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Tentative Findings from Excavations on Suchu Island, Amur (1973 Season, Excavation I)*

This article outlines the results of the 1973 excavation season at a Neolithic habitation site on Suchu Island, in the Lower Amur. New findings relate mostly to the middle Neolithic Malyshevo culture—the stratigraphy and planigraphy of dwellings, their chronological sequence, and construction features, specifically the considerable variation of dwelling-pit depth. Artifacts, totaling 4407 specimens, include stone tools, ceramics, and objects of art and cult. Lithics, made mostly of gray siltstone, were analyzed with regard to typology and function. The toolkit indicates a complex economy: it includes hunting, fishing, and butchering tools, some for processing stone, wood, and bone, some for preparing vegetable food, and some for digging. The ceramics of Malyshevo and other Neolithic cultures from excavation I were subjected to petrographic and radiographic analysis. The results reveal cultural differences in types of clay and paste, shaping, surface treatment, firing modes, and forms of vessels. Decoration, too, is culturally specific. Apart from the Malyshevo people, the excavated area on Suchu Island was often visited by those associated with other cultures of the Middle, Late, and Final Neolithic.

Keywords: Amur Basin, Suchu Island, Neolithic, dwellings, stone tools, ceramics, petrographic analysis.

Introduction

In 1973, excavation works** on the Island of Suchu, one of the most important archaeological sites of the Amur

Basin (Derevianko, Medvedev, 2002), were carried out in two areas: in the south-eastern lowered tip of the island, where the excavation I of 1972 (Okladnikov, Medvedev, Filatova, 2015) was expanded; and to the west of this location on the edge of the sea cliff (excavation II, the materials of which are not described in this article) (Medvedev, 1995: Fig. 1). The main research in

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excavation I was done directly on the bed of the earth road leading from the Mariinskaya branch of the Amur River, in a northerly direction, into the hinterland of the island. The goal of the study was to obtain new materials and to clarify the stratigraphy of the dwellings, which cut through each other at the lowest south-eastern tip of the Neolithic settlement (or group of settlements), and the sequence of their functioning, which would make it possible to identify individual stages in the development of the territory (Okladnikov, 1974: fol. 2).

The excavation area was marked out into a grid (with 1×1 m cells): A-31–35, Б-K-31-40, and Г-И-41-45. In 1973, the total area of excavation was 125 m². No traces of dwellings in the form of depressions on the bed of the earthen road were observed. The remains of the dwelling-pits were found in the process of removing the upper layers of soil. Excavation I revealed a considerable amount of material (Fig. 1, 1), including stone tools, ceramics, and objects of art and cult, totaling 4407 specimens. It was possible to discover a half of one dwelling-pit (south-western part of dwelling E) and the edges of two other dwelling-pits (south-eastern and north-western parts of dwellings C and D, respectively); and to examine a considerably large section of space between the dwellings (Fig. 1, 2), where we took a sample of charcoal that gave the ¹⁴C date of 5830 ± 65 BP, or 3880 ± 65 BC (SOAN-843) (Orlova, 1995: 226).

Materials and methods

This article is based on the information obtained from analyzing the collection, which is now kept in the Institute of Archaeology and Ethnography SB RAS (Novosibirsk); we also, in part, used the information taken from the report on field research (Okladnikov, 1973: fol. 1) and the published data. Archaeological materials were studied using various methods, including the methods of the natural sciences. To describe the dwelling complexes and the space between the dwellings, stratigraphic and planigraphic data were used. The lithic inventory was studied using morphotypological and functional analysis; ceramics were analyzed using petrographic and radiographic methods, and the objects of art and cult were analyzed using cultural-chronological methods.

After binocular examination of the ceramic collection, we selected the sets of five samples each from the Malyshevo, Kondon, and Voznesenovskoye cultures, the Belkachi complex, and the final Neolithic type. Twenty-five transparent sections were produced from these samples in the Laboratory of Physical and Chemical Methods of Research at the Khabarovsk Innovation Analytical Center of the Institute of Tectonics and Geophysics FEB RAS. The petrographic analysis

of the samples was carried out by the petrographer L.I. Shcherbak from the Institute of Mining FEB RAS. The studies were conducted using an Imager A2m polarized-light microscope. The same samples were examined by X-ray diffractometry. The X-ray phase analysis was performed by A.Y. Lushnikova, the Senior Engineer of the Institute of Tectonics and Geophysics FEB RAS, using a MiniFlex II X-ray diffractometer.

Results

Stratigraphy

In general, stratigraphy (Fig. 1, 3) was the same in the entire excavation area. The top layer represented mixed soil up to 40.0 cm thick, overlaying the main cultural horizon of dark-brown humic soil. This horizon sometimes reached 1.5 m in thickness, and constituted the main filling of dwelling-pits and of the space between dwellings. Dark-brown soil included lenses and relatively thick bands of loose gray-yellow loam and brown soil; occasionally, it acquired lighter (brown and light-brown) colors, and was underlain by the bands of light-brown and brown soil. A clay bed was below this layer, in rare cases reaching 50.0 cm in thickness, lying directly on the native soil of yellow sandy loam. Sometimes, the loam was interstratified with spots of burnt sand and dark-brown (almost black) soil with charcoal inclusions. The lowermost layers were directly associated either with the floor of the dwellings of half-dugout type, or (outside the dwellings) with the ancient daylight surface.

Dwellings and the space between them

Dwelling C (Fig. 1, 2) was located in the north-western corner of the excavation (the entire sq. 3, И/43, and Ж-И/44, 45; partly sq. E/45, И/42, 43, and K/40); the main part of the dwelling-pit continued into the western and northern walls of the excavation. Almost the entire excavated area (about 10 m²) of the dwelling covered its rim-shoulder, which turned into floor only in the corner of the excavation pit. Holes remaining from a post structure were located on a relatively sloping surface of the shoulder with small projections. Four holes (1–3, 11) were located next to the outer edge (sq. И/42, 3/43, Ж/45); six holes (4–9) were located below, closer to the floor area (sq. Ж, 3/44, 45); one hole (10) continued to the northern wall of the excavation pit (sq. Ж/45). All holes were rounded or suboval in plan, and had the diameters ranging from 10.0 to 25.0 cm, and depths ranging from 8.5 to 45.0 cm. The walls of the holes were quite steep; the bottoms were rounded or conical, or more rarely, flat. A part of a larger pit (I), evidently used for household

