover (the young goddess Rodasi) stood on a fighting chariot together with them.

The Indian epic emerged in a warriors' milieu and preserved the legacy of archaic heroism better than the priestly poetry of the Ṛgveda. The epic reflection of the young warrior brotherhood seems to be the main characters of the Mahābhārata—five Pāṇḍava brothers. After the death of their father King Pāṇḍu, the brothers grew up at the court of their uncle King Dhṛtarāṣṭra, and were in constant conflict with his sons, the princes Kauravas. In order to get rid of his nephews, Dhṛtarāṣṭra allowed them to establish their own kingdom in a remote forest area. When the Kauravas, by means of witchcraft and deception in the game of dice, deprived them of their kingdom, the Pāṇḍavas, accompanied by their common spouse Draupadī, wandered through the forests performing various feats (Held, 1935: 308; Witzel, 2005: 41; Vassilkov, 2010: 307–310).

Another group of epic characters, in which it is also possible to see a Vrātya war-band, is the entourage of Kṛṣṇa, the friend of the Pāṇḍavas—young men of the Yādava tribe. Wine flowed and young women were present at their wild ritual festivities, and the young warriors brought themselves to fierce bestial fury, which ultimately ended up in tragedy: at the last of these festivities, Kṛṣṇa's warriors, drunk and possessed with rage, completely exterminated one other (Vassilkov, 2009: 51–53).

It will suffice to confine ourselves to stating that in the earliest layer of the Mahābhārata we may find some memories of the tribal society of militant cattle breeders, in which it seemed natural for king's sons to go around the shepherds' camps, recount and brand cattle, raid the herds of neighbors, or repel similar raids (Mahābhārata I, 205; III, 227–229; IV, 33–62; all references to the Sanskrit text of the Mahābhārata are given according to (The Mahābhārata, 1933–1966)).

It is also possible to distinguish the layers belonging to various periods in the historical content of the Armenian epic. In the preface to the Russian translation of the "Sasna cŕer", academician I.A. Orbeli rightly noted that a large part of its historical content was determined by the struggle against the Arabs and the Baghdad Caliphate, but the epic also contained many layers from previous periods, and the emergence of some "points of this epic is separated from us not by one, but by many millennia" (1939: IX).

A common ethnographic substratum of the two epics: brotherhoods of young warriors

The greatest similarity to the Indian epic can be found in the earliest layer of "Sasna cŕer", and precisely in the way that the ethnographic substratum of the epic is mirrored in it. This term was proposed by B.N. Putilov for designating the mythological and ritual patterns used in an epic, as well as the archaic social organization. Next, this article will attempt to show that the "Sasna cŕer" and Mahābhārata in a similar manner reflect analogous forms of archaic social organization as a component of the ethnographic substratum of the epic. The author's attention to the group of motifs included in this layer was drawn by Petrosyan's article about "black youths", *t'ux manuk* (2011), where these characters of Armenian folklore were associated with the archaic institution of youth military brotherhoods and mythological "members of the war-band of the Thunder god". The author saw an Indian parallel to the Armenian "black youths" in the mythological groups of young warriors—the Rudras and Maruts, who formed the retinue of Rudra, the god of the storm, and Indra, the thunder god. The earthly equivalent of these mythological groups were the *vrātyas*, mentioned above in connection with the Mahābhārata, the leader of which was thought to be the embodiment of Rudra.

The first thing that strikes an Indologist in the Armenian epic is the young age of the Sassoun heroes, who performed most of their exploits in childhood and adolescence. During their childhood, all protagonists of the "Sasna cŕer", the founders of Sassoun, the brothers Baghdasar and Sanasar, the son of Sanasar Mher the Elder, the grandson of Sanasar David, and the great-grandson of Sanasar Mher the Younger, are distinguished by extraordinary strength and a violent temper. Little Sanasar in Bagdad broke the neck of the Vizier's son. In the town of King Tevatoros, the brothers mutilated local children while playing (David Sasunskij…, 1939: 15, 34–36). Little David inadvertently killed and injured the children of the nobility in Msyr; when he was sent to Sassoun, he crippled his playmates there (Ibid.: 162–163, 192–193; Armyanskiy narodnyi epos…, 2004: 269–270). Six-year-old (or even two-year-old) Mher the Younger made a bridge over the river in Sassoun and hit everyone who walked on it: "Why are you walking on my bridge!" When the townspeople waded through the river, he hit them with the words: "I made a bridge for you. Why are you wading across?" (David Sasunskij…, 1939: 335–336). There is a similar episode in the Mahābhārata (III, 106.10–15): the young prince Asamañjas, the son of King Sagara, "grabbing the helpless, crying children of the townspeople by their heels, threw them into the river"; the townspeople complained to the King and he banished his son from the town.

The rampage of the young Sassoun heroes also resulted in exile. King Tevatoros expelled Sanasar and Baghdasar from the town, however, allowing them to establish their own settlement on his land—Sassoun (Ibid.: 36–43). The Sassounians sent David to herd cattle in the mountains (Ibid.: 192–194; Armyanskiy narodnyi epos…, 2004: 171). After the violence at the bridge, Mher

the Younger was sent to his grandfather in Kaputkokh. The townspeople there also became worried about his rampaging, and the mother was forced to send her son hunting under the supervision of her two brothers. In a quarrel, he inadvertently killed both of his uncles, after which the grandfather sent Mher back to Sassoun (Zaryan, 1973: 219–222).

The rampaging of the young protagonist as a motivation for his exile is an essential element in the plot of both epics and fairy tales (Propp, 1969: 69). Yet there occur many other motivations, such as, for example, the hatred of the stepmother, dispute about the inheritance between the brothers, envy, etc. The use of only this motivation for the protagonist's departure from home in the Armenian epic suggests that the functioning of this motif was supported by a long existence of the institution of youth age-set groups among the Armenians, as evidenced by the ethnographic materials (see, e.g., (Vardanyan, 1967, 1981; Karpov, 1996: 206–207)). This institution made it possible to redirect youthful aggressiveness in the right way and bring its carriers outside the village, to the periphery of the communal territory. Most likely, the institution of youth warrior brotherhoods served as an ethnographic basis for such motifs as the expulsion of the young protagonist for his rampaging and "the house in the forest" of European fairy-tale folklore (Propp, 1946: 97–148). Sassoun thus becomes a kind of "house in the forest", a refuge for the brothers who were removed from the capital for their rampaging. There is a parallel to this in the Mahābhārata: in order to get rid of his nephews, the young Pāṇḍava brothers, King Dhṛtarāṣṭra allowed them to establish their own kingdom in a remote, forest part of his possessions, where they built their own town of Indraprasthā (Mahābhārata I, 199.24–50).

Almost the entire epic biography of each of the "Daredevils of Sassoun" falls during the period of childhood and adolescence, culminating in the marriage and birth of a son, after which the protagonist can only die or go to his last fight. The adventures of the founders of Sassoun ended when Sanasar died, after marrying Dekhtsun and waiting until his son was born (David Sasunskij…, 1939: 106–107). Mher the Elder, after marrying princess Armagan, left her for some time for the widow of Msra Melik, and then returned and died after the birth of his son (David) (Ibid.: 146–151; Zaryan, 1973: 78–90). After his wedding to Khandut-khatun and awaiting the birth of his son (Mher), David went to battle with the Khlatians and died from the arrow of his first bride-to-be whom he had renounced or her daughter born from him (Armyanskiy narodnyi epos…, 2004: 28–29, 185–187, 294). Mher the Younger married Gohar, but before the spouses could consummate their marriage, he had to defeat the army of the Msyr King. Some time after his return, he left Baghdad to defend Sassoun from enemies; after returning, he found that Gohar had died from loneliness, after which he himself left this world (David Sasunskij…, 1939: 365–375; Armyanskiy narodnyi epos…, 2004: 78–83). Marriage thus transferred each protagonist from his youthful status to the next age group, after which the epic lost interest in him.

