doi:10.17746/1563-0110.2021.49.1.021-029

I.V. Schmidt
Dostoevsky Omsk State University,
Pr. Mira 55a, bldg. 2, Omsk, 644077, Russia
E-mail: rebew@rambler.ru

Cruciform Signs Decorating Paleolithic Bone Artifacts from Cherno-Ozerye II, the Middle Irtysh Area

This study describes decorated bone artifacts from the Final Paleolithic or Epipaleolithic site of Cherno-Ozerye II in the Middle Irtysh area—a fragment of a bone dagger hilt found during the 1971 excavations, and fragments of bone "needle cases" found in 2019. An interpretation of the meaning of cruciform signs on the artifacts is suggested with reference to technology and form. Parallels from Ural and Eastern European sites are discussed. It is concluded that in terms of technology, morphology, and "syntax", the signs are stable markers of certain hunter-gatherer groups. Their specificity and possible meaning suggest that the Middle Irtysh area was a contact zone between Western (Ural) and Eastern Siberian groups of Paleolithic foragers. As a result of their interaction, an original decorative style was formed.

Keywords: Southwestern Siberia, Cherno-Ozerye II, Final Paleolithic, Epipaleolithic, decorative traditions, cruciform signs.

Introduction

The Cherno-Ozerye II site of the Final Paleolithic is located in the Middle Irtysh area. Collections of lithic and bone artifacts were gathered in the course of archaeological research at the site in 1968–1971 under the leadership of V.F. Gening and V.T. Petrin. The assemblage of bone artifacts contains a large number of ornamented items, including the well-known "Cherno-Ozerye dagger" (OMK 9675/702). Fragmented artifacts with damaged ornamental signs which were discovered at the site have not yet provoked any significant interest of scholars. Owing to the incomplete nature of such signs, it seems that an erroneous idea as to the futility of research in this area was formed. However, the evidence needs to be published and discussed, since it may lead to the study of the typology of subjects and of technological methods for creating ornamental patterns at the site, and in a wider context, elucidate the problems of settlement in the region and vectors in the development of contacts between human groups.

The cultural and historical capacity of paleo-ornamentation and its subject matter have been discussed both on the theoretical and practical level (Toporov, 1972; Gavrilov, 2009: 67–68; Kalinina, 2009: 117, 126; Privalova, 2009: 551; 2011: 1003; 2013: 1100–1101; 2014: 242; Privalova, Petrenko, 2014: 484, 489; Serikov, 2014: 104; Oshibkina, 2017: 16–17; Viktorova, 2017: 63; and others). Scholars have observed the brevity of Paleolithic ornamental signs (Kozhin, 1991: 132), which demonstrate only some features of evolved texts, such as a simplest rhythm of a limited set of elements and stability of their connections (Toporov, 1972: 78). However, the conciseness of records does not affect the heuristic capacity of the object under study. The groups that inhabited a particular region usually employed a specific set of signs in their practices of ornamental decoration, making their texts recognizable. Given the

Archaeology, Ethnology & Anthropology of Eurasia 49/1 (2021) 21–29 E-mail: Eurasia@archaeology.nsc.ru

lack of sign diversity and in view of the importance of the "way of doing things" for any archaic person, the specific technical aspects of creating an element-sign are of interest. Accordingly, distinctive features of the technique used for making the sign on the surface, are important for understanding its genesis.

Thus, ancient artisans observed the order of combining signs of two or three forms, principles of arranging the composition/text on the surface of the object (the subject was rendered parallel or perpendicular to the axis of the object), morphological and technological features of producing signs, and a specific nature of the working surface (some bone cutters preferred to apply patterns on smooth planes, while others produced additional relief before starting work).

The combination of the forms of signs, techniques of their execution, and structures of records is unique and relatively stable for each group of bone carvers. This tradition was passed down from generation to generation for millennia despite changes in materials and semantic load of the sign (Voss, 1952; Ivanov S.V., 1963: 23, 42; Kozhin, 1991: 131–132, 143; Viktorova, 2017: 63; Oshibkina, 2017: 27; Volkov, Lbova, 2017: 166; and others); it was changed along with the group of which it was typical. This study aims at analyzing the Cherno-Ozerye ornamentation in accordance with the above parameters (shape and morphology of signs, technical features of their production, structure of the record, and distinctiveness of the ornamented surface), the importance of which has been theoretically formulated.

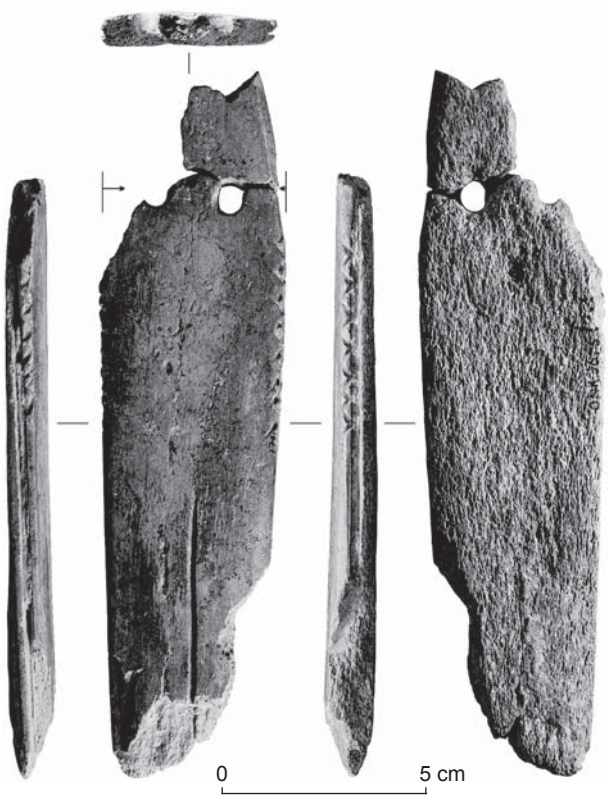

Fig. 1. Fragment of dagger hilt (OMK 9675/701). Cherno-Ozerye II.