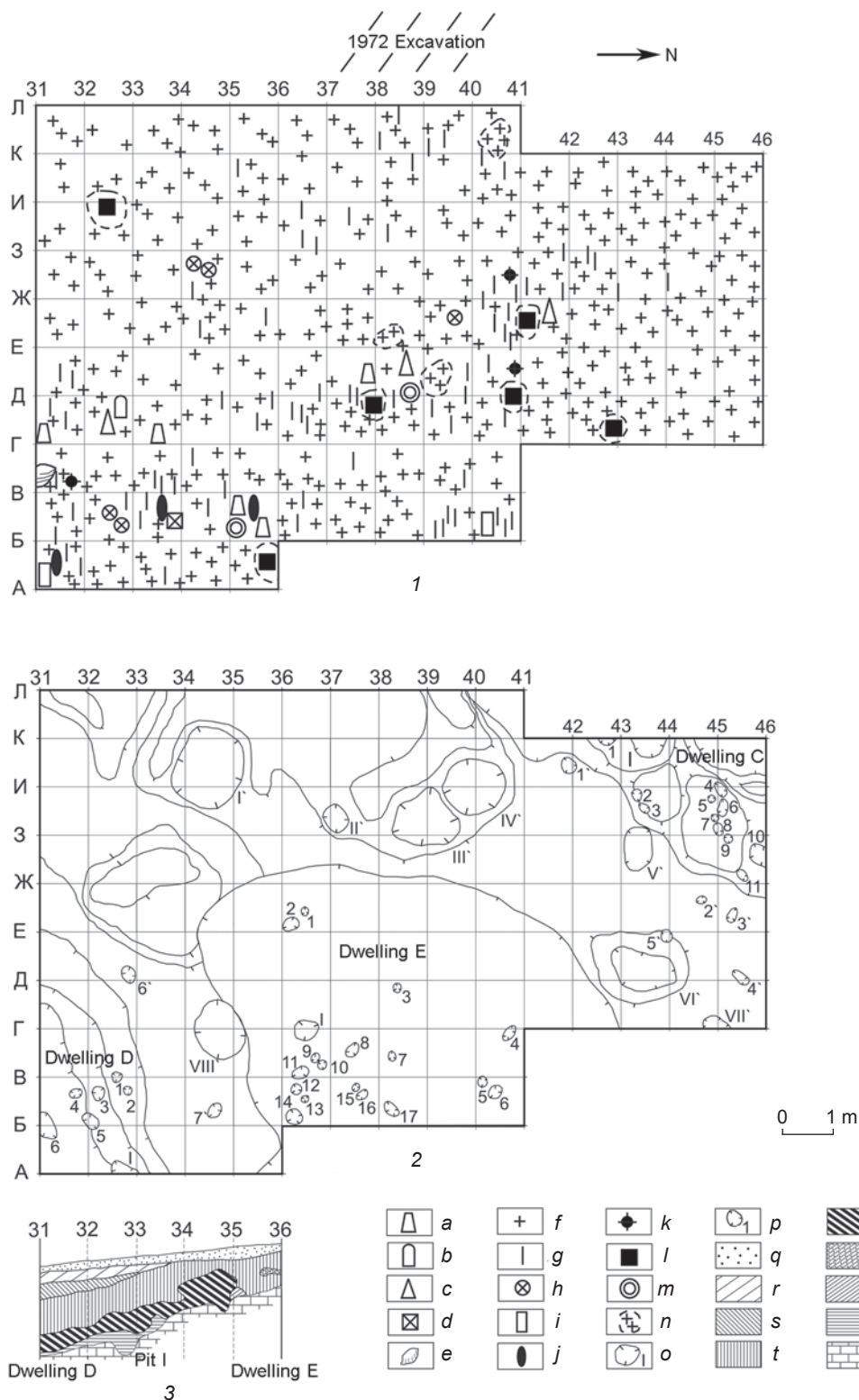


Fig. 1. Maps of parts of excavation I (1973) at the levels of dwelling filling (1) and native soil (2). Profile of the wall along the line A (3).

a – adze; b – end-scraper; c – arrow-head; d – stamp; e – stone; f – ceramic piece; g – flake; h – clay figurine; i – knife; j – ceramic rod; k – clay object; l – fragmented vessel; m – spindle-whorl; n – accumulation of ceramics; o – household pit; p – hole from post; q – w – soil: q – mixed, r – light-brown, s – with wood remains, t – dark-brown, u – dark-brown and almost black with charcoal inclusions, v – brown, w – gray-yellow; x – burnt sand; y – native soil.

purposes, was unearthed at the western wall of the excavation area (sq. И/43). Another similar hole (V) was located outside the dwelling (sq. Ж, 3/43). The total depth of the dwelling-pit from the surface reached 2.0 m.

Dwelling D. In 1973 season, a part of this dwelling (entire sq. А-Г/31, 32; partly sq. Д/31 and А/33) covering approximately 9 m² was unearthed. The excavation comprised the rim or shoulder of the dwelling; its outline became traceable mostly at a depth of 60.0–65.0 cm from the surface. The rim was steep and high, reaching about 1.5 m from the floor level of the dwelling. The excavated area revealed a ledge from 20.0 to 50.0 cm wide. It ran almost parallel to the rim-shoulder. The surface of the shoulder and ledge contained the holes from the posts: five holes (1–5) were closely grouped (mostly in the sq. Б/31, 32); another hole (6) was located below the ledge (sq. А, Б/31). The holes were rounded and oval in plan; their diameters ranged from 12.0 to 30.0 cm, with depths of 10.0 to 25.0 cm. The holes had mostly vertical walls and rounded or conical bottoms. A part of the household pit (I) was also unearthed; half of the pit continued into the eastern wall of the excavation (sq. А/32).

Dwelling E. A significant part of the dwelling (25 entire squares and 9 partial squares) was studied, comprising a little less than half of the dwelling of a relatively small size. The excavated area was approximately 33 m². The rounded dwelling-pit was slightly elongated along the southwest–northeast line. Its approximate dimensions were 9.0 m along the north–south line and 8.0 m along the east–west line. The pit was shallow; its walls were sloping; the floor rose noticeably from the center towards the walls. The ledges were not found. Holes from the posts (7–17) were discovered mostly in the south-eastern part of the dwelling. They formed a bend, and were closely grouped, which suggests the presence of some canopy-like structure in this place. Two holes (1 and 2) were found in the south-western part; three holes (4–6) were located in the north-eastern part, and one hole (3) was almost in the center of the dwelling. The holes were rounded or oval in plan; their diameters ranged from 7.0 to 20.0 cm, and their depths ranged from 6.0 to 22.0 cm. The walls of the holes were vertical; the bottoms were flat, rounded, or conical. One household pit (I) was unearthed in the dwelling-pit near its southern wall (sq. Б, Г/36); two more household pits (VI, VIII) were found outside the dwelling at its northern (sq. Г, Д/42–44) and southern (sq. Б, Г/34, 35) walls.

Space between the dwellings. This had a total area of approximately 66 m². The spaces between dwellings contained low ledges and slight depressions, five barely visible holes with diameters ranging from 35.0 to 140.0 cm, and depths ranging from 10.0 to 30.0 cm, which we provisionally identified as pits for household purposes. Four of the pits were located in the western part of the

excavation: one (I') slightly to the side, and three (II'–IV') next to each other; the fifth pit (VII') was found at the eastern wall of the excavation. Seven holes remaining from the posts were also found. Three holes (1'–3') were located at the south-eastern edge of dwelling C, the fourth hole (4') was almost 1.0 m to the east of them (sq. Г, Д/45); the fifth hole (5') was at the edge of the household pit VI'; two more holes (6', 7') were found on the opposite side (between dwellings D and E). They were rounded or oval in plan, with steep walls and flat, rounded, or conical bottoms. The diameter of the holes was 12.0–27.5 cm; their depths ranged from 7.0 to 50.0 cm. We could not identify any discernable system in their arrangement, but it can be assumed that pits 2'–5' were a part of a post-structure, apparently associated with the household pit VI'.