Not only the protagonists, but their comrades, the "Daredevils of Sassoun", are teenagers, young men, usually referred to by the term *lač* ('young fellow', 'lad', 'boy'). In the dialects, *lač* demonstrates such nuances of meaning which perfectly correspond to the image of a participant in a rampaging teenage band, for example, in the dialect of Sebastia—'(vicious, spoiled) boy'; in other dialects the derivative adverb *lač-anak* means 'bravely, courageously'. This is reminiscent of the evolution of the semantics of the Vedic *márya*, Avestian *mairya*—'young man; a member of a young warrior brotherhood': in the later Indo-Iranian languages, the variants of this word can have the meaning of both 'young lover' and 'villain', 'robber'. Their eternal mentor Keri Toros used precisely the word *lač* when he addressed the Sassoun heroes. These "lads", "boys" constituted the main military force of Sassoun. The translation of the consolidated text describing the struggle against the Baghdad Caliph says, "King Gagik gathered ardent young boys, / From them he threw together regiments… / Keri Toros and all the lads / struck and crushed the Caliph's troops" (David Sasunskij…, 1939: 21).

The protagonist's feasts with his companions deserve special attention: Mher "took forty unmarried young lads, / took forty unmarried young girls, / set seven-year-old pomegranate wine for them, and they drank!" (Armyanskiy narodnyi epos…, 2004: 75; David Sasunskij…, 1939: 239). A valuable detail is contained in the prose version of N. Zaryan: David "feasted every day with unmarried lads **of the same age** (emphasis is mine – **Y.V.**), and young girls" (1973: 149). Unfortunately, it was not possible to find out which version of the legend Zaryan used while mentioning that David's companions were of the same age. This may indicate that the "daredevils of Sassoun" belonged to a young warrior brotherhood', since the participants of such associations usually underwent the initiation rite in the same year. The description of such feasts in the "Sasna cṙer" should undoubtedly be related to the joint feasts of archaic brotherhoods of young warriors, which were usually orgiastic in nature. This can be illustrated by the ritual practice of Kṛṣṇa's companions in the Mahābhārata, and, for example, the features of collective meals among youth associations of Central Asia, which were militant in the past (Snesarev, 1963: 179, 187–188). According to ethnographic evidence, in the 19th–20th centuries, young women no longer participated in the feasts arranged by the communities of young men of one age among the Armenians (Vardanyan, 1981: 102, 107).

In the "Sasna cŕer", the feast companions of young David were described as "forty unmarried lads (*azap lač*)" and "forty unmarried girls" (*azap aɫǰik*). The definition *azap* is notable. According to ethnography, this adjective in the form of its substantive (*azap*, *azab*) was used for designating groups of young people of pre-marital age, in particular, the retinues of the groom in the wedding ceremony (Vardanyan, 1967: 291–292; 1981: 104). It is also notable that the number of David's young feast companions in the text is forty. Generally, "forty" seems to be an "epic number" in the "Sasna cŕer": forty *devs* (demons) stole forty cows from the herd that David was tending with other shepherds; Msra Melik, fleeing from David, piled forty millstones and forty oxhides upon himself while sitting in a pit, etc. But this "epic number" itself may be explained by the fact that the Armenian epic in its earliest form was the epic of a warrior brotherhood. At least, the number of David's feast companions was the same as the number of men (apparently young), who were at the same time in Keri Toros' house:

> Keri walked back and forth around the house,
> David greeted him,
> Approached him and asked: "Keri,
> How many souls of us are here in the house?"
> And he answered: "With you, there are forty of us".
>
> (David Sasunskij…, 1939: 214)

In an old ethnographic article about "David of Sassoun", this episode was interpreted as a reflection of the "patriarchal big family", typical of medieval Armenia (Pershitz, 1951: 47). Yet, it is much more likely that the episode refers to the home of a young warrior brotherhood whose leader and mentor was Keri Toros. In this regard, it makes sense to take a closer look at the strange image of "Uncle" Toros.

A.I. Pershitz made an accurate observation: "In all four branches of the epic, children are raised without their father" (Ibid.: 49). At the same time, their uncle Keri Toros was always next to the protagonists of all four generations. When the future founders of Sassoun Sanasar and Baghdasar were still infants, the Armenian "youths" led by "Uncle" Toros destroyed the army of the Baghdad Caliph, who attacked Armenia. And later Keri Toros played the same role of mentor to young protagonists for all generations of the Sassoun heroes, but he did not change at all. Judging by the fact that the appellative *keri* means the maternal uncle, Pershitz, in the spirit of his times, saw in this "abstract" figure "distant echoes" of matriarchy and avunculate (Ibid.: 50). However, there is every reason to interpret it as a personification of status and social function. The elder man, "uncle", mentor, often stood at the head of youth warrior fraternities. It is easy to find an example: Armenian ethnography describes a character known primarily for his role in the wedding ceremony, who could well serve as a model for the image of Keri Toros. This is the *kavor*—"proxy father, and subsequently the godfather of the young couple's children… In wedding ceremonies of collective initiation of youth, the *kavor* is a representative of the age group that the initiates are preparing to enter. During the initiations, the *kavor*, being senior in status, acts as a mentor to the initiates, accompanies them everywhere, and after a completion of the initiation rituals, he is the person who introduces them into the next age group" (Vardanyan, 1967: 292).

Returning to the number "forty", which determines both the number of "unmarried young males" who feasted with David and the inhabitants of "Uncle Toros' house", noteworthy is a rather interesting parallel in the ritualism of youth (often militant) associations of boys of the same age in Central Asia. In the section of G.P. Snesarev's study, entitled "The Sacral Number Forty and Its Relationship to Male Associations", the author provided some arguments that the number of participants in such associations was usually forty or so (1963: 182–184) (cf. also (Rakhimov, 1990: 58–59)). This parallel may be not only typological, since the youth associations among the Armenians and among the peoples of Central Asia (where even among the Turkic peoples, they may have been derived from the traditions of the ancient, Iranian-speaking population) reveal many common features, even coincidences in terminology (Vardanyan, 1981: 109).

Assuming that the presence of young women at the feasts of the epic protagonist with his comrades indicates their participation in the ritual activities of youth militant brotherhoods, one can hypothetically reinterpret certain oddities in the description of the female characters in the "Sasna cŕer" and some of the vague motifs associated with them, which may be rooted in archaic culture. Thus, the "heroism" of the Armenian epic brides, who often tested their grooms by engaging in duels with them, can be linked to the participation of young women in youth warrior brotherhoods of ancient times. The descriptions of heroic marriages in the "Sasna cŕer" and Mahābhārata contain some vague points that can be the traces of long forgotten archaic institutions and customs. Both epics know two basic forms of heroic marriage. One of them is termed *svayaṃvara* in Sanskrit—'the (bride's) own choosing (of the groom)'. Sometimes this was a real choice of the husband by the young woman: thus, Damayantī chose Nala from among the suitors in the famous legend of Nala (Mahābhārata III, 54), or Khandut chose David by throwing an apple to him (David Sasunskij…, 1939: 310). Sometimes, *svayaṃvara* involved contests of suitors, as a result of which the bride went to the winner, but in some cases the bride had the last word. This archaic ritual in ancient legal treatises, which laid the foundations of traditional norms, was no longer considered among the eight known types of marriage. In Armenian traditional culture, the bride's

choosing a groom was also impossible: in marriage, even "the consent of the young couple, especially the young woman's, was not taken into account" (Vardanyan, 2012: 328). The second common form of heroic marriage in the "Sasna cŕer" and Mahābhārata is the abduction of the bride. Both in India and Armenia, this form was preserved in the traditional culture: Brahmanic treatises recognized, although did not recommend, abduction as an acceptable form of marriage for the military class. Among the Armenians, bride abduction was allowed if the parents of a young woman or man resisted their marriage (Ibid.: 329). Notably, in both epic traditions, *svayaṃvara* and abduction could be combined. For example, in the "Sasna cŕer", Sanasar won the marriage competition (he retrieved a golden apple off the pillar of the palace gates), defeated sixty heroic competitors (*pahlevans*), but still, in agreement with Dekhtsun, he abducted her, fighting the pursuers—soldiers from the Copper town (David Sasunskij…, 1939: 99–103). Although Khandut chose David, he still had to fight with the troops of other suitors—the kings of various countries (Ibid.: 318–327), which possibly implies transformation of the motif of abduction and pursuit. Similarly, in the Mahābhārata, the Pāṇḍava brothers, after Arjuna became victorious in the contest at the *svayaṃvara* of Draupadī and left with her, were forced to repel the attacks of the other suitors dissatisfied with such an outcome (Mahābhārata I, 180–181).