Research sources and methods

Research sources were fragments of bone artifacts with remains of ornamental inscription. One of them was the fragment of a dagger hilt (OMK 9675/701) discovered during archaeological works at the site in 1971 and kept in the funds of the Omsk State Museum of Local History (Fig. 1). As an exhibit, the item is of little interest because of its fragmented state and specific design with ornamentation located on the sides and not noticeable when looking at the front side of the item. Its representation was placed on the flyleaf of one of the monographs on the studies of the Paleolithic in the West Siberian Plain (Petrin, 1986). Three other fragments of bone "needle cases" (ChZ II. 65, ChZ II. 67, ChZ II. 69), discovered in 2019, are being published for the first time. They are kept in the Museum of Archaeology and Ethnography at the Museum Complex of Dostoevsky Omsk State University (Fig. 2, *2*, *a–c*).

Rows of cruciform signs constitute the core of the surviving ornamental subjects on three of the artifacts. The signs on fragment OMK 9675/701 exemplify macroform, and those of other finds are microform. Differences in size of cruciform elements of ornamentation, which was represented on items of different functional purposes, testify to persistence of interest in these signs among bone carvers of the site. Analysis of symbolism of these records is problematic because of their "popularity" in the Paleolithic; the semiotic capacity of the cruciform sign excludes an unambiguous interpretation. For "reading" paleoornamentation, it is necessary to focus on identifying technological features in the working skills of the Cherno-Ozerye artisans, originality of the syntax of the surviving ornamental subjects, and morphology of the signs, find their parallels and, if possible, establish the information capacity. These problems can be solved by the methods of trace studies and experimental modeling* (Semenov, 1957; Girya, 1997). Use-wear analysis was carried out using a MBS-10 microscope. For photo recording, a Canon EOS 800D SLR camera (matrix dimensions 22.3 × 14.9 mm, resolution 24.2 million pixels) with a Canon EF-S 60mm f / 2.8 Macro USM macro lens was used. For obtaining high-resolution images, the stacking method was applied (frames were pasted together using the Helicon Focus software).

*Owing to the limited volume, the article only presents the results of use-wear analysis.

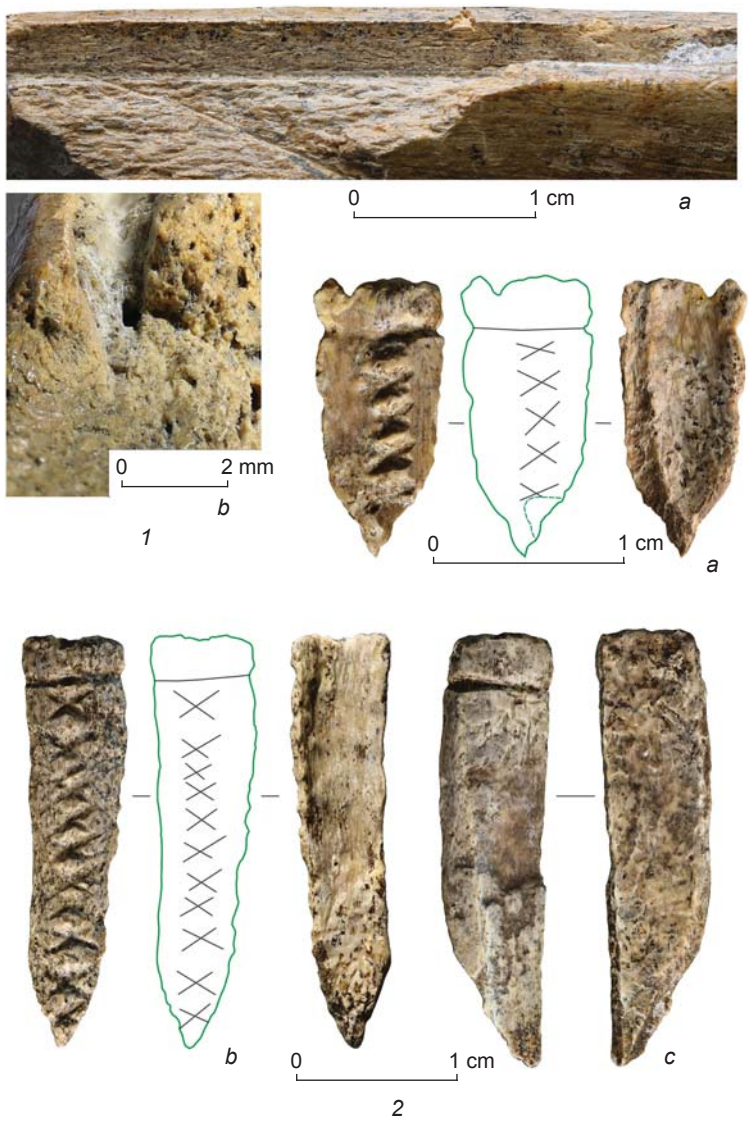

Fig. 2. Fragment of dagger hilt (*1*) and fragments of "needle cases" (*2*). Cherno-Ozerye II.
1: *a* – fragment of the left wall of the groove for inserts (close-up), *b* – profile of the right groove for inserts; 2: *a* – ChZ II. 67, *b* – ChZ II. 65, *c* – ChZ II. 69.