Lithic artifacts

The collection of lithic artifacts from excavation I of 1973 includes 660 specimens. They were found in the filling and on the floor of the excavated dwellings, as well as in the space between dwellings.

Raw materials (Table 1). The artifacts were made mostly of siltstone, of various shades of gray color. Also, middle-sized pebbles of various isotropic siliceous rocks (including flint, chert, quartzite, chalcedony, jasperoids and others) were used. Some artifacts were made of sandstone and tuff; or more rarely, of hornstone, basalt, and granitoid.

Primary reduction. The total number of artifacts illustrating primary reduction is 508, including cores and one microcore, pebbles with flaking scars, split pebbles and tablets, debitage (flakes and spalls), and blade artifacts (knife-like bladelets, blade flakes and spalls). Fifteen cores and one microcore were found (Fig. 2, 1–3). Mostly, siliceous (including jasper-like and chalcedony) pebbles were reduced; also, siltstone pebbles not exceeding 5.5 cm were knapped. Many single- and a few double-platform cores were identified. The platforms are mostly plain; some of them retain natural pebble cortex. The majority of cores are irregular sub-prismatic and wedge-shaped. The collection also includes pebbles bearing flaking scars (16 spec.), split pebbles (20 spec.), and split tablets (5 spec.).

Blade artifacts (Fig. 2, 4–9) include knife-like blades (21 spec. including four fragments), blade flakes (34 spec.) and spalls (35 spec.). Bladelets are mostly two- and three-sided, with uneven edges. Blade-flakes and spalls are mostly irregular. The surfaces show dents, use-wear signs, and retouch facets. All size categories are present: very large (more than 5.0 cm), large (up to 5.0 cm), medium-sized (less than 4.0 cm), and small (less than 2.0 cm).

Table 1. Correlation between rocks and lithic artifacts, %

Rock	Primary reduction artifacts	Debitage	Blade artifacts	Tools, including blanks and fragments	Instruments, including fragments	Total
Siltstone	1.7	38.3	8.0	11.6	0.1	59.7
Sandstone	3.3	3.3	–	1.0	2.3	9.9
Jasperoid	1.4	4.2	1.7	2.3	–	9.6
Flint	1.2	2.0	3.2	3.2	–	9.6
Chert	0.1	4.6	0.6	1.2	–	6.5
Chalcedony	0.8	1.0	–	1.0	–	2.8
Quartzite	–	1.2	–	0.1	–	1.3
Tuff	–	0.1	0.1	0.1	–	0.3
Hornstone	0.1	–	–	–	–	0.1
Basalt	–	–	–	0.1	–	0.1
Granitoid	–	–	–	0.1	–	0.1
<i>Total</i>	8.6	54.7	13.6	20.7	2.4	100

Flakes (154 spec.) are mostly medium-sized (not more than 4.0 cm); some are large (up to 5.0 cm) or very large (more than 5.0 cm). A considerable proportion of flakes bear dents and use-wear traces; seven such flakes are retouched. Spalls (200 spec.) including retouched ones (7 spec.) represent core-trimming elements retaining natural cortex, and secondary front flakes without natural cortex. There are some very large spalls, exceeding 9.0 cm.

Tools. Tools (76 spec.), their fragments (44 spec.), and tool blanks (16 spec.) were subdivided into several polymorphic classes on the basis of their presumed function. Tool-manufacturing instruments (ten complete and six fragmented artifacts) were classified as a separate category.

Projectiles (Fig. 2, 10–14) include arrow-heads (six complete tools and two blanks) and dart-heads (two complete tools and two three fragments), which were made of siliceous rocks including chalcedony and siltstone. Two types of arrow-heads were distinguished. Type 1 included bifaces foliate in plan, with straight bases (subtype 1), and elongated-triangular in plan, with notched bases (subtype 2). Both types were shaped by continuous, bifacial retouch over the entire surface, and by sharpening marginal retouch along the perimeter. Type 2 represents tools prepared on flakes rhomboid in plan. Two types of dart-heads were noted. Type 1 represents bifaces foliate in plan, with straight bases (subtype 1) and with prepared stems (subtype 2). They were shaped by bifacial trimming and finished by bifacial, marginal, sharpening retouch. Type 2 represents tools fashioned on blade flakes

leaf-shaped in plan. Arrow-heads vary from 2.0 to 3.5 cm in length; the darts are about 7.0 cm long.

Cutting tools (Fig. 2, 15–17) comprise knives (four complete specimens, seven fragments, and three blanks) made of siltstone, flint, jasper, and (more rarely) tuff. Their lengths do not exceed 7.0 cm. Two knife-types have been established: type 1—leaf-shaped, slightly asymmetrical in plan and lenticular in cross-section; type 2—elongated-subtriangular in plan. Type 1 knives were fashioned with bifacial flattening and marginal sharpening retouch. Type 2 knives showed ventral, marginal, sharpening retouch; some specimens also showed flattening retouch on the dorsal face. These have been classified as “fish knives”. The category of cutting tools also includes blade-flakes and spalls bearing specific dents and use-wear traces. The total number of such artifacts is quite large (17 spec.).

Borers (five complete tools and one fragment) were made mostly of siliceous rocks. Subtypes of “angular”, “shouldered”, and “nosed” varieties have been established on the basis of the borer’s planform shape. Their lengths vary from 2.0 to 3.5 cm.

Scraper-like tools (Fig. 2, 22–33, 35) include end-scrapers (23 complete specimens, 3 fragments, and 6 blanks), a side-scraper, and side-scraper-like tools (7 spec.). The tools were made mostly of siliceous rocks including chert, chalcedony, and jasper; some tools were made of siltstone; a few specimens were manufactured of quartzite and sandstone. End- and side-scrapers comprise varieties with working edges at the end or side, and various double-end-scrapers. Almost all end-scrapers exhibit marginal dorsal retouch along the cutting edge;