The multilayered nature of marriage customs as reflected by the Indian epic can be illustrated by the example of one episode from the Mahābhārata (I, 211–212). During a wild celebration of young warriors of the Yādava tribe led by Kṛṣṇa, Arjuna saw the beautiful Subhadrā. Kṛṣṇa noticed his excitement and offered his "sister" to Arjuna as a wife. At first Kṛṣṇa said, "If you want, I will talk to my father", that is, hinted at the possibility of a "dharmic" marriage according to the rules. Yet there was no further mention of the father. Kṛṣṇa considered it risky to make a marriage according to the *svayaṃvara* rite common to a noble warrior: after all, Subhadrā might reject the winner. Therefore, he suggested to Arjuna to abduct his "sister", to take her away by force, which Arjuna did. Kṛṣṇa managed to calm down his angry companions, who were ready to dispose of the abductor. Arjuna and Subhadrā were offered to come back to celebrate the wedding. Notably, the fate of the young woman was not decided by her father, but by her "brother" or, more precisely, by the assembly of the warrior brotherhood. The words "brother" and "sister" in the above description are put into quotation marks, since in the common Indo-European language, **bhrātar* (as later its derivatives in some Indo-European languages) "meant the brotherhood, which was not necessarily blood-related", and could refer to the members of various religious or military brotherhoods (Benveniste, 1969; Kullanda, 2002: 90–92). The word "sister" in the context of such a brotherhood (and the *gaṇa* of Kṛṣṇa looks precisely like that), might have been similar to the "sister" in the "house in the forest" of the European fairy tales (Propp, 1946: 106–109).

In the "Sasna cŕer", at least two cases can be found when a "brother" offered his "sister" as a wife to the protagonist. In one of them, Gohar, to whom Mher came in order to ask her hand in marriage, came to meet him wearing a suit of armour, announced that she was "Gohar's brother", and tested Mher three times, calling him into battle or contest with the words, "If you defeat me, you can take my sister Gohar!" (David Sasunskij…, 1939: 362–365; Armyanskiy narodnyi epos…, 2004: 227–228). In another episode, *dev* Kulynk found Mher the Younger (a traveler who was sheltered and fed by his sister) in his house. He accepted Mher as a guest, but in the morning called him for a fight, "If you win, I will give my sister to you in marriage!" Mher won, refused the marriage, but became the sworn brother of the dev (Armyanskiy narodnyi epos…, 2004: 297). The offer of the sister as a wife to the protagonist is associated here with the relationship of sworn brotherhood, which again is related to the historical reality of young warrior societies.

In the Mahābhārata, Arjuna won Draupadī at *svayaṃvara* (where, by the way, the main steward was the bride's brother, Mahābhārata I, 176.35), but she became the common wife of five Pāṇḍavas. At the time when the epic was codified, this contradicted all norms of marriage and required some artificial explanations. The Pāṇḍavas, who were hiding at that time and who were participating in the *svayaṃvara* under the guise of the Brahmins, returned together with Draupadī to the house where their mother was waiting for them, and told her still from the street, that they procured something (as alms). The mother, being behind the wall of the hut and not seeing her sons, replied: "So own it/ enjoy it together!" Then, seeing Draupadī, she became horrified with her words. Yet the real point behind this motif is that unmarried girls were present in the house of the archaic brotherhood of young warriors, and entered into more or less stable premarital relations with the boys (Vasilkov, 1990).

Some ambiguity in the relationship between Dekhtsun and the two brothers Sanasar and Baghdasar may point in the same direction. After learning about Dekhtsun's request of Sanasar to come after her, and seeing the portrait she sent, Baghdasar became so full of jealousy that he engaged in a fight with his brother. Sanasar won, but out of sympathy for his brother, offered him to marry Dekhtsun. Baghdasar calmed down and refused. When the brothers, taking away Dekhtsun, were destroying the army that pursued them, the king, Dekhtsun's father, appeared before them and asked them to stop the slaughter, "I will give you everything you want: If you

want my daughter, I will give her to you…" The brothers answered, "We want Dekhtsun and we are taking her". Sanasar and Baghdasar offered the *pahlevans* whom Dekhtsun had earlier rejected, to fight for her, "If we win, she will become ours" (David Sasunskij…, 1939: 103–105). In one version of the legend, the *pahlevans*, refusing to fight, gave Dekhtsun to both of them, "Let this young woman bring you (both) happiness!" (Armyanskiy narodnyi epos…, 2004: 137). As soon as the brothers together with Dekhtsun left for Sassoun, Sanasar, who had overcome all obstacles in the struggle for the young woman, suddenly, for the second time, offered Baghdasar to marry her, and he again refused. Some uncertainty as to whether Dekhtsun belonged to both brothers or to one of them, and to whom exactly, suggests that a trace of a long-forgotten archaic institution may be manifest here. In his day, Orbeli interpreted the club left by Mher the Younger, when he was leaving for war, at the entrance to Gohar's chambers as "a memory, which among the people was already dim, of a stick or quiver placed at the entrance to the dwelling of a wife with many husbands by the husband who had already come to her" (1939: XXXVIII), that is, a memory of polyandry. However, in the context of what was said above, it would probably be more correct to say that this, just as in the case of Dekhtsun's marriage, was a "dim memory" of the presence of girls in the militant brotherhood of boys who had not yet reached the marriageable age.

On "pastoral heroism" of the archaic epics

In the Indian epic, as it was said above, young warrior brotherhoods were associated with the practice of mobile cattle breeding and reciprocal raids on herds. Notably, the Sassounian society was also described as exclusively cattle-breeding. Keri Toros explained to Mher the Elder the cause of the famine: the Sassounians bred and grazed cattle, but did not sow and plow, and the delivery of bread from the neighbors was hampered by a man-eating lion (David Sasunskij…, 1939: 122). Cattle breeding played a great role in the biography of young David: he became a skilled shepherd, fraternized with all the local shepherds, became their leader, and defended the interests of his "brothers" (Ibid.: 206–213). Mher the Younger also showed a certain connection to shepherds: a shepherd once saw him when a door opened in a rock, and Mher told him that he would come out into the world when the new era of fertility and justice comes about (Petrosyan, 2014: 177–178).

The protection of herds from raids is second most important among the exploits committed by the protagonists of the "Sasna cŕer", the first being fighting historical invaders. David the shepherd pursued forty *devs* who had stolen cows from the public herd, caught up with them, and killed them (David Sasunskij…, 1939: 210–216). Young Sanasar and Baghdasar lived, hiding their origin, at the court of King Tevatoros in Manazkert, and served him as his steward and cup-bearer. However, when robbers chased away the town herd, the boys pursued the thieves, captured and brought them and the cattle back to town (Ibid.: 32–34). This story shows a striking parallelism with a plot from the "Virāṭa Parvan" (Mahābhārata IV, 5–62). The sequence of motifs common to both epics seems to be the following:

brothers (Pāṇḍavas / Sanasar and Baghdasar);

after long wanderings through forests, came to a town where they wanted to settle (Virāṭanagara, the capital of King Virāṭa / Manazkert, the capital of King Tevatoros);

the brothers had to hide using different names (according to the condition of the game of dice with the Kauravas / because people were afraid of the Caliph from whom they fled);

the King accepted them for serving in various capacities (Yudhiṣṭhira as the adviser and expert in the game of dice, Bhīma as the chief cook, Arjuna as the dance teacher, Nakula as the horse keeper, and Sahadeva as the cattle keeper / Sanasar as the steward and Baghdasar as the cup-bearer);

a year later, the robbers / enemies chased away the king's / town herd. The brothers defeated the robbers and returned the cattle back to town (the Pāṇḍavas revealed their names and origins / Sanasar and Baghdasar revealed their nature as heroes and mighty warriors).

It would be too risky to claim that here we have a specific plot representing Indo-European or common Aryan-Greek-Armenian heritage. However, the chance that similar motifs in two different traditions formed such similar combinations testifies to the typological proximity of the societies of the "heroic age" reflected in the early strata of the Armenian and Indian epics.

Fighting for herds of cattle in the "Sasna cŕer" occurred not only with *devs* and robbers. The campaign of the Msyr army led by Kozbadin on Sassoun was not much different from a simple raid. Its goals are indicated in a stable formula, repeated in the various versions of the epic:

> Bring red milking cows,
> Bring black yoked oxen,
> Bring tall women to load the camels,
> Bring short women to spin the millstones,
> Bring beautiful maidens for us!
>
> (Armyanskiy narodnyi epos…, 2004: 105; 274) (cf. (David Sasunskij…, 1939: 244, 245, 247, 252–253))

Sometimes it is added, "And forty packs of silver, / And forty packs of gold…" Yet the invariant of the formula mentions only two objects of the raid—women and cattle, which was specific precisely to the societies

of warlike cattle breeders. Among the Indo-Aryans of the Ṛgveda, military booty consisted of cattle and women. The hymns, praising the gifts that were received by a priest from a noble warrior-donor, mention cattle, horses, and female slaves. Variants of this formula are preserved in the epic: for example, King Virāṭa offered Yudhiṣṭhira to play dice and offered his stake as "women, cows, gold, and all other wealth" (Mahābhārata IV, 63.32). Monuments to heroes built over the past 2000 years in the cattle-breeding regions of India generally represent the mourning of the hero by those whom he protected losing his life; these are either women or cows (Vassilkov, 2011: 201–202, fig. 1, *1–3*).