The syntax of ornamental records and morphology of signs are viewed in light of the theory of semiotic analysis of sign systems, presented in the works of Vyach.Vs. Ivanov (1976) and U. Eco (2016, 2019). Many aspects of this theory have been adapted in Russian studies of paleoornamentation (Ivanov S.V., 1963; Kozhin, 1991; Kalinina, 2009; and others).

Analysis of sources

Fragment of dagger hilt (OMK 9675/701). The length of the fragment is 172 mm, width 42.1 mm, and thickness 10.7 mm. The fragment has survived in a satisfactory state (see Fig. 1). Its raw material is a split, flat bone of a large ungulate. The facial surface of the natural outer layer of bone is polished; the reverse surface is a dense spongy substance. The surviving areas of grooves for blades are filled with grayish, dense mortar, which is possibly restoration cement resembling the loam in which the artifacts were found. The surface color is brownish-beige. Rare spots of dendrites are visible. The item was interpreted as a fragment of a dagger hilt (Petrin, 1986: 62).

Channels of two through holes have been preserved in the area of the upper fracture. They are biconical in cross-section; they were made using the counter-drilling technique and are located with slight deviation from the horizontal axis. The diameter of the least damaged hole is 7.3–4.9–6.8 mm. A large and deep U/V-shaped slit (its shape changes in cross-section), 47.3 mm long, 1.8 mm wide, and 1.5 mm deep was made on the front side of the item along its long axis. Its uppermost point is located 60 mm from the area of the holes on the hilt. The area of cutting was first marked by tracing; marks of both procedures are visible on the sides and in the lower part of the slit (Fig. 3, *3*).

Grooves for the inserts have survived on the sides of the artifact. These were made using techniques typical for producing insert tools in that period: the side of the blank was flattened by shaving and smoothing; the slit was made in the center of the resulting area. Zones of damage on the hilt make it possible to establish the sizes and configurations of the slits: the depth of one of them is 3.3 mm; its width is 1.7–2.0 mm; the channel is V-shaped in cross-section (see Fig. 2, *1*).

The area near the edges of the grooves that is located next to the holes is decorated with rows of cruciform signs set close to one another, which occupy three planes—the frontal plane (the zone of the slit for the inserts) and two planes adjacent to it (see Fig. 3, *1*, *2*). These signs can be perceived by the viewer in different ways owing to the intersection of elements in the zone of the slit. For example, V.T. Petrin regarded them as V-shaped elements, the rows of which formed zigzags: "15 cuts forming a zigzag were made on the lateral faces along the edge of the groove for the inserts" (1986: 62). It is possible to assert that the signs constitute a cruciform figure if we reconstruct the movements of the knife blade with which they were carved (that is, if we "continue" the lines), and pay particular attention to the signs made with deviations;