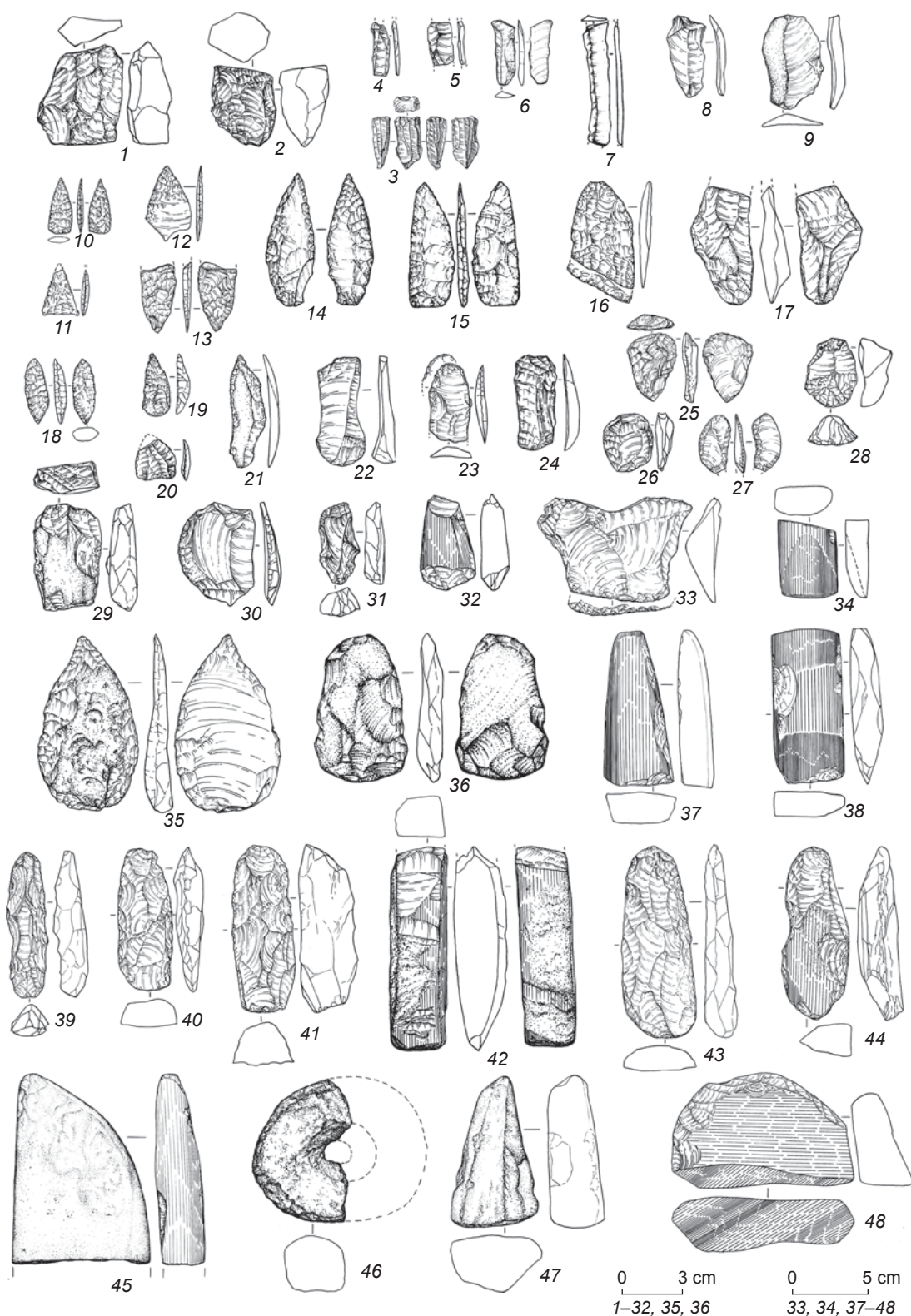


Fig. 2. Stone tools.

1–3 – cores; 4–7 – knife-like blades; 8, 9 – balde flakes; 10, 11 – arrow-heads; 12–14 – dart-heads (12, 13 – fragments); 15, 16 – knives; 17 – knife blank; 18 – carver-borer; 19, 21 – borer-scrapers; 20 – carver-scraper; 22–28, 30, 31 – end-scrapers; 29 – core-scraper-like tool; 32 – scraper blank; 33 – notched-scraper-like tool; 34 – chisel fragment; 35 – side-scraper; 36–38 – adzes; 39–43 – axes; 44 – digging tool; 45 – grinder fragment; 46 – mace-head fragment; 47 – pestle; 48 – burnisher.

some tools bear rather abrupt retouch (45°). End-scrapers were mostly 3.0 to 4.0 cm long. One of the artifacts has been identified as a side-scrapers fashioned on a thick leaf-shaped spall through marginal, discontinuous, sharpening retouch along the perimeter. There are also a side-scrapers-core-like specimen, a side-scrapers-notched and a side-scrapers-percussive tool.

Chopping tools (Fig. 2, 34, 36–43) include axes (three complete specimens and four fragments), adzes (three complete tools, 11 fragments, and a blank), and a chisel-fragment. Most of these were made of siltstone; or more rarely, of chert. Axes were fashioned with direct percussion. Two axe-types have been identified: elongated sub-rectangular or elongated sub-trapezoid in plan, and subtriangular or flattened lens-shaped in cross-section. The working edge was additionally improved by one spall (or more rarely, two spalls facing each other). The axes are from 11.0 to 12.5 cm long. In terms of working technique, two adze-types have been identified: adzes fashioned through direct percussion on pebbles and thick flakes, and adzes manufactured on pebbles through percussion followed by polishing of the entire surface. Type 1 adzes are elongated sub-trapezoid or sub-rectangular in plan, and flattened lens-shaped or unilaterally convex in cross-section. Their working edges show trimming through fine flaking. Type 2 adzes are elongated sub-trapezoid or sub-rectangular in plan, and rectangular or trapezoid in cross-section, slightly-rounded or straight. Working edges bear symmetrical or asymmetrical sharpening facets. Some of them show use-wear signs. Complete specimens are from 7.5 to 10.0 cm long.

Combination tools (see Fig. 2, 18–21) represent the tools combining several functions (15 complete specimens, a fragment, and 3 blanks): knife-borer, carver-borer, knife-scrapers, scrapers-borer, and knife-scrapers-borer. They are from 3.0 to 4.0 cm long, sometimes up to 6.0–7.0 cm long. The tools were made of siliceous rocks; or more rarely, of siltstone.

In addition, there are four complete tools, a biface fragment, and a blank, which function is hardly discernible. There are also axe-like tools (two complete tools and ten fragments) that might have been used as hoes or percussion tools. A grinder broken into two, and two pestles were also noted (Fig. 2, 44, 45, 47). A mace-head fragment made of a basalt-like porous rock has been also found (Fig. 2, 46).

Instruments include a hammerstone, a hammerstone-anvil, an anvil-whetstone, and two anvil fragments. Also, six complete grindstones, four grindstone fragments, and a burnisher (Fig. 2, 48) were found. Natural plates of fine- and medium-grained sandstone were used for this purpose. Their flat surfaces demonstrate grooves, small pits, and dents.

Thus, the morpho-typological and functional analysis of the stone-tool kit has indicated the presence

of products of primary reduction, as well as tools and instruments. The cultural-chronological attributions suggest that the majority of bifacial tools belonged to the Malyshevo culture; the polished adzes and a chisel fragment to the Voznesenovskoye culture. The collection of blade lithics has been attributed to the Kondon and Belkachi cultures on the basis of associated ceramics, which are described below.

