

УДК 930.1(T2-575)

Stone and Ceramic Tools from Ust-Shilka-2, a Hill-fort of the Early Iron Age

Galina F. Korobkova, Pavel V. Mandryka and Pavel V. Volkov*

*Siberian Federal University, Svobodny av., 79, Krasnoyarsk, 660041 Russia
Institute of Archaeology and Ethnography, Siberian branch of RAS,
Ac. Lavrentiev's av., 17, Novosibirsk, 630090 Russia¹*

Received 1.09.2007, received in revised form 1.12.2007, accepted 15.01.2008

This article examines only the stone and ceramic tools from a fully studied hill-fort of the early Iron Age. These tools are from the Shilka culture and are dated from between the 5th – 2nd centuries BC.

Keywords: complex Ust-Shilka 2, artifacts, anvil, universal tool, hammers, pestle, sharpening stones, smother, tool for correction surfaces.

Complex Ust-Shilka 2 is arranged 200 km to the North of Krasnoyarsk near the Kazachinsk rapid on 17-meters cape of the right bank of Yenisey near an estuary of the Shilka river (Mandryka 2006). During eight field seasons, 1244 square meters were excavated by Mandryka, in which chronological and cultural assemblages from Mesolithic to the late period of Middle Age were found.

The fortified part of the one-square cape-shaped hill-fort occupied the highest northern part of near estuary's bank and had five-corner shape. From the West and North it was torn off by slope of the terrace and from the East and South it was restricted by a wall, which was set in a moat (trench). The general size of the hill-fort was about 900 square meters. There were three deepened rectangular dwellings (sizes were 6.3×4.6 m, 7.0×4.6 m, 6.4×4.8 m) in one line in the centre of the fortified area. A passage with a shape of a 3-meters rupture of wall was arranged

on southern side of the fortified area. A deepened rectangular structure (2.8×3.1 m) was built near this passage and over the hill-fort's walls.

All artifacts are correlated with each other typologically; even if they are from different objects or parts of a cultural layer. Moreover, some vessels are restored (partly or fully) with fragments that were found in different points of the hill-fort. Detailed observations shows that all subjects and materials of settlement can be considered united chronological and cultural complex that did not exist for an extended period.

An insignificant share of the implements consists of metallic artifacts (a bronze raised-back knife with an openwork handle and ending in symmetrical stylized images of griffon's heads, a fragment of a flat bronze arrowhead, iron raised-back knife and an iron awl with four flat sides point and round part for implant) and bones (unfinished arrowhead and broken-off rhombic ones, punch and point). But the principle set of tools is of a

* E-mail address: pmandryka@yandex.ru; Wolf@archeology.nsc.ru

¹ © Siberian Federal University. All rights reserved

stone and ceramic subjects. Their trassological analysis done by G. F. Korobkova and P. V. Volkov allowed their use by the inhabitants of the hill-fort to be determined. The base of this study was diagnostic signs distinguished for establishment functions of ceramic and stone tools and later objects (Bronze Age — Middle Ages) and the character of the material treated by them (Korobkova 1999). Fifty-five objects were examined by microscope, traces of work saved on their surfaces. As a result of this microanalysis, some functional groups were distinguished.

Fishing tools

The fishing tools consist of a stone screen and rod sinks with notches made by a pointed technique (77 specimens). All of them are of one type and made from flat round stones, and have two notches on both sides for tying. The sizes of the sinks are varied (from 3,0×4,5×1,0 cm to 9,0×10,0×4,5 cm). Their different sizes and weights (from 20 to 100 g) show whether they were used for nets or other fishing instruments. Light sinks could be tied to fishing rods because their weight was scarcely effective for net drawing. These objects were found both in places, where dwellings had been, and in the cultural layer outside of them. In the first dwelling four sinks lay near a hearth. There were 16 sinks in the second one, six of them were found near the hearth and ten were on shelves and floor. The other sinks were found outside.