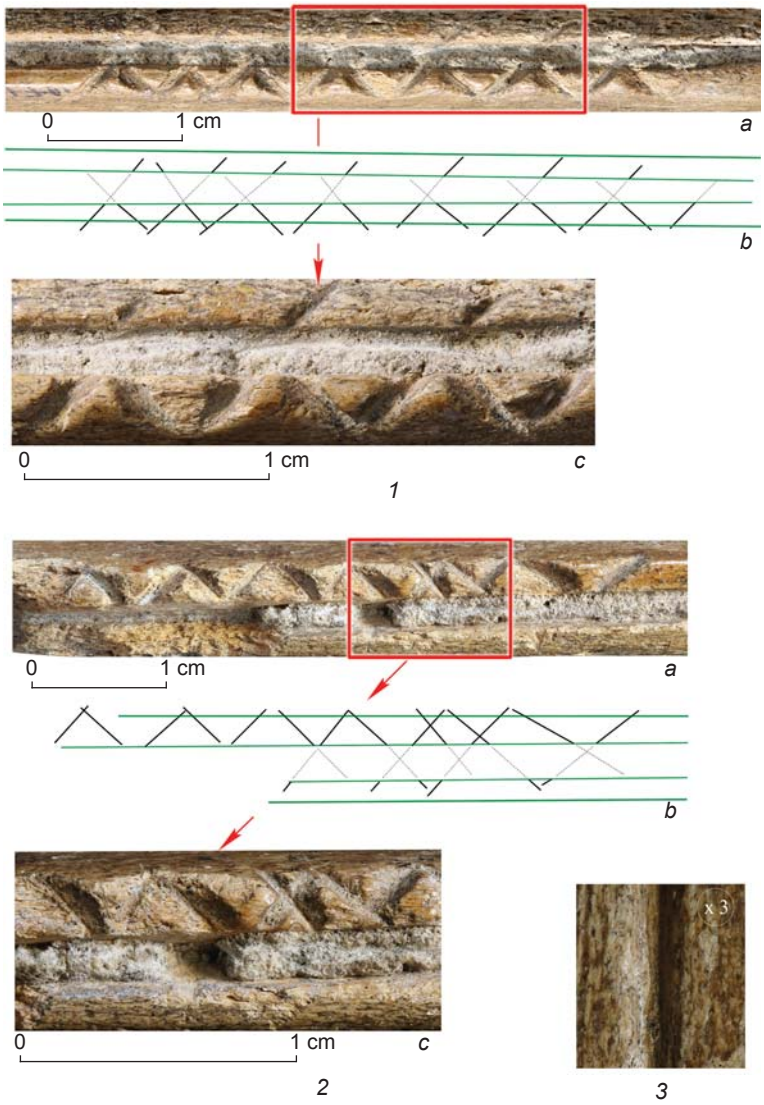

Fig. 3. Ornamental inscriptions on the right (*1*) and left (*2*) sides of the dagger hilt; fragment of the medial cut (*3*). Cherno-Ozerye II.
1: *a* – entire group of signs (close-up), *b* – record pattern, *c* – individual subject (close-up); *2*: *a* – entire group of signs (close-up), *b* – record pattern, *c* – individual subject (close-up); *3* – magnification ×3.

for example, the "small cross", in which the zone of intersection of the elements was shifted from the groove to the edge of the side of the artifact (see Fig. 3, *2*, *c*).

It is not as simple as it would seem to establish the execution technique of the cruciform signs. The slits, which are V-shaped in cross-section with sides diverging at an angle of 50–90° at a distance from 1.5 to 1.7 mm, which is comparable with the width of the central cut on the frontal side of the item, cannot be obtained by lightly sliding a cutter along the bone edge. These slits resulted from sticking the working edge of the tool into the surface and pulling the working edge set at an angle to the vertical axis of the slit. The width of divergence of the sides indicates the alternate processing/treatment of both sides of the slit. The operations had to be repeated several times until the required depth was obtained: distinctive grooves left by the working edge of the tool have been preserved on the bottom of the cut. The surfaces of the sides are smooth.

The angle between the elements of the cruciform signs is about 90° (± 10°). The signs are set close together in a strict order on the right side and with disturbances in the rhythm on the left side (see Fig. 3, *1*, *2*). As experiments show, the artisan had to "enter" the rhythm, which developed with continuous repetitive movements. The "field" where this rhythm was "entered" was the left side of the item. The right side was processed by already confident movements of the hand and tool.

It is difficult to establish the condition of the bottom of the many channels/slits, their sides*, and specific features in intersection points of the elements**: the incisions are often covered with cement; the signs are located in several planes. Notably, these were the largest of the cruciform signs that decorated the artifacts at Cherno-Ozerye II.

The texts on the left and right sides differed in the number of surviving signs. There were seven signs and one element, apparently of the eighth, unfinished sign (see Fig. 3, *1*, *a*, *b*) on the right side, and four or five signs (depending on the method of counting) and elements of three more signs (see Fig. 2) on the left half-destroyed side. It is not possible to establish how many signs there were originally in the texts on both sides. It may be assumed that the rhythm of the semantic units was important for the artisan, and not their number.

Fragments of bone "needle cases" (ChZ II. 65, ChZ II. 67, ChZ II. 69). Three fragments of the diaphysis of a tubular bone of a small animal (hare or bird) with ornamental inscription on its surface (see Fig. 2, *2*) were discovered in 2019 during the study of the site. Although the fragments compactly occurred in the layer, subtle differences (not only in design) do not make it possible to consider them as parts of a single artifact. Two finds (ChZ II. 67 and ChZ II. 65) may be

*The tool can be identified from its roughness, and the technical condition of the tool from retouching and chipped spots.

**This makes it possible to establish which element was made first.

fragments of "needle cases". These are the smallest ornamented artifacts in the collection from the site: ChZ II. 65 measures 26 × 7 × 1.2 mm; ChZ II. 67 – 15 × 7 × 1 mm, and ChZ II. 69 – 27 × 7 × 1 mm. The reconstructed diameter is 5–7 mm.

All three items have survived in satisfactory condition; they have a light, gray-brown surface; the original edge has mostly been preserved. In their shapes, two fragments (ChZ II. 65 and ChZ II. 67) show similarities with the find described above: the ornament consists of groups of small slanting criss crosses. The chain of criss crosses stretches along the long axis of the items to the preserved transverse band, which encircles the edge of the items. Five signs with miniature elements up to 1.8 mm have survived on fragment ChZ II. 67. One angle between the intersecting lines is 50°; the other angle is 130°. Eleven signs are visible on fragment ChZ II. 65. The length of the elements ranges from 2.5 to 3.0 mm; the angle between the intersections is 60° (± 10°) and 120°. This subtle difference in angular rates affects the visual perception of both the sign and the text as a whole; in addition, presence of this difference indicates that these finds were fragments remaining from different items. Obviously, different artisans worked on their design: one of them was trained to represent one combination of angles, while the other another combination of angles. The elements are V-shaped in cross-section; the depth of the incisions reaches 1 mm; the distance between the sides in the upper part is 1.0–1.2 mm.

Only the band located across the long axis of the artifact, 2 mm from the rim, has survived on the third fragment (ChZ II. 69). It is V-shaped in cross-section; the depth of cut of this sign on all three fragments varies from 1.0 to 1.5 mm; the difference between the sides in the upper part is 1.0–1.5 mm.