Ceramics

The archaeological assemblage from excavation I exposed in the 1973 season includes 3730 ceramic pieces: archaeologically complete reconstructable vessels, upper, middle, and bottom vessel-parts, isolated fragments of rims, walls, and bottoms belonging to different vessels. The recovered ceramic pieces have been attributed to the Middle (Malyshevo, Kondon, and Belkachi cultures), Late (Voznesenovskoye culture), and Final (Final Neolithic type) Neolithic periods. Reconstruction of ceramic technology was based on the results of petrographic analysis (Table 2) of transparent ceramic sections, as well as on the data of binocular microscopy and X-ray phase analysis.

Malyshevo culture (Fig. 3, 1, 2, 4–9). The sample consists of 2937 ceramic pieces: 4 archaeologically complete vessels, 15 upper and 2 lower vessel-parts, 336 rim fragments, 2335 wall fragments, and 245 bottom fragments. 846 ceramic pieces do not bear any decoration. Malyshevo pottery was found in the filling and on the floor of the excavated dwellings, as well as in the space between dwellings. Dwelling C yielded 478 pieces, dwelling D yielded 196 pieces, dwelling E produced 1303 pieces, and 960 pieces were found in the space between dwellings.

Technology (Table 2). Two main traditions of paste preparation were identified: non-composite (mineralogenic) and composite (mineralogenic-grog). Petrographic analysis did not reveal any organic matter in the paste. Three main recipes were used: clay + sand (two specimens); clay + sand + natural debris (two specimens); clay + sand + grog (one specimen). The X-ray diffraction analysis supported the petrographic data. Vessel surfaces were rubbed, smoothed, burnished and polished, covered with engobe, and painted red both externally and internally. Malyshevo ceramics vary in colors from light ochre (yellow, reddish, orange, light-brown) to dark (dark-brown and dark-gray, nearly black) shades. This indicated that the firing mode was oxidizing, and was carried out at a temperature not exceeding 700 °C. “Smoking” technique was also used.

Shaping and morphology. Vessels were shaped using base- and base-and-body shaping methods, as well as coil-spiral and ring-spiral techniques. The coil’s width

Table 2. Results of petrographic analysis of the Neolithic ceramics found in 1973 season (excavation I)

Section code	Vessel part	Paste composition	Clay composition	Sand		
				Inclusions	Size, mm	%
1	2	3	4	5	6	7
<i>Malyshevo culture</i>						
C-1	Bottom with a wall	C + S	Psammitic-silty, brown, ferruginous clay	Quartz, ore mineral, rarely – feldspar (plagioclase), potassic feldspar	0.5–1.0	10
C-2	Rim	C + S + RD	Psammitic, brown, ferruginous clay	Fragments of quartz, plagioclase, and ore mineral, rarely – fragments of biotite and granite	0.3–3.0	15
C-3	"	C + S	Psammitic, brown to dark-brown, very ferruginous clay	Ore mineral, quartz, plagioclase	0.2–3.0	20
C-4	"	C + S + RD	Psammitic, dark-brown, very ferruginous clay	Quartz, ore mineral, microcline, ferruginized fragments of biotitic granite	0.2–3.5	15–20
C-5	Wall	C + S + G	Psammitic, psammitic-silty, brown ferruginous clay	Quartz, feldspar (plagioclase), ore mineral, fragments of black ferruginous clay	0.2–3.0 to 4.0	15–20
<i>Kondon culture</i>						
C-6	"	C + RD + S	Psammitic, dark-brown to black, very ferruginous clay	Fragments of heavily kaolinized, slightly translucent, ferruginized granite, rarely – pure quartz grains, kaolinized feldspar grains, ore mineral	0.3–2.0	40
C-7	Rim	C + S	Black, very ferruginous clay	Pelitized and kaolinized feldspar, rarely – pure quartz grains, ore mineral	0.2–3.0	70
C-8	"	Same	Limonitic, brownish-black, very ferruginous clay	Fragmented crystals of pelitized, kaolinized, and ferruginized feldspar, of ore mineral, rarely – quartz grains	0.2–2.0 to 3.0	15
C-9	Wall	C + G	Black, ferruginous clay	Fragments of light-brown clay	2.0 to 3.0–5.0	40
C-10	Rim	C + S	Same	Plagioclase, quartz, and their attachments	0.3–3.5	40
<i>Belkachi complex</i>						
C-11	Wall	C + S + G	Black, very ferruginous clay	Fissured fragments of plagioclase and quartz crystals, their attachments, isometric and linear brown clay fragments, single epidote-crystal	0.1–3.0	20
C-12	"	C + S	Same	Fragmented crystals of quartz and plagioclase, single round grain of ore mineral	0.2–2.0	20
C-13	"	C + S + G + RD	Silty, hydromicaceous, light-brown to black, unevenly ferruginous clay	Rarely – plagioclase and quartz fragments; rounded black clay lumps (3 spec.), 2.0 × 3.0 mm, in light-brown clay; single fragment of hydromicaceous rock, 2.0 × 4.0 mm	0.2–1.0	20

Table 2 (end)

1	2	3	4	5	6	7
C-14	Wall	C + S + G	Black, very ferruginous clay	Fragmented crystals of plagioclase and quartz (2.0 × 1.0 mm), fragments of brown, hydromicaceous clay without mineral inclusions, and of light-brown clay containing 85 % of quartz and plagioclase 2.0 × 3.0 mm fragments; the clay inclusions are 1.0 × 3.0 mm	0.2–1.0 to 3.0	30
C-15	"	C + S	Hydromicaceous, brown, ferruginous clay	Fragmented crystals of quartz, plagioclase, and ore mineral	0.2–1.5	20
<i>Voznesenovskoye culture</i>						
C-16	"	Same	Silty, hydromicaceous, brown, ferruginous clay	Fragmented crystals of plagioclase and quartz, and ore mineral grains	0.2–1.5	30
C-17	Rim	C + S + G	Silty, light-brown, low ferruginous clay	Fragmented crystals of plagioclase and quartz, rarely – lumps of brown clay without inclusions, and light-gray, light-brown clay with inclusions (70–80 %) of fragmented plagioclase and quartz; single epidote crystal	0.2–1.0	10
C-18	Wall	C + S	Brown, ferruginous clay	Plagioclase, quartz, rarely – grains of epidote, 2.0 × 3.0 mm	0.2–1.0 to 2.0	10
C-19	Bottom with a wall	Same	Silty, hydromicaceous, light-brown, low ferruginous clay	Plagioclase and quartz crystals and their fragments	0.2–1.5	10
C-20	Wall	"	Silty, light-brown, low ferruginous clay	Fragmented crystals of quartz, plagioclase, and epidote, rarely – fragments of ore mineral	0.2–1.5	15
<i>Final Neolithic type</i>						
C-21	Rim	"	Silty, hydromicaceous, light-brown, brown clay	Plagioclase, epidote, quartz	0.2–1.0	10
C-22	"	"	Dark-brown to black, ferruginous clay	Plagioclase and quartz fragments, sphene, epidote	0.2–1.0	10
C-23	"	"	Very limonitic, dark-brown clay	Isolated grains of plagioclase, quartz, and ore mineral; epidote	0.2–1.0	10
C-24	"	"	Silty, hydromicaceous, limonitic, brown, ferruginous clay	Quartz, rarely – plagioclase and epidote	0.2–1.0	10
C-25	"	"	Silty, brown, black, ferruginous clay	Fragmented crystals of quartz and plagioclase	0.2–3.0	30

Note: P – paste, C – clay, S – sand, RD – rock debris, G – grog.

depends on the vessel's size, and varies from 4.0–5.0 to 6.0–7.0 cm. The rim-coil's width was 1.5–2.0 cm. The shapes and sizes of the vessels vary across the sample. The sample includes small and considerably large vessels with and without necks, closed and open in shape. The

rim of the vessels are straight or folded out- and inward; the orifices are rounded, pointed, flattened, or beveled. Orifice whetting technique was used. The bottoms are flat.