Cooking stones

More than 100 specimens of cooking stones were found. On their outer surfaces remained traces of burning (black soot or coloured spots). Moreover, many stones have chaotic cracks formed not by mechanical means, but by high temperatures. According to these signs, they had been used to warm liquids in ceramics vessels in order to cook. It is possible that they could sometimes be used as fishing sinks, but their

patterns of cracking could have been caused by a fire in the hill-fort. Need to take into account, that smoked whole and cracked stones are noted on all parts of excavated square and often lay in group, what shows that cooking was realized with stones for warming. It is especially important that they lay among ceramic pieces, it is supplementary evidence of their appointment as warming stones for cooking.

Tools for grinding hard and soft materials

A *pestle* found in the first dwelling was made from stone with big-grain's structure. It has lengthy round shape of blunt part and brightly expressed wide working flat for hit and friction. Sizes of implement are 7.6×12.3×6.0 cm (p. 1:10). Friction's traces of micro relief and typical for pestles for grinding grain lined scratches can be seen on it.

The *hammer* from the third dwelling was made from brick stone with rounded corners at the rectangular section with two working surfaces. One of them is narrow and has traces of beating. The second blunt end had been used for treating and breaking away hard material. The implement size is 15.0×7.5×5.0 cm (p. 1:3).

One massive *tool for hitting* was found in cultural layer of the hill-fort. It was made from lengthened ellipsoid stone, the edges of which had been mounted by transversal chopping. Traces of beating were found on the transversal sides of tool. These are typical for hitting implements that had been used for hard material (for example, stones). Its size is 24.0×8.3×5.1 cm (p. 1:8).

The transversal end of the stone tool with round-ellipsoid shape was mounted on one side for chopping. It had traces of breaking, rumpling, beating, blunting which show that it could be used for chopping hard materials, for example, bones. It was found in the cultural layer near the wall of the hill-fort.