The "battle frenzy" of archaic heroes

In conclusion, we should briefly discuss another point indicating the role of young warrior brotherhoods in the genesis of the Armenian epic. The key word, present even in the title of the epic cycle ("Sasna cṙer"), is *cuṙ* (plural *cṙer*), which has the original literal meaning of 'curved'. In the Russian translations, it is transmitted either by the adjective "shalnoi" ('wild'), "bezumnyi" ('crazy'), "yaryi" ('ardent'), or "beshennyi" ('mad'), or as a noun "udalets" ('daredevil'), "sumasbrod" ('crazy fellow'), or "bezumets" ('madman'). The analysis of some contexts in which the word *cuṙ* was used in the epic performed with the help of the Armenologist and Indo-Europeist P.A. Kocharov, has shown that apparently it meant a person who was capable of falling into a state of violent rage that drove out all fear of death, multiplied strength and guaranteed victory in a fight. Parallels to this are provided by the Indian epic in which young warriors cultivated a state of battle frenzy during their wild feasts, which manifested itself, as in the Armenian epic too, in "bloodshot eyes". We can also mention the ability of the members of the Iranian warrior brotherhoods to work themselves up into a state of fierce wrath (Avestian *aēšma*, Persian *xašm*) (Wikander, 1938: 57–60; Daryaee, 2018: 41, 46), a similar state of "wolfish rage" (λύσσα) in the Homeric epics, the violent rage (*wut*) of the ancient German berserkers, or the uncontrollable rage (*ferg*) of the Irish epic hero Cúchulainn (Lincoln, 1975). A detailed argument in favor of exactly this understanding of the word *cuṙ* is provided in another article (Vassilkov, 2018).

Conclusions

Both in India and Armenia, the archaic motifs in the epic poetry were definitely supported by the fact that early forms of social organization, including youth age-set groups, were preserved until modernity at least on the periphery of the culture. Yet the emergence of these motifs in both cases should be attributed to the ancient period; in the Indian epic tradition, possibly to the Bronze Age.

The interpretation of the Armenian epic proposed in this study will remain hypothetical, until it has been either rejected or confirmed by specialists in the Armenian studies who are able to read the text in its original language. Nevertheless, we hope that a comparison with the Mahābhārata has made it possible to broaden the parallel proposed by Petrosyan between the "black youths" of the Armenian epic and the Indian Maruts (2011: 345). It seems that we have also been able to confirm to some extent the point of view, according to which a comparative study of the "Sasna cṙer" against the background of world epic folklore reveals new aspects of form and content previously hidden from us (Egiazaryan, 2016: 5, 6). Broader involvement of the Armenian epic data in the study of other epic traditions will undoubtedly enrich and stimulate Comparative epic studies.

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Antemortem Cranial Injuries in the Altai Mountains Pastoralists of the Scythian and Xiongnu-Sarmatian Periods (5th Century BC to 5th Century AD)

This article describes healed cranial injuries in the Altai Mountains pastoralists of the Early Iron Age, the increased prevalence of which may testify to interpersonal violence aimed rather at injuring than killing the opponent. Skulls of more than 500 adults from burials of the Pazyryk (5th to 3rd century BC) and Bulan-Koba (2nd century BC to 5th century AD) cultures have been analyzed. On the world scale, the level of nonlethal violence among the Altai Mountains pastoralists was moderate (25.5 % in males and 9.1 % in females). The frequencies, however, differ between the southern and northern Pazyryk populations (males, 35.7 % vs. 15.3 %, respectively; females, 16.7 % vs. 5.6 %) and between the early and late periods of Bulan-Koba (males, 32.7 % vs. 22.1 %; females, 10.0 % vs. 6.3 %, respectively). The high prevalence of injuries among the Pazyryk people from the high-altitude valleys of the Southeastern and Southern Altai might indicate scramble for limited resources under a harsh climate, whereas the high frequency among the early Bulan-Koba pastoralists could have resulted from an inflow of migrants. In the Xiongnu-Sarmatian period, as compared to the Scythian period, repeated injuries became more frequent among males. Interpersonal violence among the Altai Mountains pastoralists involved mainly blows to the face, but in the Bulan-Koba males blows on the head were more random. Healed face injuries in women were likely associated with domestic violence.

Keywords: *Antemortem cranial injuries, violence, pastoralists, Early Iron Age, Pazyryk culture, Bulan-Koba culture, Altai Mountains.*

Introduction

The traumas of the cranial vault localized below the so-called "hat brim line", i.e. at the squamas of the frontal, parietal, and the upper part of the occipital bones, as well as traumatic lesions of the facial skeleton, are typically caused intentionally (Sheperd et al., 1990; Hussain et al., 1994; Walker, 1997; Maxeiner, Ehrlich, 2000; Harrod, Liénard, Martin, 2012). Thus, these types of injuries are one of the main sources of information for the study of domestic or warfare violence in ancient societies. Antemortem, or healed cranial injuries are in many cases related to acts of interpersonal violence aimed not to kill but rather to injury the opponent (Walker, 1989, 1997; Harrod, Liénard, Martin, 2012; Martin, Harrod, 2015). Cross-cultural studies show that different forms of violence, lethal and nonlethal, are weakly but positively correlated (Ember C.R., Ember M., 1994). On the other hand, a high rate of antemortem cranial trauma can serve as an independent indicator of social tension (Walker, 1989; Baustian et al., 2012).

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The aim of this study is to perform a comparative analysis of healed cranial injuries prevalence in the pastoralists of the Altai Mountains during the Scythian (5th century BC to 3rd century BC) and Xiongnu-Sarmatian (2nd century BC to 5th century AD) periods. Previous works have shown that the emergence and succession of ruling empires in Central Asia, including Xiongnu (2nd century BC to 1st century AD), Xianbei (2nd to 3rd century AD) and Zhouzhan (late 4th to 5th century AD) were substantially affecting the rate of warfare activity in the Altai Mountains (Tur, Matrenin, Soenov, 2018: 132). But to what extent the pastoralist lifestyle in this region was related to interpersonal violence remains an open question.

Material and methods

Healed cranial injuries in adult individuals were analyzed in the present study. The cranial sample of the Pazyryk culture (the Scythian period) was divided into two subsamples: one from Southeastern and Southern Altai, another from Central, Northern, and Northwestern Altai. The sample of the Bulan-Koba culture (the Xiongnu-Sarmatian period) comprised the skulls from the sites mostly located in Central Altai. In order to analyze the temporal change in the prevalence of trauma, the Bulan-Koba sample was, when possible, divided into two subsamples: Xiongnu-Early Xianbei (2nd century BC to early 3rd century AD) and Late Xianbei-Zhouzhan (second half of the 3rd to 5th century AD).

The individuals were aged and sexed using standard osteological criteria (Standards…, 1994: 15–38). The following age cohorts were used: young – 17–35 years, mature – 35–50 years, old – more than 50 years.

The main methodological difficulty for an epidemiological study of cranial injuries in paleopopulations is that the analysis of fragmentary skulls underestimates the prevalence of the lesions, while the preservation of skeletal remains may vary substantially between various samples. As experience has shown, gracile nasal bones are most often damaged or lost during excavations. Walker (1997: 150) reports the absence of nasal bones in 50–70 % of studied individuals, while less than a half of the cranial vault is preserved in only 10–30 % of the individuals. The issue of unequal preservation of skull structures is as relevant for the Pazyryk and Bulan-Koba samples. In order to minimize the influence of this factor, the frequency of nasal, facial, and vault injuries was calculated with respect to the number of observations for each of these regions. The absence of trauma was diagnosed only in individuals with at least 75 % of respective part of the skull preserved. The same criterion was employed for calculating an integrative value—the rate of injured skulls. Also, if only left or right side of the cranium is present, that specimen contributed 0.5 to the total count of individuals examined (Ibid.: 149). In the end, the total Pazyryk sample included 253 effective individuals (128 male and 125 female), and the total Bulak-Koba sample comprised 277 individuals (182 male and 95 female).