Decoration patterns. Both embossed pattern and high relief were used, as well as flat decoration patterns. The

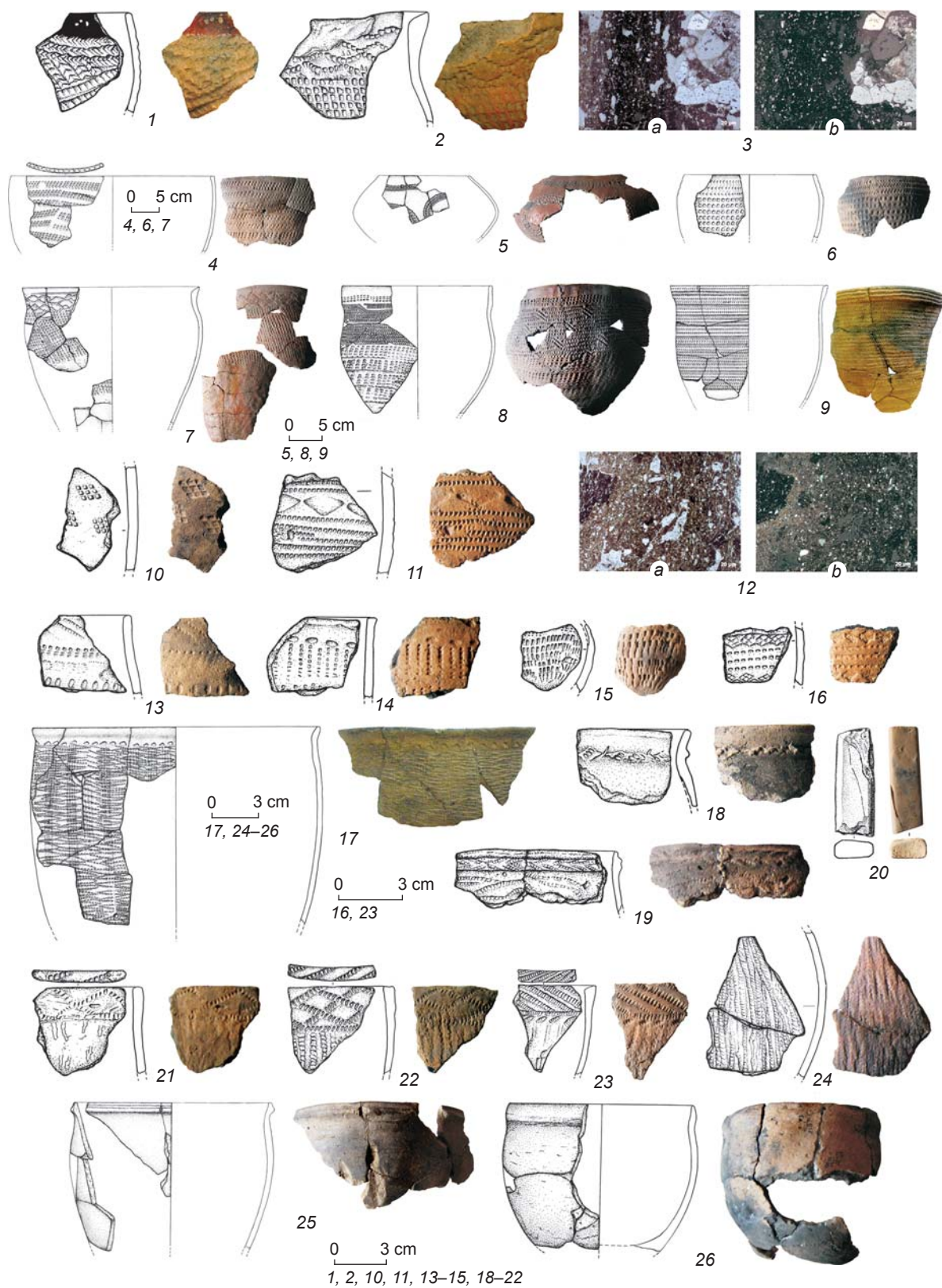


Fig. 3. Ceramicware (1, 2, 4–11, 13–19, 21–26), ceramic rod (20), and pictures of sections (3, 12) in polarized light (b) and without it (a).

1–9 – Malyshevo culture; 10–16 – Kondon culture; 17–20 – Voznesenskoye culture; 21–24 – Belkachi ceramic complex; 25, 26 – Final Neolithic ceramics.

most typical decorative techniques are comb-imprints (mainly from two to five cogs) and retreating spatula stamp (angular and bracket-shaped). There are also imprints of variously shaped cogged wheels, finger and nail imprints, appliqué fillets (straight, with fascia, and wavy), incised lines and grooves, various scratches, pricks, etc. Separate elements form various motifs, and simple and complex compositions.

Functions. Ceramicware has been classified into two main groups: utility ware and ritual ceramics. Household utensils show soot-deposits (sometimes heavy) both outside and inside; ritual vessels have painted inner surfaces.

Thus, Malyshevo ceramics demonstrate stability of major features, and can be considered a single complex of the developed pottery tradition. However, this complex includes a significant share of ceramic fragments of the so-called Boismana type with their own ornamentation patterns.

Kondon culture (Fig. 3, 10, 11, 13–16). In total, 163 ceramic fragments were found, including 11 rims, 121 walls, and 31 bottoms, of which 130 pieces were not ornamented. Dwelling C yielded 34 ceramic pieces, including 16 specimens in sq. W/45; dwelling D (sq. B/33, Г/32) yielded 3 pieces; dwelling E produced 109 pieces, including 31 fragments in sq. B, B/36–38. The rest fragments were recovered from the space between dwellings, one half of which were noted in sq. Ж/34.

Technology (Table 2). Two non-composite paste-preparation traditions were established: the mineralogenic and grog traditions. Petrographic analyses did not reveal any organic admixtures. The main paste-recipe is clay + sand (three specimens); other recipes: clay + rock debris + sand, and clay + grog, each represented by one specimen. The X-ray diffraction analysis supported the petrographic data. Vessel-surfaces were rubbed, smoothed and covered with engobe; a few specimens showed polishing. The colors of the inner and breakage surfaces of the ceramics vary from gray to dark-gray, while the outer surfaces are yellow or reddish. This indicates that the firing process was carried out in the redox environment at the temperature of 650–700 °C. “Tempering” mode was also used.