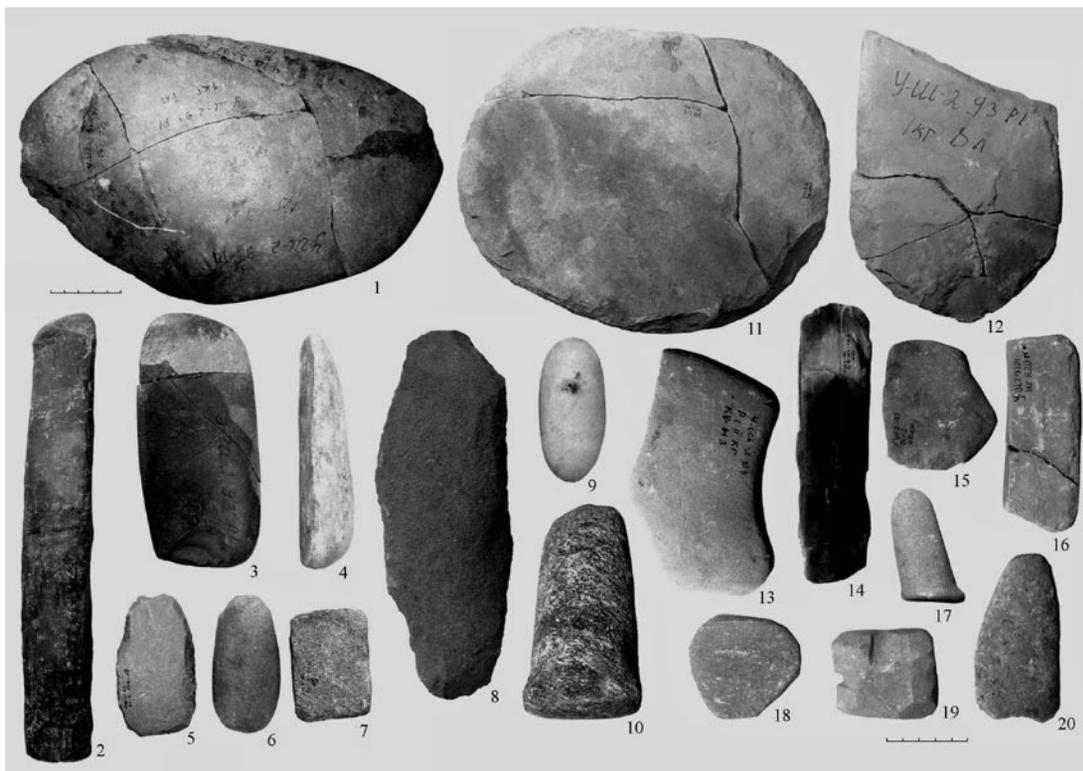


Fig. 1. Stone tools from Ust-Shilka-2 hill-fort: 1 – anvil; 2 – universal tool (hammer-sharpener-smoother); 3-9 – hammers; 10 – pestle; 11-16, 18, 19 – sharpening stones; 17 – smother; 20 – tool for correcting surfaces.

Tools for treating metallic artifacts

An *anvil*, found in the third dwelling, is a massive, round, flat stone with sharpened edges and narrowed ends. Traces of blows and metallic brilliant are found in the centres of both flats.

It was used for forging implements from soft metal. The lateral edges of the stone were used and possibly the narrowed ends were used too. Therefore it is a universal anvil, on which both big and small implements were forged. Sizes of subject are 27.0×16.0×8.0 cm (p. 1:1).

The *universal tool* from the first dwellings was made from bricks lengthened stone of a rectangular section shape, which had been formed by the pointed technique. Moreover, some sides had been polished. One end of tool is straight, slightly convex, with traces of breakage left from forging implements from soft metal. Its lateral side had been used for this purpose as well. The

other end of the tool is slanted and polished. The surface is polished and well smoothed, and saves metallic brilliant. The character of sign of wear down is typical for smoothers and straighteners, which were used for rolling sheets of metal and smoothing them after forging. The same work signs are noted on the tools end. Moreover, narrow grooves and scratches with metallic brilliant and smooth surface, which were formed because of grinding of sharp metallic implements, such as needles or awls, are noticed on one wide side. The tool is 5.0×29.0×2.5 cm (p. 1:2). Therefore, the tool was used as a hammer for forging, as a smoother and straightener for rolling sheets of metal, and an abrasive for sharpening the working ends of metallic needles and awls.

The stone *hammer* with a cylindrical shape for cold forging soft metal (bronze) has two straight working ends. Small signs of chopping around