A specific feature of the artifacts discovered in 2019 was preparation of their surface before engraving the signs: several thin removals were made in the area of future ornamentation, which resulted in a ledge on the surface of the bone (see fragment ChZ II. 69; the work on making such a relief was clearly initiated, but not finished); the signs were made on the edge of that ledge. Owing to the close, strictly rhythmic arrangement of criss crosses (often with interweaved ends of the elements), a subtheme—a chain of relief micro-rhombs—appeared on the convex surface (ChZ II.65 and ChZ II.67). It is not clear which result the artisan wanted to obtain: the row of criss crosses or relief rhombs, since both signs (cross and rhomb) were typical of the Cherno-Ozerye ornamentation.

The ventral part of fragments ChZ II. 65 and ChZ II. 67 deserves particular attention. Their surface is covered with shallow grooves/scratches left by a pointed tool, which were tightly arranged and oriented along the long axis of the artifact. The lower boundary of the zone with scratches is located 3 mm from the edge of fragment ChZ II. 67, and 14–15 mm from the edge of fragment ChZ II. 65. These damages can be explained by regular contact of the ventral side of the artifact with a hard and sharp item. Such marks appear when a dressmaker, without looking, puts a needle into a container-socket. The evidence from the site includes one bone needle with polished surface, 73 mm long, with maximum thickness of 1.5 mm. It is subrectangular in cross-section, with a rounded tip; the diameter of the eye hole is 0.5 mm (Gening, Petrin, 1985: 53, fig. XX, *2*). Finds ChZ II. 65 and ChZ II. 67 are probably the fragments of needle cases that belonged to "muscular dressmakers"; this role was possibly played by men. Scratches similar to those described above could appear if the needle was pushed into the needle case not only in a half-blind mode, but also with great effort. The angle of entry of the needle into the socket, established by the length of the needle track on the walls of various fragments, was also different, which means that these fragments belonged to different items. The question of the gender of their owners remains open. If these needle cases were kept in humid conditions, their surfaces could become susceptible to any, even slight, mechanical impact, in which case the assumption of "muscular dressmakers" can be discarded.

Discussion

Ornamental decoration of bone items cannot be discussed without analyzing their technical, typological, and stylistic parallels.

Many studies have focused on technical and typological analysis of regional ornamental evidence (Rusinowo…, 2017; Enshin, Skochina, 2017; Volkov, Lbova, 2017; Akhmetgaleeva, Dudin, 2017; Majkić et al., 2017; and others). However, they rarely consider issues related to physical and technological indicators of signs/elements or other technical features of methods used for representing signs on bone surface. Insufficient knowledge of these issues has been primarily caused by the lack of technical equipment in museum laboratories and in a number of scientific research centers, as well as lack of specialists in use-wear analysis and experimenters who elaborate the systems for describing the observations.

The tradition in Russia of studying these problems has only started to emerge. The issue of techniques used for creating representations has not yet received proper consideration. We should try to address some of them using the example of finds from Cherno-Ozerye II. The majority of ornamental elements on the fragments under discussion were created by carving, which is also confirmed by experiments. People from Cherno-Ozerye were familiar with the sawing method; in some cases its

use seems more appropriate, but they did not apply it when they made the items under discussion. According to some scholars, the cutting/carving procedure is archaic (Akhmetgaleeva, Dudin, 2017: 31), and its traces on the artifacts of the transition period from the Paleolithic to the Mesolithic are surprising. Obviously, different groups of bone carvers created technological chains of ornamentation, which are difficult to attribute chronologically.

The signs were carved using an ordinary blade (tool with thin, unretouched working edge, since retouching leaves traces on the surface of the sides of the channel), fastened in a holder. Bone was kept in water for softening, which facilitated cutting.

The depth and angle of divergence between the sides of the cuts depended on the size of the tool, preferences of the bone cutter, and individual features of handling the tools by the artisan; they may serve as individual markers. Such aspects of the sign as width and depth of cuts, which ensure the accuracy of its reading, are archaic features. This becomes clear when Paleolithic ornamental texts are compared with the "spider web" patterns of the Mesolithic.

Discussion about the style of patterns and signs is traditional in the history of paleoart. The Cherno-Ozerye patterns are recognizable owing to syntactic features in construction of compositions and distinctive morphology of their constituent signs. Bone cutters arranged straight and slanting crosses in rows oriented along the long axis of the artifact. Changes in the shape of crosses may reflect both the period of creation and transformations in the semantic paradigm of the sign. This element is known both from the European evidence and from the Final Paleolithic of the Urals. Slanting crosses rarely appear on the finds from the Trans-Urals and western regions of Western Siberia. Such crosses can be found in the decoration of the artifacts from the Cherno-Ozerye II site and in the ornamental composition, albeit in a different syntactic context, on the dagger from Aitkulovo (Irtysh region) (according to a number of features, it can be attributed to the Mesolithic of this area) (Kungurov, Shemyakina, 1994). It has not been found in the contemporaneous ornamental records on the artifacts discovered in the eastern and southern parts of Siberia (or such evidence has not been published).