Shaping and morphology. Vessels were manufactured using the base- and base-and-body shaping method, and also coil-ring (with coils not less than 6.0 cm wide) and, probably, patch technique. The bad state of preservation of the Kondon ceramics makes it impossible to identify morphological features of vessels clearly. Supposedly, vessels were mostly small and medium-sized, close-shaped, with and without necks. Rims were straight and slightly folded outward; orifices were either flattened or round; bottoms were flat.

Decoration patterns. Only embossed patterns were noted, representing mostly multi-cogged comb and figured stamp-imprints (predominantly rhomboid).

Leading motifs are kind of “mesh grid” framed with parallel horizontal lines, or without any framing.

Functions. All ceramics are attributed to household utensils. The pottery bears soot-deposits (sometimes heavy), both on the inner and outer potsherd surfaces.

Thus, the Kondon ceramicware, discovered in the Malyshevo dwellings and the space between dwellings, seems to attest to a very short-term presence of a small Kondon population group. These ceramics belong to the intermediate period between the early and late trends in the Kondon pottery tradition.

Voznesenovskoye culture (Fig. 3, 17–19). In total, 401 potsherds were recovered, including an archaeologically complete vessel, upper parts (4 spec.), rim fragments (45 spec.), wall fragments (312 spec.), and bottom fragments (39 spec.). The majority of potsherds (290 spec.) do not bear any decorations.

Technology (Table 2). The paste-preparation traditions were identified as composite: mineralogenic-organogenic and mineralogenic-grog-organogenic. The main paste recipe is clay + sand + organic matter (four specimens). One specimen demonstrates a recipe of clay + sand + grog + organic matter. Petrographic analysis did not show any organic admixtures in the paste, yet the analyzed sections of Voznesenovskoye ceramics were of poor quality. Visual observations and binocular microscopic analysis have shown that shell and bodies of fresh-water mollusks were added to the ceramic paste. The X-ray diffraction analysis supported the petrographic data. Vessel-surfaces were rubbed and smoothed; a few specimens showed polishing. The colors of the inner and breakage surfaces of the Voznesenovskoye ceramics vary from gray to dark-gray, while the outer surfaces are yellowish-gray and gray-brown. This indicates that firing process was carried out in the redox environment at a temperature of 650–700 °C.

Shaping and morphology. The vessels were built using the body-and-base shaping method and coil-ring technique. The width of the body’s coils varies from 3.5 to 4.5 cm, and that of rim’s coils from 1.0 to 1.5 cm. Vessels are predominantly large- and medium-sized, close-shaped, with necks. Rims are mostly folded outwards; a few straight rims were also noted; the orifice is either pointed or rounded. Bottoms are flat.

Decoration patterns. Two types of relief have been noted: embossed relief was mostly executed through multi-cogged comb imprints, cogged-wheel incisions, and scratched lines; raised relief, through appliqué. The first type of relief is common for vessel-bodies, which could have been covered with vertical or, more rarely, horizontal zigzags, but could also have been smooth. Appliqué was used for decoration of exterior rim surfaces.

Functions. All ceramics are attributed to household utensils. Often, significant soot-deposits are observed on the inner and/or outer potsherd surfaces.

In general, the Voznesenovskoye ceramic-complex from excavation I of 1973 can be subdivided into two main groups of vessels. The first group is characterized by a comparatively dense paste with minor organic admixture and vertical zigzag decoration motif. The second group is further subdivided into two subgroups by decoration patterns: with body decoration and without it. On the whole, this ceramic complex is characterized by loose paste with abundant organic admixtures; by a fillet with the incised grooves and slanting imprints of multi-cogged comb stamp on the outer rim surface; and by vertical and/or horizontal zigzag motifs over the main body. The body might also not have been decorated. These observations suggest two or even three non-contemporaneous events of migration of the Voznesenovskoye people to Suchu Island.

Belkachi ceramic complex (Fig. 3, 21–24) is represented by 98 ceramic pieces, including 10 rim fragments, the rest being wall fragments. In the filling of the dwelling C (sq. И/42–45), 30 potsherds were recovered, in dwelling D (sq. А/31), 3 pieces, in dwelling E (various squares), 17 pieces, and the rest potsherds were found in the space between dwellings (mainly in sq. Ж, 3/41, 42).

Technology (Table 2). The main traditions of paste-preparation were identified as non-composite (mineralogenic) and composite (mineralogenic-grog). Three recipes were used: clay + sand (two specimens); clay + sand + grog (two specimens); clay + sand + natural debris + grog (one specimen). The X-ray diffraction analysis supported the petrographic data. Vessel surfaces were rubbed and compacted. The ceramics are predominantly brown and gray-brown. The firing process was carried out in an oxidizing environment at a temperature not more than 800 °C. “Smoking” technique was used.

Shaping and morphology. Vessels were shaped using coil-ring and coil-spiral techniques. The width of the coils depended on the vessel’s size. The poor state of preservation of the Belkachi ceramics makes it impossible to identify clearly morphological features of vessels. Supposedly, they were mostly close- and open-shaped, large- and medium-sized, with poorly curved necks. The rims of the vessels are straight or folded out- and inward, orifice is rounded, pointed, flattened, or beveled. The bottoms are round or rounded-pointed (with a “spur”).

Decoration patterns. Rims were decorated with appliqué fillets, which could have also been covered with cogged-wheel or multi-cogged comb-imprints forming straight and oblique lines and grid. The walls show cord-imprints with some modifications.

Functions. All ceramics are attributed to household utensils. Soot-deposits are observed on some inner and outer potsherd surfaces.

Thus, the Belkachi ceramics represent a homogenous complex with certain main features. The location of the Belkachi ceramics in the excavation area and their comparatively small number suggest a single and a very short-term occupation of the island by the Belkachi tribe.

Final Neolithic ceramics (Fig. 3, 25, 26). These comprise 63 ceramic pieces, including two archaeologically complete vessels, 3 rim fragments, 49 walls, and 9 bottoms. In the filling of the dwelling C, 19 pieces were found (mainly (17 spec., including one complete vessel) in sq. И/42–45); in dwelling D, 18 pieces, half of which were recovered from sq. Б-Г/31; in dwelling E (various squares), 12 pieces; and in the space between dwellings (sq. Д-Е/43, 44, 3/38, И/39), 14 pieces.

Technology (Table 2). Paste-preparation technology was identified as composite, mineralogenic-organogenic. The only recipe was clay + sand + organic matter. Petrographic analysis did not show any organic admixtures in the paste, yet the analyzed sections of Final Neolithic ceramics were of poor quality. Visual observations and binocular microscopic analysis have shown that shell and bodies of fresh-water mollusks were added to the ceramic paste. The X-ray diffraction analysis supported the petrographic data. Vessel surfaces were rubbed, smoothed, polished, and coated with engobe. The colors of the inner and breakage surfaces of ceramics vary from gray to dark-gray, while the outer surfaces are yellowish-gray and gray-brown. This indicates that firing process was carried out in the redox environment at the temperature of 650–700 °C.