The descriptions of the healed traumas included their size, localization in the anterior or posterior half of the skull (with respect to *bregma*), left or right side of the skull. The significance of differences in frequency of trauma was evaluated using two-sided Fisher's exact test, and the significance level was set to 0.05. The prevalence of antemortem cranial injuries in various groups of the Altaian pastoralists was also assigned to one of three categories: low, medium (between the 1st and 3rd quartiles), and high. The boundaries between the categories were set on the basis of the variation of the prevalence of healed cranial injuries at the intergroup level in 42 geographically and chronologically diverse cranial samples. These reference data were compiled from the literature, and include samples from various parts of the world and dated from the Neolithic to the 17th century AD. As lethal and nonlethal forms of violence are not mutually independent, the rate of perimortem cranial traumas was tabulated as well.

Healed cranial injuries in the samples of the Pazyryk and Bulan-Koba cultures

Pazyryk culture (Tables 1, 2). The rate of antemortem cranial injuries in the Scythian period was much higher in males as compared to females (24.2 % vs. 10.4 %, $p = 0.005$). Local variations are observed for both sexes: the rate is substantially higher in the southern part of the Pazyryk area than in its northern part (35.7 % vs. 15.3 % in males, $p = 0.012$; 16.7 % vs. 5.6 % in females, $p = 0.072$).

The facial skeleton was injured more often than the cranial vault: 23.0 % vs. 8.6 % in males ($p = 0.004$), and 12.8 % vs. 2.4 % in females ($p = 0.005$). The most prevalent in all samples are fractures of nasal bones (Fig. 1). In two cases, these were accompanied by fractures of the adjacent part of the maxilla (Ulandryk-2, kurgan 6, burial 4; Yustyd-12, kurgan 3). Fractures of the mandible (Verkh-Elanda-2, kurgan 2, burial 2/3; Chultukov Log-1, burial 117), zygomatic arch (Tytkesken-6, burial 88), and supra-orbital ridge (Khankarinsky Dol, burial 17) were observed as well. An antemortem tooth loss in a young male (Ulandryk-3, kurgan 1) could also have been a result of an intentional injury. Differences between the two areas of the Pazyryk culture in the prevalence of nasal bone fractures in males ($p = 0.002$) and females ($p = 0.016$) are statistically significant, as well as in the rate of facial skeleton trauma in males ($p = 0.010$).

Table 1. **Cranial injures in male samples of the Pazyryk culture**

Sample	Antemortem injures				Lethal	Total
	nose	face	vault	skull		
Southeastern and Southern Altai						
Ak-Alakha-1, -3–5	0/1*	0/4	2/5	2/5	0/5	2/5
Alagail-1, -2	2/2	2/2	0/2	2/2	0/2	2/2
Baratal-1, -2	1/5	1/5	2/5	2/5	4/5	4/5
Barburgazy-1–3	0/2	0/3	0/4	0/4	0/4	0/4
Bertek-1, -10, -12, -27	1/3	1/3	0/4	1/4	0/4	1/4
Buraty-4	…	…	0/1	0/1	1/1	1/1
Dzholin-1	0/1	0/1	0/1	0/1	0/1	0/1
Kurai Steppe	0/2	0/2	0/2	0/2	1/2	1/2
Kyzyl-Dzhar-1–5, -8	2/10	2/11	1/10	2/10	1/10	3/10
Maltalu	1/2	1/3	0/3	1/3	0/3	1/3
Ulandryk-1–4	4/10	5/11	0/13	5/13	2/13	7/13
Yustyd-1, -12, -22	5/6	5/6	1/6	5/6	0/6	5/6
Total	*16/44 (36.4 %)*	*17/51 (33.3 %)*	*6/56 (10.7 %)*	*20/56 (35.7 %)*	*9/56 (16.1 %)*	*27/56 (48.2 %)*
Central, Northern, and Northwestern Altai						
Balyk-Sook	…	0/2	0/2	0/2	0/2	0/2
Bersyukta-2	…	…	0/1	0/1	0/1	0/1
Bike-1, -3	0/1	0/2	0/2	0/2	0/2	0/3
Verkh-Elanda-2	0/1	0/3	0/6	0/6	2/6	2/6
Kaindu	0/1	0/1	0/3	0/3	0/3	0/3
Maima-4	0/1	0/2	0/4	0/4	0/4	0/4
Tavdushka	0/3	0/4	0/4	0/4	0/4	0/4
Tytkesken-6	2/18	3/19	3/23	6/23	2/23	6/23
Khankarinsky Dol	1/6	2/3	0/5	2/5	0/5	2/5
Choburak-1, -2	0/2	0/2	0/3	0/3	0/3	0/3
Chultukov Log-1, -2	1/10	1/11	2/14	3/14	0/14	3/14
Yabogan-2, -3	0/4	0/3	0/5	0/5	1/5	1/5
Total	*4/47 (8.5 %)*	*6/52 (11.5 %)*	*5/72 (6.9 %)*	*11/72 (15.3 %)*	*5/72 (6.9 %)*	*14/72 (19.4 %)*

Notes. Number of skulls with trauma / total number of observations. Statistically significant local and territorial differences are italicized.

Healed injuries, mostly subtle depressed fractures, of the vault were detected in 10 males, 3 females, and 2 sub-adults (Fig. 2, *4*, *5*). Such injuries are typically caused by a blunt object with a small surface area. Almost all the lesions were found in the frontal bones. The mean area of the fractures is 74 mm^2 in males and 235 mm^2 in females. At the margin of one of the lesions, a small fragment of stone ingrown in bone was detected (Chultukov Log-2, kurgan 5, burial 1). Linear fractures of the vault were found only in a few cases (Tytkesken-6, burial 92/1). Traumas of both facial skeleton and vault are slightly more often found in the left than in the right side of skull (11 vs. 8 in males, 7 vs. 3 in females).

In most cases, the healed cranial injuries were single. Three males and one female displayed two fractures each (of the nasal and frontal bones), but those could have been a result of one episode of violence. In four male skulls, a healed injury was accompanied by a perimortem trauma. This means that at least 9.8 % of the males who had cranial injuries participated in conflicts repeatedly.

In terms of interpopulation variation, the rate of antemortem cranial trauma in both males and females is high in southern areas of the Pazyryk culture territory, while it is medium in northern areas (Fig. 3).

Bulan-Koba culture (Tables 3, 4). In the sample of the Xiongnu-Sarmatian period, 26.4 % of male and

Table 2. **Cranial injures in female samples of the Pazyryk culture***

Sample	Antemortem injures				Lethal	Total
	nose	face	vault	skull		
Southeastern and Southern Altai						
Ak-Alakha-1, -3–5	2/2	2/2	0/2	2/2	0/2	2/2
Alagail-1, -2	1/2	1/2	0/3	1/3	0/3	1/3
Baratal-1, -2	0/2	0/3	0/3	0/3	0/3	0/3
Barburgazy-1, -2	2/7	2/8	0/8	2/8	1/8	3/8
Buraty-8	0/1	0/1	0/1	0/1	0/1	0/1
Verkh-Kaldzhin-1	…	…	0/1	0/1	0/1	0/1
Dzholin-1–3	0/3	0/3	0/3	0/3	0/3	0/3
Kaldzhin-6	0/1	0/1	0/1	0/1	0/1	0/1
Kurai Steppe	0/1	0/1	0/1	0/1	0/1	0/1
Kyzyl-Dzhar-1–5, -8	0/5	0/6	0/6	0/6	0/6	0/6
Maltalu	1/2	1/2	1/2	1/2	0/2	1/2
Moinak-2	0/1	0/1	0/1	0/1	0/1	0/1
Ulandryk-1–4	1/10	1/10	0/14	1/14	0/14	1/14
Yustyd-1, -12, -22	2/6	2/7	0/8	2/8	0/8	2/8
Total	*9/43 (20.9 %)*	*9/47 (19.1 %)*	*1/54 (1.9 %)*	*9/54 (16.7 %)*	*1/54 (1.9 %)*	*10/54 (18.5 %)*
Central, Northern, and Northwestern Altai						
Balyk-Sook	0/1	0/1	0/1	0/1	0/1	0/1
Bike-3	0/1	0/1	0/1	0/1	0/1	0/1
Bike-2	0/2	1/3	0/3	1/3	0/3	1/3
Kaindu	0/2	0/4	0/4	0/4	0/4	0/4
Maima-4	0/5	0/5	1/11	1/11	1/11	2/11
Tavdushka	1/6	1/7	0/8	1/8	0/8	1/8
Tytkesken-6	0/7	0/10	0/13	0/13	0/13	0/13
Khankarinsky Dol	0/4	0/5	0/7	0/7	0/7	0/7
Choburak-2	0/1	…	…	…	…	…
Chultukov Log-1, -2	0/8	1/10	1/22	2/22	0/22	2/22
Yabogan-3	0/1	0/1	0/1	0/1	0/1	0/1
Total	*1/38 (2.6 %)*	*3/47 (6.4 %)*	*2/71 (2.8 %)*	*4/71 (5.6 %)*	*1/71 (1.4 %)*	*6/71 (8.5 %)*

*See notes to Table 1.