Territorially close parallels to the slanting cruciform signs under consideration are ornamental elements on a groundhog bone from Shulgan-Tash Cave (Urals) (Zhitenev, 2014, 2016). The record consists of four slanting crosses, which are located parallel to the long axis of the bone, and are separated by short transverse incisions (Zhitenev, 2014: 47). Information about the size of the signs and their execution technique has not yet been published, but the differences in the syntax of the signs of the compared inscriptions (with the closeness of their shape being preserved) are obvious. If we take ornamentation on the groundhog bone from Shulgan-Tash Cave for an archetype according to the dates of the Pleistocene deposits (from 13,930 ± 300 BP (GIN-4853) to 16,010 ± 100 BP (KN-5023) (Ibid.: 45)), the composition on the artifacts from Cherno-Ozerye II can be considered to be its variant: while maintaining a number of key features (shape of signs, their structural features, vector of development of the record), some changes are noticeable. This set of features makes it possible to see the roots of the Cherno-Ozerye tradition of using cruciform signs in the Ural version of ornamentation.

Another distinctive feature of the Cherno-Ozerye crosses is that these signs are located on several planes formed either by the joint of the facets in the end part of the product (OMK 9675/701), or by surface modification (ChZ II. 67 and ChZ II. 65). This modification technique is well known from the evidence of Western and Central Europe, and the Urals. Traces of using this technique in modeling specimens ChZ II. 65 and ChZ II. 67 are barely noticeable, but they appear clearly on a territorially close parallel—a bone fragment with diamond-shaped signs from Shulgan-Tash Cave (Ibid.: 47).

We should discuss the question of the importance of the preparatory stage for drawing cruciform signs on the bone surface. Preparation of convex relief, just as the specific location of cruciform signs, is known from the Kostenki-Avdeyeva evidence (see (Gvozdover, 1985; Demeshchenko, 2006; Verkhniy paleolit…, 2016)). Several "needle cases" have been found at the Avdeyeva site in Central Russia, which were designed almost the same way as the Cherno-Ozerye fragments. Tightly grouped slanting crosses were placed on the prepared faces along the long axis of the artifact; they were separated by sparse, straight incisions located perpendicular to the axis (see (Abramova, 1962: Pl. XXX, *12*; Gvozdover, 1985: 12)). Noteworthy is the complete coincidence of stylistically important design features on the "needle cases" from Avdeyeva and Cherno-Ozerye II, such as preliminary modeled relief and location of a row of slanting crosses along the long axis of the item. Ancient "needle cases" were often decorated with cruciform signs; the figure in the form of a cross was associated with the technology of bonding and joining. Clearly, the pattern of fastening seams typical of artifacts made of soft materials, was aesthetically conscious and was replicated on materials which were not suitable for sewing (Demeshchenko, 2006: 11). The connecting nature of the sign is emphasized by its specific placement in the zone of "joining spaces" on the sides or facets of bone items.

Such cruciform images do not often appear on dagger hilts. Ornamentation consisting of groups of cruciform signs has been found on the famous "Cherno-Ozerye dagger" where the groups of slanting cruciform signs are located in the same way as on the OMK 9675/701 find—

at the ends, in the center, but not in the area of the hilt. It is possible that the inhabitants of the site customarily represented criss crosses (straight or slanting) on the ends of daggers. There are very few items with similar design among numerous tools of this type in the Upper Paleolithic and Mesolithic collections from Eurasia. The closest parallel to the composition under discussion is the ornament on a fragment of a dagger point from the 4th cultural layer of the Ivanovskoye-7 site (Middle Volga region). M.G. Zhilin, one of the heads of the excavations, mentions "ornamentation of a band of slanting intersecting crosses", made with the corner of a broken blade or flake on the edges of a Mesolithic tool (2018: 45, fig. 22, *1*).

Semantic explanations can be found for the stylistic features of the Cherno-Ozerye cruciform records mentioned above. Based on the theory of genesis of visual activities, developed by A.D. Stolyar (1985: 134–137), I.V. Kalinina mentioned that the cruciform sign was one of the first technological symbols of the "closed wound", fastening, tying, and bandaging, which appeared in art since the Mousterian period (2001: 55–56). Images on the fragments under consideration may serve as confirmation of the plectogenic theory explaining the origin of that subject (Ivanov S.V., 1963: 14–15; Ivanov Vyach.Vs., 1976: 245). "The symbolism of the slanted cross… goes back to the most ancient methods of fastening, tying, and sewing together. Ornamentation, while performing a 'protective' function, 'strengthened' flint inserts in the point, and 'protected' the edge of the groove. By replacing binding, spiral ornamentation and the slanted cross 'strengthened' the handle of the point and place of its connection with the shaft" (Kalinina, 2009: 241). Obviously, our ornamental inscription on the dagger fragment from Cherno-Ozerye II can be considered a sign of such symbolic "strengthening" of the weapon. The rows of cruciform signs on the needle cases are a reference to the results of needlework, to symbolically fastened planes. Differences in shape and size of the signs (in one case they are larger, in the other case smaller; in one case they resemble straight lines, in the other case slanting lines) should be interpreted in the context of chronology of the subjects using wider evidence.

Conclusions

The fragments of the artifacts described herein and damaged records of signs appearing on them are extremely informative. They can be used for analyzing various aspects of the history of paleoart, primarily the criteria for assessing technical and morphological features of Paleolithic/Mesolithic ornamentation, as well as algorithms and conditions for their observation.