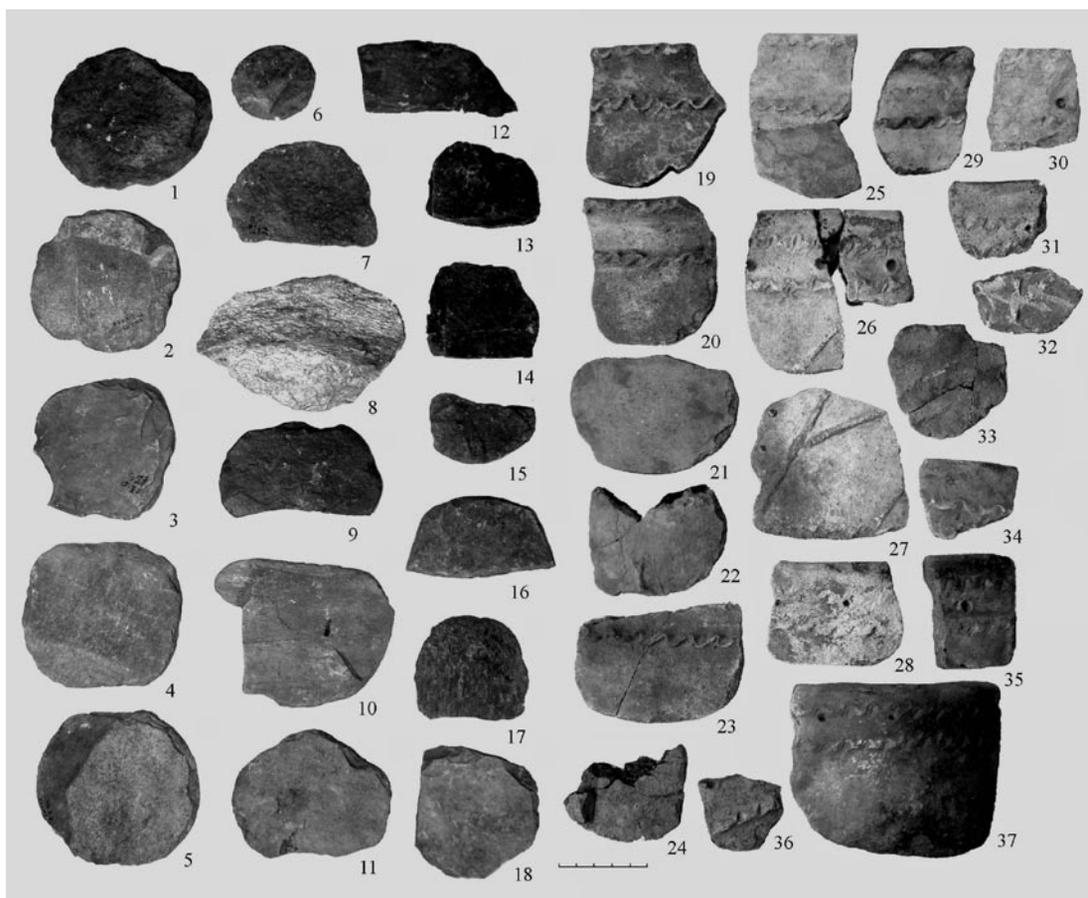


Fig. 2. Scrapers for treating hides: 1-18 – stone, another – ceramics.

the working square, traces of pointed pressing and signs of heavy rubbing and the rinsing of micro relief show that it was used (p. 1:6). The size of the tool, found in the third dwelling, is $8.5 \times 4.3 \times 3.5$ cm.

The second stone *hammer* with a cylindrical shape and the same signs of wear on the ends of tool was also used for forging metallic implements. It was found in the layer behind the walls of the hill-fort. Its size is $9.5 \times 4.2 \times 3.5$ cm (p. 1:9).

The third *hammer* is conditionally considered not to show signs of use, it was noted in the cultural layer of the hill-fort. It was made from a lengthened ellipsoid flat stone. The artifact was formed by chopping on all edges. Its size is $5.3 \times 9.4 \times 2.0$ cm (p. 1:5).

The fourth *hammer* found in the first dwelling, was made of a split-lengthened ellipsoid stone. Signs of pointed blows and some beating are seen on both working ends. Its size is $3.0 \times 15.0 \times 3.4$ cm (p. 1:4).

The fifth stone *hammer* has the shape of a rectangular parallelepiped. It has the same traces of use described above. It was used for forging of metallic artifacts, it was found near the wall of the second dwelling. Its size is $5.2 \times 7.2 \times 3.5$ cm (p. 1:7).

A collection of stone tools, which were used for *mounting, sharpening and directing* metallic implements. They are different abrasives and smoothers. In one case for these aims one flat of stone with leaf-shape was used. Sizes of this

tool which was found in cultural layer outside settlement's walls are 10.0×5.0×1.3 cm (p. 1:20).

The second object from this set is a *smoother*. It is a stone with a slanted round shape and has a handle. Working flat is arranged on lower end, straight, smooth and well-polished with metallic brilliance. Its traces of wear show that it was used for rolling sheets of soft metal or straightening the surface of metallic implements after forging. Its size is 4.0×7.5×2.5 (p. 1:17). It was found near the disc-shape sharpening stone in the second dwelling.

A whole set of stones was used as abrasives for sharpening metal implements.

One *sharpening stone* (hone) with the shape of a flat rectangular plate restored from 15 fragments, lay on the northern "shoulder" of the second dwelling place among burnt bones. Both ends had been formed by chopping. The four sides of the tool had been used for sharpening and directing blades of metallic implements used for cutting. They are highly rubbed, polished, and have lot of slim scratches, which are parallel lengthwise. Its size is 4.6×17.0×1.0 cm (p. 1:14).

The second *sharpening stone* (abrasive) with dick-shape had been made from sandstone and was also noted near the eastern wall of the second dwelling. One even, well-rubbed surface was used for polishing and straightening wide straight flats of metallic implements, according to signs of work. The ends have traces of beating, which possibly were formed because of forging soft metal. Its size is 18.0×22.0×3.5 cm (p. 1:11).