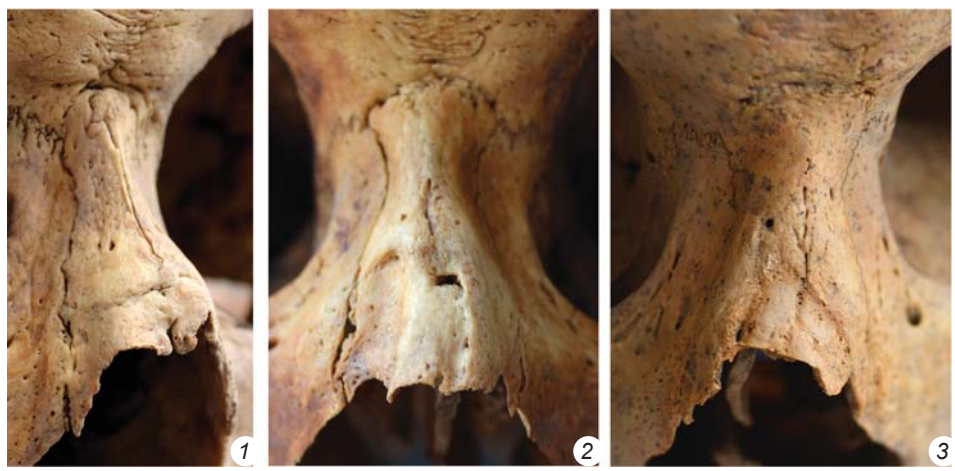

Fig. 1. Examples of healed fractures of the nasal bones in the Pazyryk sample from Southeastern Altai.
1 – Bertek-10, kurgan 3, male, *maturus*; *2* – Ulandryk-2, kurgan 7, burial 1, male, *maturus*; *3* – Maltalu, kurgan 25, female, *senilis*.

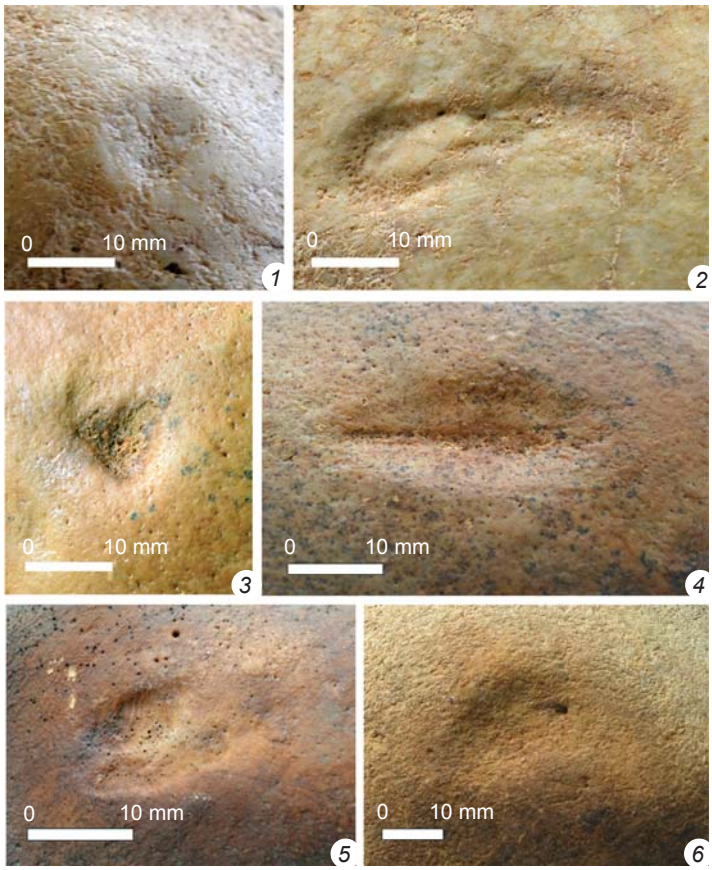

Fig. 2. Examples of healed depressed fractures of the cranial vault in the Pazyryk and Bulan-Koba samples. *1* – right frontal eminence, male, *maturus*, Airydash-1, kurgan 44; *2* – anterior part of the right parietal bone, male, *maturus*, Bulan-Koby-4, kurgan 2, burial 2/1; *3* – frontal bone, male, *adultus*, Kyzyl-Dzhar-1, burial 9 (joint burial); *4* – right parietal bone, female, *senilis*, Maltalu, kurgan 25; *5* – left part of the frontal bone, male, *adultus*, Ak-Alakha-5, kurgan 3, burial 1; *6* – area of the right parietal tubercle, male, *adultus*, Bosh-Tuu-1, burial 10.

7.4 % of female skulls display healed injuries. The sex differences are highly statistically significant ($p = 0.000$). Facial injuries, including fractures of nasal, maxillary, and zygomatic bones, supra-orbital ridge, glabella region, orbit, and mandible, were detected in 15 % of male and 6.1 % of female skulls (Fig. 4). Injuries to nose are the most prevalent and are significantly more often found in males than in females (14.8 % vs. 4.5 %, $p = 0.047$). These nasal fractures are in a number of individuals accompanied by trauma of other facial bones (5 out of 13 cases).

Injuries to the vault are mostly small depressed fractures of oval or round shape. These are observed in the males as often as facial injuries (see Fig. 2, *1–3*, *6*); but they are not found in the females. Sex differences in this indicator are statistically significant ($p = 0.000$). The area of the depressed fractures is highly variable in males (20 to 1980 mm^2); the mean area of lesions in parietal bones is larger than in the frontal bones (149.9 vs. 284.8 mm^2). In some cases, depressed fractures of the vault were accompanied by linear fractures (Airydash-1, kurgan 124; Stepushka-1, kurgan 15, burial 1; Ust-Edigan, burial 3, 3a).

Healed trauma is most often localized in the anterior part of the skull: 46 vs. 18 cases in males ($p = 0.018$), 7 vs. 1 in females ($p = 0.282$). No differences between the left and right sides of the skull were observed (27 : 26). Some skulls displayed two or three healed injuries, which, however, could have been received during the same episode of violence. But in 8 males, mostly young, specific localization of the antemortem lesions, as well as differences in their shape and size, suggest their possible emergence at different times. In 9 other male skulls, healed fractures are accompanied by perimortem trauma. If these cases of repeated injury are considered together, it can be concluded that 27 % of the males who had cranial injuries had participated in multiple encounters.

No differences in prevalence of cranial trauma between local Bulan-Koba groups were observed. However, during the late Xianbei-Zhouzhan period, as compared to the Xiongnu-early Xianbei times, the level of nonlethal violence slightly

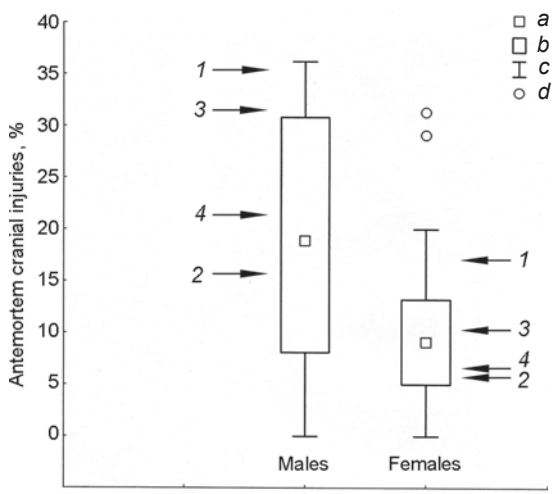

Fig. 3. Range of prevalence of healed cranial injuries across the studied samples.
1, *2* – Pazyryk culture: *1* – Southeastern and Southern Altai, *2* – Central, Northern, and Northwestern Altai; *3*, *4* – Bulan-Koba culture: *3* – Xiongnu-early Xianbei period, *4* – late Xianbei-Zhouzhan period.
a – median; *b* – 25–75 %; *c* – range excluding outliers; *d* – outliers.