From our point of view, study of the technique of creating ornamental patterns is necessary for reconstructing the historical and cultural potential for the artifacts and describing techniques for executing ornamentation in a specific group. Analysis of stylistic features of the fragmented ornamental subjects is crucial for establishing the boundaries of the area where a specific ornamental motif existed/emerged. Most of the parallels with the items under discussion originated from the territories to the west of the Urals. The center of the area of the specific Western ornamental tradition was probably located there, and the periphery of this area was to the east of the Urals, or alternatively, we should not include the regional Ural and Western Siberian collections into scholarly research because of their fragmented nature, sparsity, etc. Sometimes it is easier to connect the genesis of the Neolithic ornamental patterns appearing on Western Siberian items with the pictorial subjects of the Middle East (Enshin, Skochina, 2017: 15) rather than with local traditions. This study has revealed ornamental traditions that emerged on a local basis in the Irtysh region, but with the involvement of traditions typical of the Urals. Even a superficial consideration of such a simple motif as a series of cruciform signs gives grounds for suggesting that the border of the ancient Ural ornamental zone (where this sign was used in the Paleolithic and more actively in the Mesolithic) should be moved one thousand kilometers to the east of the Urals. When this motif was transferred to the Middle Irtysh area, it became transformed—some elements dropped out of the texts and there were some changes in the syntax. Taking into account the previously published suggestion concerning the Malta influence (Schmidt, 2017), it would be correct to speak not about "losses in the set of signs", but about replacement of some signs and principles of their grouping, typical of the Ural ornamental tradition, with Eastern Siberian ones, when "Ural crosses and rhombs" became combined with "pearl threads", the prototypes of which appear in the decoration of items from the Malta site (Cis-Baikal). The need to place a narration of a certain volume (which should not be too large) on a limited surface of bone must have forced artisans to give something up while creating a composition and operate only with the "main" thing; it might have been signs of a certain shape, text layout, etc. As a result of contacts between various groups on the territory under discussion, a distinctive (composite) ornamental language emerged.

It will be possible to expand the empirical basis of this assumption and strengthen its argumentation, if the evidence kept in museums is published, archaeological research in the region is continued, and methodological foundations of the history of paleoart are further developed.

Acknowledgments

We express our gratitude to E.M. Besprozvanny, Head of the "AV KOM – Heritage" Research and Analytical Center of Cultural and Natural Heritage Preservation Problems (Yekaterinburg), for his technical and financial support of the projects related to the study of the Cherno-Ozerye II site and its collections, and to E.Y. Girya, Senior Researcher of the Experimental Traceological Laboratory of the Institute for the History of Material Culture of the Russian Academy of Sciences (St. Petersburg) for his endless patience and methodological assistance.

References

Abramova Z.A. 1962
Paleoliticheskoye iskusstvo na territorii SSSR. Moscow, Leningrad: Izd. AN SSSR. (SAI; iss. A 4-3).

Akhmetgaleeva N.B., Dudin A.E. 2017
Noviye proizvedeniya iskusstva s verkhnepaleoliticheskoy stoyanki Kostenki 11, 1a kulturniy sloy: Tekhnologicheskiy analiz i predvaritelniye trasologicheskiye nablyudeniya. *Arkheologiya yevraziyskikh stepey*. No. 2: Kamenniy vek i nachalo epokhi rannego metalla. Tekhnologiya izgotovleniya i funktsii kostyanykh izdeliy v drevnikh kulturakh Yevrazii: 31–42.

Demeshchenko S.A. 2006
Osobennosti ukrasheniy kostenkovsko-avdeyevskoy kultury. *Rossiyskaya arkheologiya*, No. 1: 5–16.

Eco U. 2016
Ot dreva k labirintu. Istoricheskiye issledovaniya znaka i interpretatsii. Moscow: Akademicheskiy proekt.

Eco U. 2019
Otsutstvuyushchaya struktura. Vvedeniye v semiologiyu. Moscow: Izd. AST: CORPUS.

Enshin D.N., Skochina S.N. 2017
Ornament na izdeliyakh iz kosti i roga neoliticheskogo kompleksa poseleniya Mergen 6. *Vestnik arkheologii, antropologii i etnografii*, No. 2 (37): 15–29.

Gavrilov K.N. 2009
Zhenshchina – zver – ornament. Kulturnaya spetsifika v iskusstve epigravetta na Russkoy ravnine. *Rossiyskaya arkheologiya*, No. 4: 66–80.

Gening V.F., Petrin V.T. 1985
Pozdnepaleoliticheskaya epokha na yuge Zapadnoy Sibiri. Novosibirsk: Nauka.

Girya E.Y. 1997
Tekhnologicheskiy analiz kamennykh industriy. Pt. 2: Metodika mikro-makroanaliza drevnikh orudiy truda. St. Petersburg: Izd. IIMK RAN.

Gvozdover M.D. 1985
Ornament na podelkakh kostenkovskoy kultury. *Sovetskaya arkheologiya*, No. 1: 9–22.

Ivanov S.V. 1963
Ornament narodov Sibiri kak istoricheskiy istochnik (po materialam XIX–nachala XX v.). In *Narody Severa i Dalnego Vostoka*. Moscow, Leningrad: Izd. AN SSSR. (TIE; vol. 81).

Ivanov Vyach.Vs. 1976
Ocherki po istorii semiotiki v SSSR. Moscow: Nauka.

Kalinina I.V. 2001
Krestoobrazniye znaki v izobrazitelnoy deyatelnosti paleoantropov. In *Arkheologiya v puti ili put arkheologa*. Pt. 2: Arkheologiya v puti… St. Petersburg: Izd. Sankt-Peterburg. filosof. ob-va., pp. 54–56.

Kalinina I.V. 2009
Ocherki po istoricheskoy semantike. St. Petersburg: Izd. SPb. Gos. Univ.