The third large *sharpening stone* from the third dwelling was made from a piece of flat sandstone. One edge is round, formed by chopping. The working surfaces of both sides were used as an abrasive for sharpening surfaces of metal implements. They have the same traces as does the above tool. For these aims straight rib of lateral side of tool had been used. Its size is 12.0×14.5×3.5 cm (p.1:12).

Two *sharpening stones* (the fourth and fifth) were fixed in structure for economical and cult purposes. One of them was made from a slab of sandstone and has an irregular square shape. Two wide sides had been used for working. The first one was abrasive for forming the surfaces of metal implements, the second side was a hone for sharpening and directing the blades of knives, sharp ends of awls and needles. Its size is 6.7×7.5×1.5 cm (p.1:15). The second stone is of brick-shaped fragments of sandstone, by which we can suppose that the shape of the tool was that of a brick, flat and ellipsoid and with a width of 5 cm. It has the same traces of wear as do the hones.

The sharpening stones which were found in the cultural layer have different shapes. The first one was made from sandstone and has the shape of parallelepiped with slightly flattened and corrected surfaces. There are ditches on two sides of the ends of the artifact, where the straight ends of the metallic blades of implements were flattened, for example, blunt ends of knives. This specialized abrasive was used a long time. Its size is 5.6×6.3×2.5 cm (p. 1:19). The second stone (the hone) also was made from a slab of sandstone with an irregular rectangular shape. Both lateral flats were used for sharpening and directing blades of metal implements. Its measurements are 14.5×8.0×2.2 cm (p.1:13). The third stone is hone too; it is a rectangular brick made from sandstone. All its sides were used a long time as a hone for sharpening and directing blades of metal daggers and knives. Its size is 4.2×11.4×2.0 cm (p. 1:16). The last stone from the cultural layer is an ellipsoid triangular flat shape made from porous sandstone. Profound furrows and ditches with a depth to 0.2 cm are present on both surfaces of tool; they had been formed because of sharpening ends of pointes of metallic implements. Its measurements are 6.0×7.0×1.3 cm (p. 1:18).

Trassological examination of stone tools for treatment metal showed their different use.

Forging metal implements was done with the help of hammers and anvils. Confirmation of this was found in traces on the blade of the bronze knife from the first dwelling. The surfaces of points had been straightened after forging by smoothers and straighteners; a sheet of metal was rolled by them too. Sharpening instruments were made of sandstone pieces found near the hill-fort, and have suitable flats and sides for it and can act as abrasives. Accidentally picked up stones were used; and in only one case was the shape of the sharpener formed specially (p. 1:18). It was necessary in order to make a treatment special details of metallic implements in particular the blunt ends of knives. Among abrasives hones are distinguished; they were used for sharpening and directing blades of cutting tools, and some of them were used for sharpening working ends of awls, needles.

The presence of a large quantity of instruments for different treatments of metal implements shows their wide use in the economic and productive activity of the hill-fort's inhabitants. Since there are no traces of bronze casting in the hill-fort, it is probable that it had been arranged outside. But the metal treatment had been done within the hill-fort, and different artifacts (hammers, anvils, smoothing objects, abrasives and hones) which are connected with the treatment of metal and tool production prove this.

Tools for treatments of hides

Scrapers on stones slab (18 specimens). All of them are flat and round, and were made from layers of stones formed by chopping. Notches, traces of blunting and rubbing are seen on the working edges. On broken scrapes, the edges are also round, arc-shaped and covered by transversal scratches. The artifacts were found near the first economical pit, near the second dwelling and also outside. The sizes of the whole implements are from 4.5×4.5×0.9 cm to 8.0×8.3×0.4 cm (p. 2:1-18).

The blades of scrapers are many-sided; one direction of movements is noted according to character of working sides. Two scrapers had treated dry hides; well-flatted edges prove this. Other scrapers had been used for soft (slightly dried) hides. The degree of wear is various. By the different corners of wear at the working edges we can suppose that different people had worked with these scrapers. The hides had been treated "by hanging" on spread surfaces, for example, on knees, on earth. Scrapers were used without handles. All surfaces are worn. The sides of some tools have traces of windiness (deflection), which can show that the scrapers were made from slab picked up at random.