Table 3. **Cranial injures in male samples of the Bulan-Koba culture**

Sample	Antemortem injures				Lethal	Total
	nose	face	vault	skull		
Airydash-1	0/12*	2/27	6/31	8/31	7/31	11/31
Bely Bom-2	2/6	2/9	0/10	2/10	1/10	3/10
Biyke	…	…	0/1	0/1	0/1	0/1
Boochi	0/2	0/2	1/3	1/3	1/3	2/3
Bosh-Tuu-1	5/29	6/33	8/32	12/32	1/32	12/32
Bulan-Koby-4	5/17	5/16	3/16	6/16	0/16	6/16
Verkh-Elanda-2	0/1	0/1	0/1	0/1	0/1	0/1
Verkh-Uimon	0/2	1/2	0/6	1/6	2/6	2/6
Dyalyan	0/1	0/1	0/3	0/3	0/3	0/3
Kara-Bom-11	0/2	0/2	1/2	1/2	0/2	1/2
Karban-1	0/2	0/4	1/6	1/6	1/6	2/6
Kuraika	0/5	0/6	1/6	1/6	2/6	3/6
Kyzyl-Dzhar-1	…	0/1	1/1	1/1	0/1	1/1
Saldyar-2	0/1	1/1	0/2	1/2	0/2	1/2
Stepushka-1, -2	2/13	3/23	3/26	6/26	6/26	10/26
Tytkesken-6	…	0/1	0/1	0/1	0/1	0/1
Ulita	0/4	0/7	1/12	1/12	1/12	2/12
Ust-Balyktyul	0/1	0/1	0/1	0/1	0/1	0/1
Ust-Edigan	2/10	2/12	3/13	4/13	2/13	5/13
Yabogan-3	1/3	1/4	0/4	1/4	0/4	1/4
Yaloman-2, west. gr.	0/2	0/2	1/3	1/3	0/3	1/3
Yaloman-2, centr. gr.	0/2	0/2	0/2	0/2	0/2	0/2
2nd century BC to early 3rd century AD	7/43 (16.3 %)	9/52 (17.3 %)	13/55 (23.6 %)	18/55 (32.7 %)	4/55 (7.3 %)	20/55 (36.4 %)
Late 3rd to 5th century AD	9/63 (14.3 %)	13/90 (14.4 %)	14/113 (12.4 %)	25/113 (22.1 %)	19/113 (16.8 %)	37/113 (32.7 %)
Total	17/115 (14.8 %)	23/157 (14.6 %)	30/182 (16.5 %)	48/182 (26.4 %)	24/182 (13.2 %)	63/182 (34.6 %)

Note. Number of skulls with injures / total number of observations.

decreases in males ($p = 0.075$). On the world scale, the rate of healed cranial injuries is medium in both male and female Bulan-Koba samples, while it is high in males of the Xiongnu-early Xianbei period (see Fig. 3).

Discussion

In all the studied samples, the rate of antemortem cranial trauma is higher in males than in females, which is a universal rule for all regions and historical periods (Knüsel, Smith, 2014). The level of nonlethal traumatism in the Altaian pastoralists in general is medium, but during the Scythian period it displays a substantial local variation, while in the Xiongnu-Sarmatian period there are chronological differences observed (Fig. 5). The higher prevalence of healed cranial injuries in southern area of the Pazyryk culture can be hypothetically explained by an imbalance between population density (and/or the size of livestock) and limited natural resources in highland areas of the Southeastern and Southern Altai. Such an imbalance could have led to conflicts for pastures. Furthermore, the rate of lethal cranial injuries in males is high in this region (see Table 1). A similar situation was described for southern periphery of the Pazyryk area in Western Mongolia (Jordana et al., 2009).

In the Xiongnu-Sarmatian period, a peak of nonlethal traumatism coincides with the early Bulan-Koba period, while that of lethal traumatism coincides with its late period. The high rate of healed cranial trauma in Central Altai during the Xiongnu-early

Table 4. **Cranial injures in female samples of the Bulan-Koba culture***

Sample	Antemortem injures				Lethal	Total
	nose	face	vault	skull		
Airydash-1	0/14	0/21	0/22	0/22	2/22	2/22
Bely Bom-2	0/5	0/8	0/8	0/8	1/8	1/8
Bosh-Tuu-1	1/11	2/11	0/11	2/11	0/11	2/11
Bulan-Koby-4	1/10	2/11	1/11	3/11	1/11	4/11
Verkh-Uimon	…	…	0/4	0/4	0/4	0/4
Dyalyan	0/1	0/1	0/1	0/1	0/1	0/1
Kara-Bom-11	0/1	0/1	0/1	0/1	0/1	0/1
Karban-1	1/2	1/3	0/3	1/3	0/3	1/3
Kuraika	0/3	0/4	1/5	1/5	0/5	1/5
Stepushka-1, -2	0/4	0/4	0/4	0/4	0/4	0/4
Ulita	0/2	0/5	0/7	0/7	0/7	0/7
Ust-Balyktyul	0/1	0/1	0/1	0/1	0/1	0/1
Ust-Edigan	0/10	0/9	0/14	0/14	2/14	2/14
Yabogan-3	0/1	0/1	0/1	0/1	0/1	0/1
Yaloman-2, west. gr.	0/2	0/2	0/2	0/2	0/2	0/2
2nd century BC to early 3rd century AD	2/25 (8.0 %)	3/25 (12.0 %)	0/30 (0.0 %)	3/30 (10.0 %)	2/30 (6.7 %)	5/30 (16.7 %)
Late 3rd to 5th century AD	1/40 (2.5 %)	2/55 (3.6 %)	2/63 (3.2 %)	4/63 (6.3 %)	4/63 (6.3 %)	8/63 (12.7 %)
Total	3/67 (4.5 %)	5/82 (6.1 %)	2/95 (2.1 %)	7/95 (7.4 %)	6/95 (6.3 %)	13/95 (13.7 %)

*See note to Table 3.

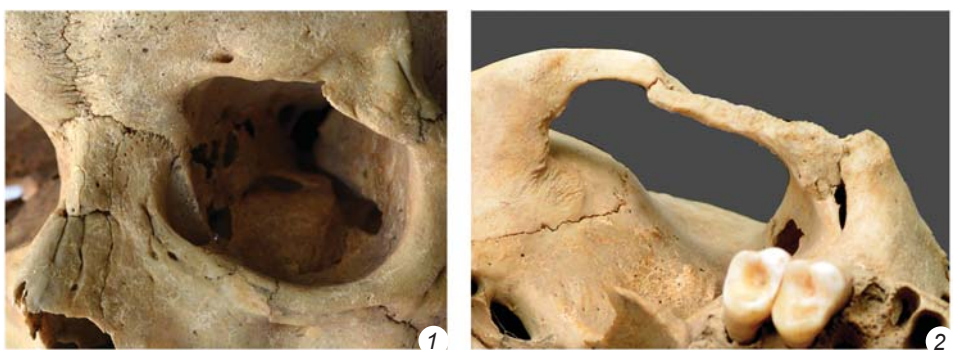

Fig. 4. Examples of healed trauma of the facial skeleton on the skulls of the Bulan-Koba samples.
1 – fracture of the nasal bones and left zygomatic process of the frontal bone male, *adultus*, Bulan-Koby-4, kurgan 1, burial 2;
2 – fracture of the right maxilla and zygoma, female, *maturus*, Bulan-Koby-4, kurgan 2, burial 3.

Xianbei period might be also explained by the influx of migrants, which is documented by archaeological data (Tishkin, 2007: 177–179; Seregin, Matrenin, 2016: 144–147, 158–163; and others). The rise of military activity in the late Xianbei-Zhouzhan times was likely an outcome of the change of political situation in Central Asia, i.e. the collapse of the Xianbei Empire and escalation of the internecine struggle for power (Tur, Matrenin, Soenov, 2018).