Shaping and morphology. The vessels were manufactured using the base- and base-and-body shaping methods, and also coil-ring technique. The width of the body’s coils varies from 4.0 to 4.5 cm, that of rim’s coils from 1.0 to 1.5 cm. The vessels are large- and medium-sized, close-shaped, with necks. The rims are folded outward, orifice is pointed or rounded. Bottoms are flat.

Decoration patterns. The ceramics bear only one decoration pattern: appliqué fillets on the exterior rim-surface. Some fillets are monolithic, others are segmented by one or two grooves. The other parts of the vessels are smooth.

Functions. All ceramicware is identified as household utensils, which is indicated by soot-deposits on the inner surfaces.

The availability of some technological, morphological, and decorative features points to a certain similarity between the Final Neolithic and Voznesenovskoye ceramics, and suggests that the Final Neolithic pottery tradition was based on the Voznesenovskoye ceramics. However, the issue of a foreign component introduced into the Voznesenovskoye culture still remains open.

In addition to the Neolithic collections described above, 66 pieces of the Early Iron Age ceramics (Poltse

culture) have been found. These are mostly isolated wall fragments (51 spec.), dark-brown and gray in color, bearing decorations in the form of segmented appliquéd fillets and nail-imprints. Almost all of them were discovered in the upper filling layers of dwelling E (25 spec.) and in the space between dwellings (26 spec.). Two late medieval vessel fragments were also found.

Pieces of art and cult, ornamenting tools

The excavation-area—mostly the sandy loam filling of dwellings—yielded 17 artifacts of fired clay (predominantly fragments) that were attributed to the Malyshevo and Voznesenskoye cultures. The collection includes three ceramic rods (Fig. 3, 20), four fragments of anthropomorphic figurines (one fragment represents the upper part of phallus-shaped female head, the rest represent parts of human bodies) (Medvedev, 2011: Fig. 1, 2), and a fragment of a zoomorphic figurine (part of a body with one leg of—presumably—a bear). Among six Malyshevo spindle-whorls (two complete items and four fragments), four items were made of modified potsherds with comb-imprints, and two were originally manufactured as spindle-whorls. One of these two bears sub-ovoid notches along the edge; another whorl is ornamented with a cross-shaped (?) composition of low fillets covered with cogged-wheel imprints. The latter whorl might have been used as a cult object (churinga?) (Medvedev, 2002). The collection also includes a small fragment of a considerably large ceramic ring, which can be attributed to a cult solar object. Two ceramic stamps belong to the Malyshevo culture: a cogged wheel and a rounded rod, one end of which is nearly circular and another rhomboid, both segmented cross-wise.

Discussion and conclusions

Excavations on Suchu Island in the 1973 season yielded results that supported the available information on the existence of remains of the Malyshevo dwellings, and material remains of other Neolithic cultures, in the lowermost part of a wide hollow in the southeastern part of the island (Okladnikov, Medvedev, Filatova, 2015: 61). Apart from a part of dwelling C, discovered in 1972, the excavation of 1973 allowed investigation of a small part of dwelling D, a large part of dwelling E, and the space between them. All these dwellings belong to the Malyshevo culture, which is why the majority of finds were associated with this. On the floor, in the filling of dwelling-pits, and nearby, 2937 ceramic fragments were found (out of the total

of 3730 potsherds in the entire excavation). It can be assumed that one of the first radiocarbon dates of 5830 ± 65 BP (3880 ± 65 BC) (SOAN-843) of the site is associated with the dwelling E, which yielded pieces of charcoal used in the analysis.

Planigraphic analysis of the excavated dwellings has shown considerable differences in their construction-features. Dwelling-pits vary in depth: dwellings C and D have considerably deep pits (up to 2.0 m), while dwelling E rested on a shallow pit. The rim-shoulders are gently sloping in dwellings C and E and steep in dwelling D. Dwellings C and D show ledges in their pits, while dwelling E does not have any ledges. The floor inside the dwelling E pit is uneven, and rises from the center to the walls. These features are typical for Malyshevo culture, which carriers used to build both large dwellings with ledges inside, and small dwellings without ledges. Notably, the latter are also characteristic of the Kondon building tradition.

The toolkit of this settlement-site points to the complex economy of the ancient population of Suchu Island. The kit represents hunting, fishing, and butchering tools. There are also tools for processing stone, wood, and bone, for preparing vegetable food, and for digging. These features make it possible to conclude that to the 4th millennium BC, the Neolithic population of the island established the cultural and economic system typical of game hunters, fishermen, and foragers populating large river valleys.

Analysis of the ceramics has shown a certain diversity in the ceramicware belonging to various cultural traditions: in the choice of clay- and paste-composition, methods of surface treatment, and firing modes. There are common and distinctive features in vessel-shaping and morphology. Decoration, too, is culturally specific.

In the Neolithic, Suchu Island was not only the place of constant long-term population by the Malyshevo people, but also was often visited by representatives of foreign cultures. Apparently, there were several waves of migration of the Lower Amur tribes and those from the mainland and other islands, mostly from Sakhalin.

Excavations on Suchu Island in 1973 have yielded important materials, mostly ceramicware, providing a new insight into the Neolithic of the Amur Basin.

References

- Derevianko A.P., Medvedev V.E. 2002**
K tridsatiletiyu nachala statsionarnykh issledovaniy na ostrove Suchu (nekotorye itogi). In *Istoriya i kultura Vostoka Azii: Materialy Mezhdunar. nauch. konf.*, vol. II. Novosibirsk: pp. 53–66.
- Medvedev V.E. 1995**
Otchet o raskopkakh na ostrove Suchu v 1995 g. Khabarovskiy krai. Arkhiv IA RAN. R-1, No. 19584.

Medvedev V.E. 2002

Amurskiye churingi. *Gumanitarnye nauki v Sibiri*. Ser.: Kultura, nauka, obrazovaniye, No. 3: 11–15.

Medvedev V.E. 2011

Skulpturnye izobrazheniya s ostrova Suchu. In *Drevnosti po obe storony Velikogo okeana*. Vladivostok: Izd. Dalnevost. Federal. Univ., pp. 8–15. (Tikhookeanskaya arkheologiya; iss. 21).

Okladnikov A.P. 1973

Otchet o raskopkakh neoliticheskogo poseleniya na ostrove Suchu Khabarovskogo kraya v 1973 g. Arkhiv IA RAN. R-1, No. 5072.

Okladnikov A.P. 1974

Otchet o raskopkakh neoliticheskogo poseleniya na ostrove Suchu v 1974 godu. Arkhiv IAE SO RAN.

Okladnikov A.P., Medvedev V.E., Filatova I.V. 2015

The first systematic excavations on Suchu Island and radiocarbon dates of the site (1972). *Archaeology, Ethnology and Anthropology of Eurasia*, vol. 43 (3): 50–63.

Orlova L.A. 1995

Radiouglerodnoye datirovaniye arkheologicheskikh pamyatnikov Sibiri i Dalnego Vostoka. In *Metody estestvennykh nauk v arkheologicheskikh rekonstruktsiyakh*, pt. 2. Novosibirsk: Izd. IAE SO RAN, pp. 207–232.

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