Kozhin P.M. 1991
O drevnikh ornamentalnykh sistemakh Yevrazii. In *Etnoznakoviye funktsii kultury*. Moscow: Nauka, pp. 129–151.

Kungurov A.L., Shemyakina A.S. 1994
Kostyanoy vkladysheviy kinzhal iz Tarskogo Priirtyshya. In *Paleodemografiya i migratsionnye protsessy v Zapadnoy Sibiri v drevnosti i srednevekovye*. Barnaul: Alt. Gos. Univ., pp. 33–35.

Majkić A., Evans S., Stepanchuk V., Tsvelykh A., d'Errico F. 2017
A decorated raven bone from the Zaskalnaya VI (Kolosovskaya) Neanderthal site, Crimea. *PLoS ONE*, vol. 12 (3): e0173435.

Oshibkina S.V. 2017
Iskusstvo epokhi mezolita (po materialam kultury veretye). Moscow: IA RAN.

Petrin V.T. 1986
Paleoliticheskiye pamyatniki Zapadno-Sibirskoy ravniny. Novosibirsk: Nauka.

Privalova V.M. 2009
Simvoly kulturno-istoricheskogo teksta v dinamike obrazovatelnogo diskursa. *Izvestiya Samarskogo nauchnogo tsentra RAN*, vol. 11, No. 4 (2): 550–553.

Privalova V.M. 2011
Obuslovlennost ornamenta kak znakovo-simvolicheskogo rituala v kulture. *Izvestiya Samarskogo nauchnogo tsentra RAN*, vol. 13, No. 2 (4): 1001–1010.

Privalova V.M. 2013
Ornament kak interpretatsiya znakovo-simvolicheskogo rituala v metodologii issledovaniya semiosfery/kogitosfery/dukhovnoy sfery kultury i iskusstv. *Izvestiya Samarskogo nauchnogo tsentra RAN*, vol. 15, No. 2 (4): 1094–1101.

Privalova V.M. 2014
Ritm ornamenta kak proyektsiya mirozdaniya v semantike znakov i simvolov. *Izvestiya Samarskogo nauchnogo tsentra RAN*, vol. 16, No. 2 (1): 236–246.

Privalova V.M., Petrenko V.F. 2014
Psikhosemantika ornamenta v semiotike kultury. *Izvestiya Samarskogo nauchnogo tsentra RAN*, vol. 16, No. 2 (2): 482–489.

Rusinowo. The Symbolic Culture of Foragers in the Late Palaeolithic and the Early Mesolithic. 2017
T. Płonka, K. Kowalski (eds.). Wrocław: Univ. of Wrocław: Inst. of Archaeology.

Schmidt I.V. 2017
Ornamenty paleolita Severnoy Azii: K issledovaniyam ikonografii. *Universum Humanitarium*, No. 2 (5): 48–67.

Semenov S.A. 1957
Pervobytnaya tekhnika (opyt izucheniya drevneishikh orudiy i izdeliy po sledam raboty). Moscow, Leningrad: Izd. AN SSSR. (MIA; No. 54).

Serikov Y.B. 2014
Ocherki po pervobytnomu iskusstvu Urala. Nizhniy Tagil: Yazykova E.S.

Stolyar A.D. 1985
O proiskhozhdenii izobrazitelnogo iskusstva. Moscow: Iskusstvo.

Toporov V.N. 1972
K proiskhozhdeniyu nekotorykh poeticheskikh simvolov. Paleoliticheskaya epokha. In *Ranniye formy iskusstva*. Moscow: Iskusstvo, pp. 77–98.

Verkhniy paleolit: Obrazy, simvoly, znaki: Katalog predmetov iskusstva malykh form i unikalnykh nakhodok verkhnego paleolita iz arkheologicheskogo sobraniya MAE RAN. 2016
G.A. Khlopachev (ed.). St. Petersburg: Ekstraprint.

Viktorova V.D. 2017
Veshch i znak v arkheologii. Yekaterinburg: Kvadrat.

Volkov P.V., Lbova L.V. 2017
Osobennosti tekhnologii obrabotki bivnya i osnovnoy instrumentariy pri izgotovlenii predmetov mobilnogo iskusstva v Maltinskoy kollektsii. *KSIA*, iss. 246: 157–167.

Voss M.E. 1952
Drevneishaya istoriya Severa Yevropeiskoy chasti SSSR. Moscow: Izd. AN SSSR. (MIA; No. 29).

Zhilin M.G. 2018
Mezoliticheskiye izdeliya iz kosti i roga iz nizhnego sloya stoyanki Ivanovskoye 7 v sobranii MAE RAN. *Camera praehistorica*, No. 1 (1): 24–63.

Zhitenev V.S. 2014
Pervaya nakhodka fragmentov ornamentirovannykh kostey verkhnepaleoliticheskogo vozrasta iz Kapovoy peshchery. *Vestnik Novosibirskogo Gosudarstvennogo Universiteta*. Ser.: Istoriya, filologiya, vol. 13. Iss. 7: Arkheologiya i etnografiya: 45–51.

Zhitenev V.S. 2016
Kostyanaya industriya Kapovoy peshchery i peshchernykh pamyatnikov verkhnego paleolita s nastennymi izobrazheniyami Franko-Kantabrii. *Vestnik arkheologii, antropologii i etnografii*, No. 2 (33): 5–15.

Received March 24, 2020.
Received in revised form November 9, 2020.