

**EARLY NEOLITHIC IMPRESSO-DECORATION RECONSIDERED:
A CASE STUDY FROM PAVLOVAC –
KOVAČKE NJIVE, SOUTHERN SERBIA***

Jasna VUKOVIĆ
Marija SVILAR****

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Cuvinte cheie: *ceramică impresso, neolitic timpuriu, Kovačke Njive, tehnică de execuție, funcționalitate.*

Abstract: *In this article we analyse the impressed-pottery from the Early Neolithic site of Kovačke Njive. It is argued that the impressions on the pottery have not been made by impressing fingertips and fingernails into the plastic clay, but by using different kinds of tools. The classification of the so-called impresso-ornaments is made based on the diagnostic traces on the sherds: movement direction of the potter's hand and position of the tool during execution. Based on the functional properties of the textured surfaces, impresso-treatment is regarded as a surface finishing method. According to the variety of impressions and implements used, we assume the household production involving part-time artisans.*

Rezumat: *În articol este analizată ceramica impresso descoperită în așezarea neolitică timpurie de la Kovačke Njive. Se demonstrează că imprimarea ceramicii nu s-a făcut prin impresiunea vârfulor degetelor sau a unghiilor în pasta moale, ci prin utilizarea unor tipuri diferite de instrumente. Clasificarea așa-numitelor motive impresso este realizată pe baza analizei urmelor de pe fragmentele ceramice: direcția de mișcare a*

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** Jasna VUKOVIĆ, Department of Archaeology, Faculty of Philosophy, University of Belgrade, Čika-Ljubina 18-20, Belgrade, Serbia, e-mail: jvukovic@f.bg.ac.rs.

** Marija SVILAR, Phd candidate, Department of Archaeology, Faculty of Philosophy, University of Belgrade, Čika-Ljubina 18-20, Belgrade, Serbia.

mâinii olarului și poziția ustensilei în timpul executării decorului. Pornindu-se de la aspectul funcțional al texturii suprafeței, tehnica de decorare impresso este considerată o metodă de finisare a suprafeței. Având în vedere varietatea impresiunilor și a ustensilelor folosite, se poate presupune existența unei producții pentru uz casnic în care erau implicați în egală măsură și olarii specializați din comunitate.

The Early Neolithic pottery, i.e. the Starčevo tradition from the Central Balkans, has been considered from the cultural history point of view and typological analyses were conducted in order to establish its chronological position. The so-called impresso-ornaments, as one of the most prominent features of the Starčevo pottery, have been usually seen as a way of decoration; nevertheless, a detailed classification of these patterns has never been made. Moreover, the considerations of technological and functional aspects of impresso-pottery are lacking. However, numerous fragments of this pottery class excavated at the site of Kovačke Njive may shed a new light on the execution techniques, function of the textured surfaces and some aspects of the production organization.

The site

In 2011, when preparations for the construction of E-75 highway (Belgrade-Athens) began, rescue excavations on two Neolithic sites near the village of Pavlovac, approximately 10 km south of Vranje were conducted by the joint team of the Faculty of Philosophy and Institute of Archaeology in Belgrade. Both sites were multi-layered, containing traces of Early (Starčevo) and Late (Vinča) Neolithic occupation, along with layers belonging to the late prehistoric and medieval period. The site of Čukar is located on a hill, and the site of Kovačke Njive joins it on its southeastern side. The Neolithic layers on Kovačke Njive were disturbed by late prehistory and Middle Ages ploughing and building activities. This is why Early and Late Neolithic portable finds are mixed together with the remains from later periods. However, two excavated structures (one pit and one pit-dwelling) were attributed with certainty to the Early Neolithic.¹ Analyses of the pottery revealed that there are no differences between the pottery originating from the structures and pottery found in the cultural layer. Therefore, the pottery assemblage presented in this paper includes all of the pottery findings from the site.

Kovačke Njive pottery assemblage

The Early Neolithic pottery from the site attributed to the Starčevo tradition was highly fragmented, with only a few complete vessels. A total number of 14,670 fragments and complete vessels excavated in structures, as well as in cultural layer were statistically processed. The results concerning all formal properties in general fit into the current knowledge about the Starčevo pottery. A vast majority is made from a medium fabric made of clay mixed with chaff and different mineral inclusions (93%): fine sand (67%), crushed stone (17%) or gravel

¹ VUKOVIĆ *et alii*, forthcoming.