Scrapers on ceramic pieces (19 specimens). Their material was fragments of untreated ceramic vessels. There are traces of working on one of the raised edges of the fragments. The working surfaces are very worn down and ribbed; grains of sand of admixture are naked and raised. Lined traces are perpendicular to edges. The tools were arranged on places of the hill-fort and in the cultural layer (there were 6 scrapers in the third dwelling, 1 in the second one and 1 scraper on the floor of the economic and cult structure). It is possible, that there had been leather workshop in the third dwelling. It is important, that no one of scrapers had been made from fragments of vessels broken on the hill-fort though they are close to them typologically. It talks that all scrapers had been made from ceramic pieces which had been picked up outside of the hill-fort, for example, on short-term sites and on production area mastering by hill-fort's inhabitants.

Traces of use are not identified on four tools, "dry" hard hides had been treated by eight scrapers, with other ones people had worked on "soft" and moister hides. Separate ceramic scrapers have traces of treatment hides on hard raised surface (may be on a log). Moreover, it is necessary to note that according to a series of

indirect undocumented signs we can suppose that some of these tools had been used as abrasives for sharpening metallic instruments in Bronze Age cultures (Kileynikov 1990; Korobkova 2001).

Therefore all scrapers produced in the hill-fort had been used for treating hides and producing fur and leather wares. Thick hides with large square of treatment had been treated by the scrapers. That is, these could be the hides of large animals. It has been confirmed that the osteological materials found in the hill-fort included bones of horses, big and small horn cattle, elk and other animals. Materials had been treated with different levels of preparation; hides had different degrees of moisture and lying. Consequently, part of hides could be treated at once after removing them from the bodies of animals, and part of them had been saved. We mustn't discount the possibility of accumulating hides which had been removed from animals killed at different times of the year, in hunting season.

The distribution of stone tools on revealed objects of hill-fort is allows the character of their use to be guessed. So there were four fishing sinks, pestle, universal tool for treating implements from non-ferrous metals, hammer for

metal and scraper on ceramic piece for treatment hides in the first dwelling. Sixteensinks, hammer, smoother, sharpening blade, sharpening disc, two stone scrapers and ceramic one were found in the second dwelling. There were big and small hammers, anvil, a fragment of a smoothing stone and six scrapers for treatment hides from ceramics fragments in the third dwelling. The character of the artifacts shows that in all dwellings housework (cooking, treatment hides, correction and sharpening metallic instruments, repairing fishing nets) was done. Metallic treatment small wares and correction blades of cutting tools were fixed in the second and third dwellings. The character of artifacts from the structure, which was outside the fortified area and had no hearth, but which had two smoothers, two stone scrapers and a ceramic one, shows that it was also used. Treatment hides and sharpening instruments were made there.

Therefore, the inhabitants of the hill-fort in the period of its settling had been engaged in hunting activity and cattle-breeding. Both branches were the basis of their life-support system. Moreover, work for making stone, ceramic and metallic tools, and treating the hides of wild and domestic animals was done in the hill-fort.

References

1. V.V. Kileynikov, *About Some Ceramics Tools from Sites of Don Forest-steppes Logs Culture: Problems of Studying Sites of Seversk Donets Archeology* (Lugansk, 1990), p. 21-30.
2. G.F. Korobkova, "Bones Cutting Subjects and Ceramics Tools of Stone Age. Stone Age of European Plain", Material of conference (Sergiev Posad, 2001), p. 192-199.
3. P.V. Mandryka, "Shilka Culture in Southern Taiga of Middle Siberia", *Second Northern Archaeological Congress. Abstracts* (Khanty-Mansiisk, 2006), p. 117-118.
4. G.F. Korobkova, *Narzedzia w pradziejach. Podstany badania funkeji metoda traseopogiczna* (Torun: Universitet Mikolaja Kopernica, 1999).