According to the localization of injuries in the skeletal samples, the blows were often directed to the face or vault (Walker, 1989, 1997; Lessa, Mendonça de Souza, 2006; Baustian et al., 2012; Cohen et al., 2014; Monge, Selinsky, 2016: 151; and others), which is in good agreement with both ethnographic and clinical data on ethnocultural specific of interpersonal violence (Walker, 1989, 1997; Brickley, Smith, 2006). The main target for the Altai Mountains pastoralists during a conflict was the face of

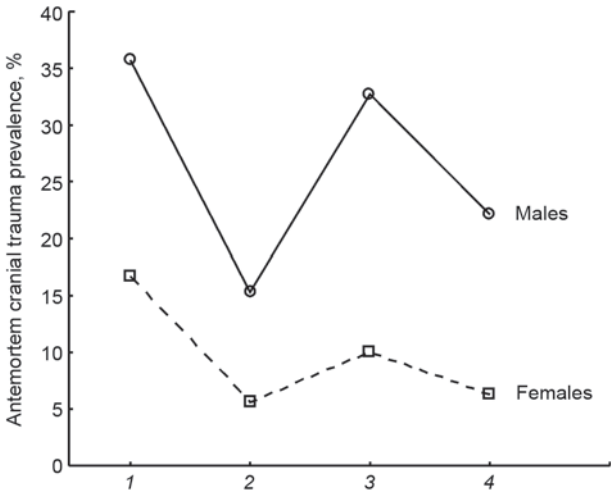

Fig. 5. Spatial and chronological variation of the healed cranial trauma prevalence in male and female subsamples of the Altai Mountains pastoralists.
1–4 – see Fig. 3.

the opponent, and only in Bulan-Koba males was the cranial vault affected as often as the face.

Localization of healed trauma in the anterior vs. posterior, or in the left vs. right parts of the skull can be used as an indicator of position of the sides of a conflict. In most male skulls of both Pazyryk and Bulan-Koba people, the majority of antemortem injuries are found in the facial and frontal bones, which implies a "face to face" type of encounters. A subtle predominance of left-side lesions (i.e. caused mostly by the right hand) is only observed during the Scythian period. The shape and size of the depressed fractures vary, but large and deep lesions are rare. The smaller size of frontal bone fractures than those of the parietal bone is explained by a higher hardness of the former (DeGrood, 1975).

"Traumatic recidivism" is a feature of the male samples of the Altaian pastoralists. This term was borrowed from clinical practice and is used in bioarchaeology to describe any case of repeated trauma (Harrod et al., 2017). However, in skeletal samples, it is not always possible to determine the sequence of appearance of two or more healed traumas. These can be synchronous and related to the same episode of violence, but they might equally have been caused on different occasions. The presence of both an antemortem and perimortem cranial trauma in an individual is a reliable indicator of "traumatic recidivism". If these cases are taken into account, it can be concluded that the level of "traumatic recidivism" was higher in the Xiongnu-Sarmatian period than in the Scythian period (27 % vs. 9.8 %). Repeated head trauma can point towards a systemic character of interpersonal violence, but might also suggest a dependent status of the injured individuals. The later version does not find support in the archaeological context of the Pazyryk and Bulan-Koba cultures. Another explanation of "traumatic recidivism" can be the occupational activity of males of the population.

The prevalence of antemortem as compared to perimortem trauma in the male samples of the Altaian pastoralists might suggest that the use of force in solving interpersonal conflicts was predominantly aimed at injuring rather than killing the enemy. One of the sources of nonlethal traumatism in males in traditional societies is so-called "controlled violence"—ritualized individual or collective fights, which were observed in many ethnic groups (Chagnon, 1988: 986; Walker, 1989: 319–320; Abbink, 1998: 280–281; Gorbunov, 1999: 4–218; Herdt, 2006: 33–36; Lessa, Mendonça de Souza, 2006: 136; and others). Such fight pursued various purposes: rise of individual prestige, solving inter- and intragroup conflicts. In some cases it was a ceremony. The fights were performed publically and according to rules decreasing the probability of a fatal result. For example, blunt weapons were often used. Serious injuries were not rare, but murder of the opponent was penalized.

Another widespread tradition in pastoralist societies was collective herd raising. Such actions were usually undertaken by people who had lost their own flocks owing to adverse climatic condition, or as a punishment for a crime, or as a compensation for damage. The use of lethal violence was avoided during such encounters so as not to provoke blood feud (Pershitz, 1994: 168–169, 191–192).

In the female samples of the Pazyryk and Bulan-Koba cultures, injuries are mostly localized on the face. The women having traces of beatings were buried in a full compliance with burial traditions, which points towards their equal status in the group. In modern industrial society, facial injuries in females of reproductive age are an indicator of domestic violence (Greene et al., 1999; Novak, 2006; Allen, Novak, Bench, 2007). A fist blow to the face is very painful and often leads to an abundant bleeding, which can have not only a strategic but also a symbolic meaning (Walker, 1997: 160). According to clinical data, most women who suffered from spousal battering have only soft tissues injured; fractures of facial bones are only observed in 7–9 % of cases (Fonseka, 1974: 400; Novak, 2006: 242). However, ethnographic studies show that the rate and localization of cranial trauma in victims of domestic violence can vary substantially between different cultures. For instance, among the Turkana pastoralists of Kenya, 50 % of female victims of domestic violence had cranial traumas, usually in the form of small depressed fractures inflicted by expedient weapons such as stones, kitchen utensils, or herding sticks (Harrod, Liénard, Martin, 2012: 70).

Domestic violence has deep historical roots. In patrilineal and patrilocal societies, physical punishment of a woman by her husband or his relatives was socially sanctioned and was considered a means of controlling her behavior (Dobash R.E., Dobash R., 1979: 31–47). The level of domestic violence depends on many factors, including the general level of violence in the society. The latter apparently holds true for the society of the Altai Mountains pastoralists of the Scythian and Xiongnu-Sarmatian periods (Fig. 5).

Conclusions

The increased prevalence of antemortem trauma of the facial skeleton and cranial vault may characterize the level of the interpersonal violence aimed rather at injuring than killing the opponent. On the world scale, the Altai Mountains pastoralists display a moderate frequency of healed cranial trauma. But during the Scythian period, a substantial territorial variation of this indicator can be observed, while during the Xiongnu-Sarmatian age, a temporal trend is evident. In the southern part of the Pazyryk area, as well as during the Xiongnu-early Xianbei period of the Bulan-Koba culture, the prevalence of antemortem cranial injuries was high. In all cases, males were more affected by nonlethal violence than females. In the Xiongnu-Sarmatian period, as compared to the Scythian period, repeated injuries became more frequent. The main target for blows in interpersonal conflict was the face of the opponent. Only Bulan-Koba males were less "picky" when hitting the head of their opponents. Healed facial traumas in females were probably the results of domestic violence.

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AN GSSR – Georgian SSR Academy of Sciences

AN RT – Academy of Sciences of the Republic of Tatarstan

ARGO – Archive of the Russian Geographical Society

BGIKZ – Bakhchisaray Historical and Cultural Reserve (Bakhchisaray)

CEIPHAR – Centro Europeu de Investigação da Pré-História do Alto Ribatejo

GIM – State Historical Museum (Moscow)

IA RAN – Institute of Archaeology, Russian Academy of Sciences (Moscow)

IAET SO RAN – Institute of Archaeology and Ethnography, Siberian Branch of the Russian Academy of Sciences (Novosibirsk)

IEA RAN – Institute of Ethnography and Anthropology, Russian Academy of Sciences (Moscow)

IKMZ UR – Historical and Cultural Museum of the Udmurt Republic Idnakar (Glazov)

INION AN SSSR – Institute of Scientific Information on Social Sciences of theInstitute of Scientific Information on Social Sciences of the USSR Academy of Sciences (Moscow)

KemGU – Kemerovo State University (Kemerovo)

KSIA – Brief Communications of the Institute of Archaeology, Russian Academy of Sciences

MAE RAN – Peter the Great Museum of Anthropology and Ethnography (Kunstkamera), Russian Academy of Sciences (St. Petersburg)

MIA – Materials and Investigations on Archaeology in the USSR

NAN RA – National Academy of Sciences of the Republic of Armenia

NAN RK – National Academy of Sciences of the Republic of Kazakhstan

SAI – Collection of Archaeological Sources

UIIYL UrO RAN – Udmurt Institute of History, Linguistics, and Literature, Ural Branch of the Russian Academy of Sciences (Izhevsk)

UrO RAN – Ural Branch of the Russian Academy of Sciences

VSEGEI – A.P. Karpinsky Russian Geological Research Institute (St. Petersburg)

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