(9%), while only 7% of the specimens belongs to fine (clay without any inclusions or with finely grained sand) or rough fabric (clay with great quantities of crushed stones). A large number of pottery sherds were poorly preserved; in some cases, their outer and/or inner surfaces were severely damaged and the surface was not preserved at all (4% of outer and 3% of inner surfaces, respectively); the slip was very hard to identify since it usually appears on a small surface of the fragments. However, in most cases, the outer surfaces were finished by applying a slip (42%), burnishing (32%), or smoothing (20%), but it can be assumed that the frequency of the slipped specimens was considerably higher and that it could not be identified due to poor pottery preservation. A small quantity of sherds exhibits roughened surfaces (0.19%) or twig-strokes (0.23%) on the outside; it was argued that the latter could be some kind of preparation of the vessel for applying the slip (cf. Vuković 2004, p.91). The frequencies for the inner surfaces are similar: slipped (41%), burnished (35%) and smoothed (21%). Shape frequencies exhibit a domination of the conical bowls (45%), followed by globular bowls (24%), S-shaped vessels (20%) and hemispherical bowls (10%); other forms include pear-shaped and miniature vessels and only one example of biconical bowl. With the exception of abrasion traces on several specimens, other kinds of surface alteration (carbon deposits and sooting clouds) are lacking.

Although the frequencies of formal properties generally reveal an usual situation in Starčevo pottery assemblages, the material from Kovačke Njive differs from other sites in one distinct feature: the amount of decorated specimens. It seems that the quantity of decorated fragments is striking. Published works about Early Neolithic Starčevo pottery do not reveal any quantitative data concerning the decoration. It is usually noted that some specific technique dominates² or that small quantities of pottery are decorated³. The problem lies in the fact that the assemblages from old excavations do not represent a statistically valid sample, since a certain selection was made, and only a small percentage of pottery remained available for statistical analyses. So far, the only comparable data set comes from Blagotin⁴. In contrast to Blagotin's 9% of decorated specimens, 15% (namely 2,406 sherds) from Kovačke Njive seem very significant. Although small amounts of different techniques are present: incising - 6%, organized barbotine - 3%, appliqué and modelling (in two cases with figural representations) - 1%, channelling - 1% and a small amount of combination of different techniques, various kinds of impressions predominate (84%). Such abundance of impresso-ornaments inevitably leads to reconsiderations of the execution procedure, their function and mutual relations with other techniques.

Impresso-decoration revisited

Although impresso-decorated pottery sherds are easy to differentiate from other kinds of pottery with textured surfaces, it seems that their classification is not always an easy task. Moreover, it has become apparent that traditional

² BOGDANOVIĆ 2004.

³ e.g., PERIĆ & NIKOLIĆ 2004.

⁴ VUKOVIĆ 2004.

descriptions of impresso-decorative techniques are often unclear and imprecise⁵, and that they tend to describe these ornaments without thorough consideration of the decoration technique, i.e. the implements used and the applying mode, as well as their function. In traditional archaeology, it is widely accepted⁶ that so-called impresso-ornaments were executed by pressing fingers or fingernails into the outer surface of the vessel in its plastic stage. This feature was recognized as one of the most important characteristics of Early Neolithic, i.e. the Starčevo pottery. However, from the technology point of view, which was rarely considered, impressing is a "displacement" decorative technique, which involves displacing clay by applying pressure⁷, and by using not only fingers, but also various kinds of tools. Bearing in mind the fact that the Neolithic impressing techniques were not elaborated, nor discussed in detail, the attribution of such decoration to finger/nail impressions was common, and taken for granted, while implements use was only sporadically mentioned and never considered as a variety of the same technique. The analysis of Kovačke Njive data provided more detailed insight into the execution procedure. Various kinds of impressions were identified, suggesting usage of different tools; moreover, traces formed during the making process indicate the movement direction of the potter's hand and tool position during execution. A classification of the impressed ornaments was made based on these criteria:

1. Punctuated impressions (178 specimens, which makes 7% of decorated and 8% of impressed specimens). As it was suggested in the relevant literature, punctuation is a variety of impressed decoration which includes usage of "natural" objects such as fingernails, sticks, shells, stems etc.⁸. These impressions were made by pressing an implement into the clay at 90°. The impressions' margins are evenly elevated, suggesting that clay was soft, i.e. in its plastic stage. According to the impressions' shape, their cross-sections and depth, several different tools can be identified (**fig. 1**).

a) Impressions made by an impressing tool with circular cross-section have vertical "walls" and can be divided into four groups. Impressions made with a flat tip tool are regular, usually impressed to a considerable depth (**Pl. I/1**); it can be assumed that the tool was not deliberately made for this purpose, and that some kind of stick could have been used. Irregular, carelessly executed impressions were made by using the rounded tip tool (**Pl. I/2, 4, 6**); similarly, some kind of "natural" object could have been used. Deep, regular impressions with a small lump of clay in the middle (**Pl. I/5, fig. 5**) suggest usage of a hollow stem (cane?) or a bird bone. Finally, small impressions were made by a tool with pointed tip (**Pl. I/3**), and are organized in parallel rows. Some kind of awl could have been used.

b) Tools with triangular cross-section exhibit slanted "walls" (**Pl. II/1**). The impressions are regular, usually structured in parallel rows (**Pl. II/2, 4-5**) or in circular pattern (**Pl. II/3**). Bearing in mind the appearance of the impressions,

⁵ VUKOVIĆ 2013.

⁶ VUKOVIĆ 2013 for overview.

⁷ RYE 1981, p. 92.

⁸ RYE 1981, p. 92.

some of the tools used must have been deliberately shaped.

c) Tools with irregular quadrangular cross-section. The impressions are shallow, organized in parallel vertical (**Pl. III/1-3**) or deeper horizontal rows (**Pl. IV/1**). The latter could have been made by using a denticulate bone or wood tool.

d) "Kidney"-shaped impressions (**Pl. IV/2-4**) are shallow, organized in parallel rows. It is possible that a vertically cut bird-bone was used.

e) "Fish"-like impressions (**Pl. IV/5**). All of the impressions are identical, so there is no doubt that they were made by using some specific tool that cannot be identified.

f) Impressions in crescent shape were made with a very sharp tool. They were usually interpreted as shell-impressions, and this can be an acceptable solution (**Pl. V, Pl. VI/7**). On the other hand, a considerable number of crescent-like impressions are very thin and short (**Pl. VI/1, 3-6, Pl. VII/6**), thus excluding a shell as a tool. There is no doubt that many specimens with this kind of impressions could have been attributed to fingernail-impressions. Due to the fact that impressions are of identical appearance, made in regular width and depth, it can be assumed with certainty that some sharp tool was used instead of fingernails. Impressions are sometimes roughly executed, with lumps of excess clay (**Pl. VI/2**); in this case, the tool cannot be identified with certainty.

g) Impressions in the form of short, straight, usually vertical lines (**Pl. III/4, Pl. VII/1-5**). Due to their appearance, it is possible that, in traditional typologies, these ornaments could have been identified as incised decoration. However, their appearance strongly opposes this interpretation. Incising involves movement of potter's hand, making the depth of the incised line uneven: movement direction can be assumed by the shallower incision on one end, and deeper one on the spot where the movement ended. In addition, lines could not be of the same length. The impressions shown on **Pl. VII/1** are of the same size; both ends are shallower than the middle of the line. These features suggest impressing rather than incising; it could have been made by using some sharp implement, possibly a rounded edge flint tool.

2. Punctuated impressions made by the potter's hand movement in an oblique angle, made in a plastic or leather-hard clay. The impressions are uneven, not structured in motifs, but covering the whole surface of the sherd instead; they can be shallow (**Pl. VIII/1,2**) or deep, with extruded edges, i.e. made without the removal of excess clay (**Pl. VIII/3**). In contrast to the previous group, the shape and cross-section of the used tool could not be identified, because the execution involved a higher pressure along with pushing the tool down an angle. In one case, the use of a "kidney"-shaped tool can be assumed (**Pl. VIII/2**), but the impressions are not regular, exhibiting different depths, suggesting a careless fabrication. Another group consists of impressions made by pressing and dragging a "T"-shaped tool; the "walls" of the shallow (**Pl. VIII/5**) or deep (**Pl. VIII/4**) impressions are slanted; the motif is organized in parallel rows.

The vast majority of sherds (86%, namely 1,733 fragments) belong to a diverse group, traditionally attributed to the "typical" Starčevo impresso-ornaments. It was argued that the majority of these ornaments (with the exception of finger impressions) were not made by pressing fingernails, but also by using

tools⁹. These impressions have different appearance, depth and width, but all of them share one important feature: they are made by pressing and dragging a sharp tool over the surface. The impressions can be distributed without patterning, but they can form vertical and horizontal parallel rows as well. The most typical are very deep impressions with a lump of excess clay left after dragging (Pl. IX, Pl. X/2, 4), sometimes in the shape of a coffee-bean, probably made in a leather-hard clay (Pl. X/1, 3, 5). In some cases, the shape of the tool-tip can be observed, as in the case of the specimen shown on fig. 2: at the beginning of the movement, the tool left shallow denticulate traces: sticks or bone could have been used for this purpose (fig. 2a). It is important to stress that several objects with different tip shapes could have been used on the same vessel along with the previously mentioned sharp, flattened object that literally cuts the surface (fig. 2b). Rough, uneven, carelessly executed impressions made by different tools can be observed on other sherds (Pl. VIII/6): it seems that along with flat objects, some hollow tools were used as well. The impressions' depth varies, as well as their shape, and excess clay is present sporadically. A considerable number of specimens exhibit impressions without lumps of excess clay. A deep thin line can be observed in the center of these impressions (fig. 3), again indicating the use of a sharp pointed tool. Some interesting markings are identified on the specimen shown on fig. 4: a tool was used upwards, in a vertical movement, leaving a deeper line in the center and slightly extruded "walls" on the upper end.

Another kind of decoration, usually called "pinching" was identified in the Kovačke Njive assemblage, but in a smaller quantity (5%, i.e. 94 specimens). Traditionally, it is explained as the simultaneous impressing of both hands' fingernails, stressing the presence of the excess clay lumps¹⁰. However, the pottery analysis revealed that no pinching occurred; rather, the tools use seems again more likely. The impressions do not look different from the ones previously described. The only difference is that they occur in pairs (Pl. XI/1-4). Therefore, the same techniques and implements were used.

3. Grooving. One separate group consists of fragments with extremely shallow depressions of different sizes and orientation. This intervention resembles to incising and impressing, but it seems that it was differently made. One possibility is that this kind of ornaments was made by dragging the tool over the surface (Pl. IV/6); therefore, it includes movement. The difference from incising is the type of tool: it was not pointed, but flat-tipped. Another possibility is that some kind of flexible object, such as a straw was used; it could have been laterally pressed into the plastic surface, thus making irregular and uneven shallow depressions.¹¹

Other related techniques

A motif related to "pinched" ornaments is a wheat-grain motif. In the considerations on the Blagotin assemblage, it was argued that the wheat-grain

⁹ VUKOVIĆ 2013

¹⁰ ARANĐELOVIĆ-GARAŠANIN 1954, p. 67.

¹¹ This kind of execution was assumed for the Early Neolithic altars (VUKOVIĆ 2014).

motif in relief was executed not by pinching, but by applying a plastic band on the vessel's walls, then pressing it to the walls by using a thin, sharp implement (pointed stick or bone) in a series of short notches, forming parallel rows¹². In the Kovačke Njive assemblage, the wheat-grain motif is present in a small quantity (only 5 specimens) (Pl. XI/5-6); their appearance support earlier made conclusions about the tools use. However, in some cases the plastic band was not applied, but formed as a consequence of dense, deep notches instead (Pl. XI/7). It was also argued that the so-called organized barbotine (e.g.) is related to the wheat-grain motif. The observation of the impresso-barbotine hybrids' presence identified in the Blagotin assemblage is confirmed in the Kovačke Njive assemblage as well. A layer of clay was applied to the already shaped vessel's walls, and then finger-pressed (Pl. XII/2); this is the only appearance of fingertip impressions in the Kovačke Njive assemblage. The other specimen (Pl. XII/1) also shows finger impressions and dragging over the paste layer, leaving uneven, wavy surfaces. A fragment with organized barbotine combined with the impressions in the form of straight lines (1g) is also worth mentioning (Pl. XII/3).

Technological aspects and impresso-decoration function

The various types of impresso-decoration's classification and description in the Kovačke Njive assemblage requires reconsidering the existing knowledge about the technological and functional aspects of the Early Neolithic pottery.

Impresso-decoration and surface treatment. The impresso-technique is usually seen as a decorative technique; however, its initial purpose, especially in the case of irregular, unpattern impressions could have been different. In the pottery studies, impressing is regarded as a method of surface finishing¹³, especially in the cases where the impressions are applied to the entire vessels' surface, without distinguishable motifs. Textured (or patterned) surfaces have a clear functional role: they provide a better grip, making a pot easier to carry and making it less slippery when wet. On the other hand, textured surfaces are suitable for food preparation, because they improve heat transfer in cooking¹⁴. In this sense, barbotine, as a method of surface roughening, has the same function. It was established that impresso (and barbotine) treatments occur on two functional vessel classes in the Early Neolithic: large conical bowls (intended for short-term water storage, for everyday use in the household) and S-profiled vessels (intended for transport and storage, and extremely rarely for cooking)¹⁵. The same pattern is observable in the Kovačke Njive assemblage; along with conical bowls, impresso-ornaments occur on the fragments of large vessels with thick walls, suggesting the storage function (only one whole S-profile pot with impresso was found *in situ*). However, the decorative purpose of the impressions cannot be excluded. The presence of finely shaped impressions organized in motifs suggests that the Neolithic potters recognized the surface finishing treatment as a means of making a decorative effect as well.

¹² VUKOVIĆ 2013, p. 669-670.

¹³ RICE 1987, p. 140-141.

¹⁴ PIERCE 2005; RICE 1987, p. 138.

¹⁵ VUKOVIĆ 2013, p. 668-669.

Two different surface treatments can occur on the same vessel: it is usual that the upper parts of the pots (rim and neck) have a slipped outer surface, while the lower parts are roughened or impressed (7% of impresso-decorated fragments). The slip application techniques can be divided into three groups: dipping, pouring and wiping¹⁶. The presence of the slip over the textured part of the vessel was not recognized so far in the Neolithic assemblages. However, several pots from Kovačke Njive show the presence of a slip on the impressed outer surface. Therefore, the slipping techniques employed must be determined. The differences between dipping and wiping can be assessed by examining the diagnostic traces on the fragments: when the slip is applied by dipping, it penetrates recesses and grooves; wiping the surface with a cloth or ball of grass soaked in the slip covers only smooth surfaces, while it does not penetrate into the depressions and grooves¹⁷. The Kovačke Njive slipped specimens' majority show the latter (Pl. III/3, V/7, XI/7). The impressions on the specimen shown on fig. 5 are, however, filled with slip, suggesting dipping technique. Bearing in mind the fact that the impressions form regular parallel rows, it can be assumed that dipping was applied in the cases when decorative effect of impresso was more important than its functional role. On the other hand, applying the slip is related to the vessel's intended use. The functional role of the slip is to reduce porosity, especially if the fabric is rich with organic inclusions; this is important for the liquids' storage. It also reduces permeability¹⁸, making the pots unsuitable for cooking. These properties of the slip on interiors further support already described observations about the function of impressed vessels (storage and transport). Applying the slip on the exteriors involves one more step in the production sequence; therefore it increases the production costs, i.e. labor investment. Consequently, the slip's importance was considerable, but the reasons of its application on the outer textured surfaces still remain unclear. It can only be assumed that its decorative effect played an important role as well. More analyses and experimental work is therefore much needed.

Impresso-decoration and organization of production. According to the range of different impressions previously described, it seems that the Early Neolithic potters used a variety of tools: stems, bird bones, denticulate bones, awls, shells, flints, etc. On the other hand, the quality of impresso-ornaments varies to a great extent, with some vessels decorated with great awareness and attention presenting regular motifs, organized in parallel rows, sometimes on a distinct part of the vessel, while others display careless impressions, randomly placed on the surface of the pot. It could be argued that these features indicate different levels of potters' skill, thus presuming the presence of inexperienced artisans. The Early Neolithic pottery's manufacture process is still unknown. The diagnostic traces and markings that reveal the vessel shaping process are usually lacking; they were "erased" by applying slip and burnishing of the surface. Impressing was, as it was stated earlier, executed after the vessel was built, in its plastic or leather-hard stage. In order to avoid deformation of the walls during the

¹⁶ RICE 1987, p. 150.

¹⁷ RYE 1981, p. 41.

¹⁸ BRONITSKY 1986, p. 225.

execution of impressed designs, opposing pressure from the opposite side was necessary¹⁹. The interior walls are, however, usually even and regular, indicating that possible markings were removed after the decoration was finished. Moreover, the preserved sherds do not exhibit any kind of deformation, therefore excluding the possibility of a lower level of the potter's skill. Therefore, carelessly executed impressions indicate that their appearance has not always been the main concern of the potter, again supporting the possibility that the functional role of impresso-decoration was more important than their display properties. Decorative effects of impressed designs therefore can be regarded rather as a choice of the potter, than as a consequence of social requirements and pressure.

On the other hand, a great variability of impressed designs may lead to some further considerations. The used tools' variety, impressions' appearance and (ir)regularity suggest the presence of a large potters number. This is not surprising, because the Early Neolithic pottery production is household-based²⁰, as it was proposed in different models explaining the pottery production organization²¹. It implies non-specialized manufacture for the needs of the potter's household, part-time involvement in the craft and seasonal potting activities. Observations of impresso-decoration from Kovačke Njive additionally support these already defined characteristics of Early Neolithic organization of production.

Chronological considerations

Since the 14C data for the site is not yet available, certain conclusions about a relative chronology can be made, based on the pottery's attributes. Generally, the morphological traits, such as the absence of biconical and pedestalled bowls, indicate earlier phases of Early Neolithic. The decoration characteristics further confirm this conclusion. The most important is to emphasize the complete absence of painted designs, which are common on the neighboring site of Pavlovac-Čukar. Other features can be elaborated in more details. In the sense of relative chronology, impresso-decorated pottery can be regarded as a chronological marker. Some authors²² argued that frequency ratios between impresso and barbotine treatments should be considered as the most important clue for establishing the chronological position of the Early Neolithic assemblages. The predominance of impresso-ornaments in the Kovačke Njive material record (84% vs. 3%) therefore suggests earlier phases of the Starčevo tradition. It was also argued that, in terms of technological change, the sequence: non-organized impresso - wheat-grain motifs in relief - barbotine, reveal chronological succession of pottery features²³. These features overlap in the Blagotin and Kovačke Njive assemblages, indicating the beginning of the Starčevo tradition transformation. This change will lead to the disappearance of impresso and domination of barbotine technique, observable on the neighboring site of

¹⁹ RYE 1981, p. 92.

²⁰ VUKOVIĆ 2011.

²¹ for example RICE 1981; SANTLEY *et alii* 1989.

²² NIKOLIĆ 2001.

²³ VUKOVIĆ 2013.

Pavlovac-Čukar. Although it is beyond the scope of this paper to argue about possible movements of Starčevo population and horizontal stratigraphy, the occurrence of the Early and Late Starčevo pottery on two adjacent sites is undoubtedly worth mentioning.

Conclusion

The Kovačke Njive pottery assemblage obtained a relevant data set for the impresso-technique examination. The analysis revealed that the widely accepted notion of impresso as a decoration technique, which involves impressing of fingertips and fingernails into the plastic clay, should be reconsidered. Although finger and fingernail impressions are not excluded, it was shown that the majority of so-called impresso-ornaments were executed by using a variety of tools. Therefore, the main concern of the researchers should be the reconstruction of the applied techniques and the textured surfaces' function, rather than the motifs' appearance. So far, detailed analyses of relevant data sets from the Early Neolithic assemblages are still lacking, and the need for more research, including experiments, must be emphasized.

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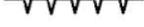
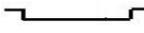
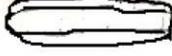
Representation of punctated impressions at 90° with possible implements			
a) circular cross-section			
			
			
			
b) triangular cross-section			
c) quadrangular cross-section			
			
d) "kidney" shaped impressions			
e) "fish-like" impressions			
f) crescent impressions			
g) impressions in the form of lines			

Fig. 1

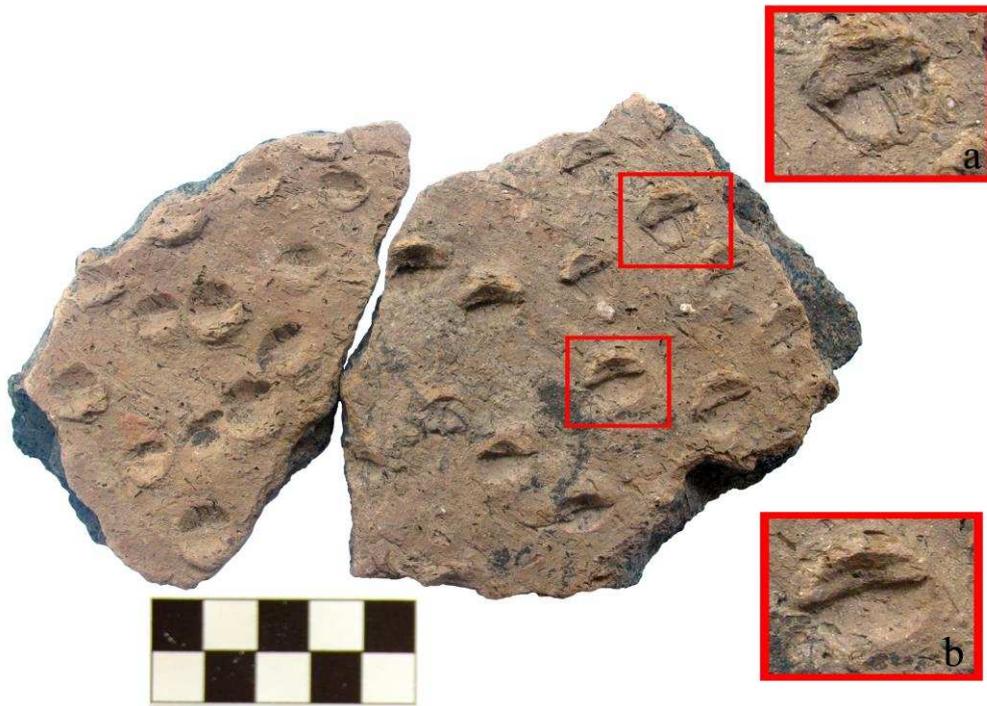


Fig. 2

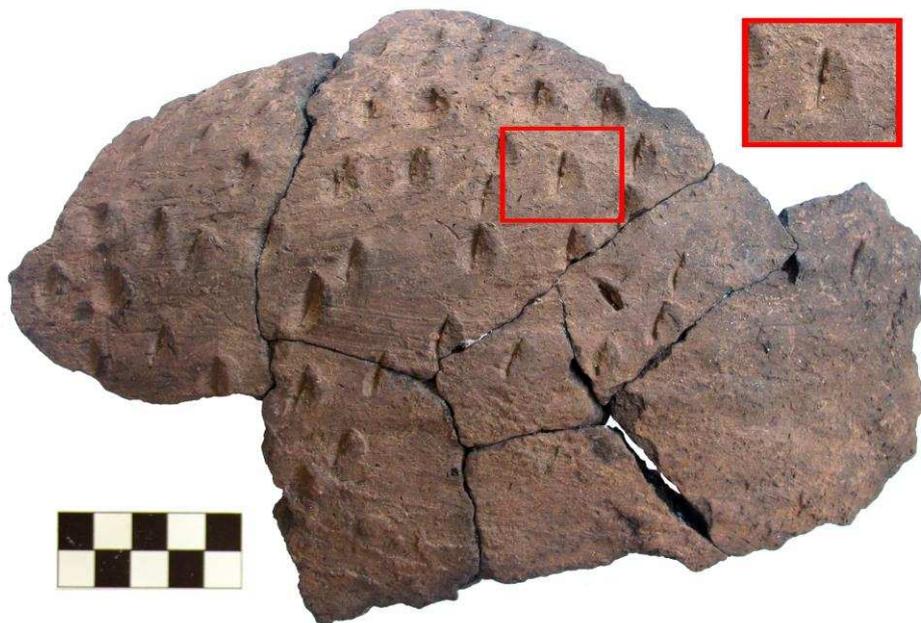


Fig. 3

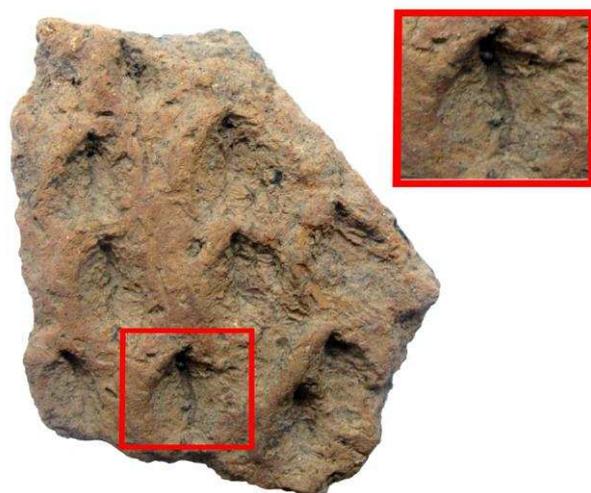


Fig. 4



Fig. 5

Plate I

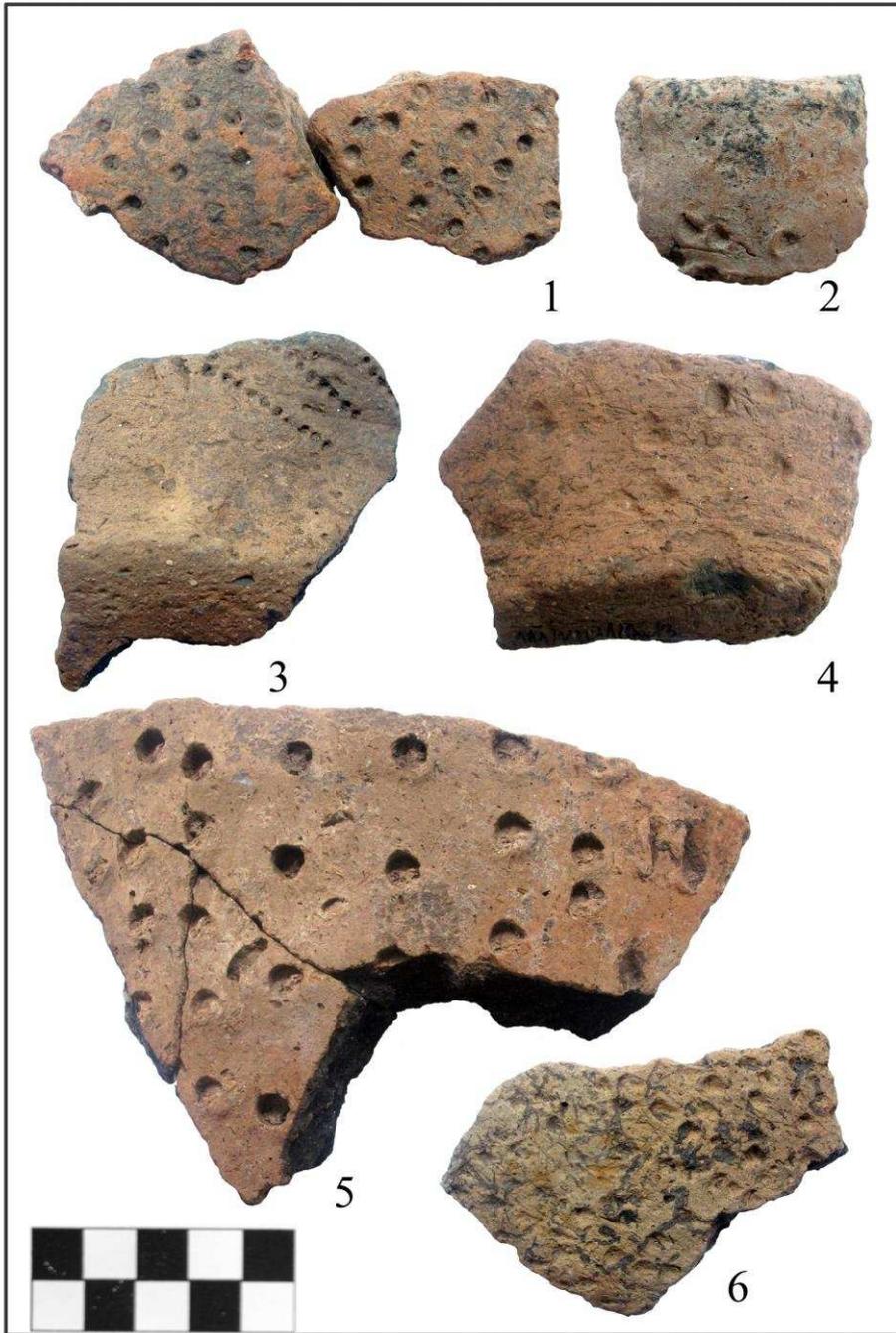


Plate II

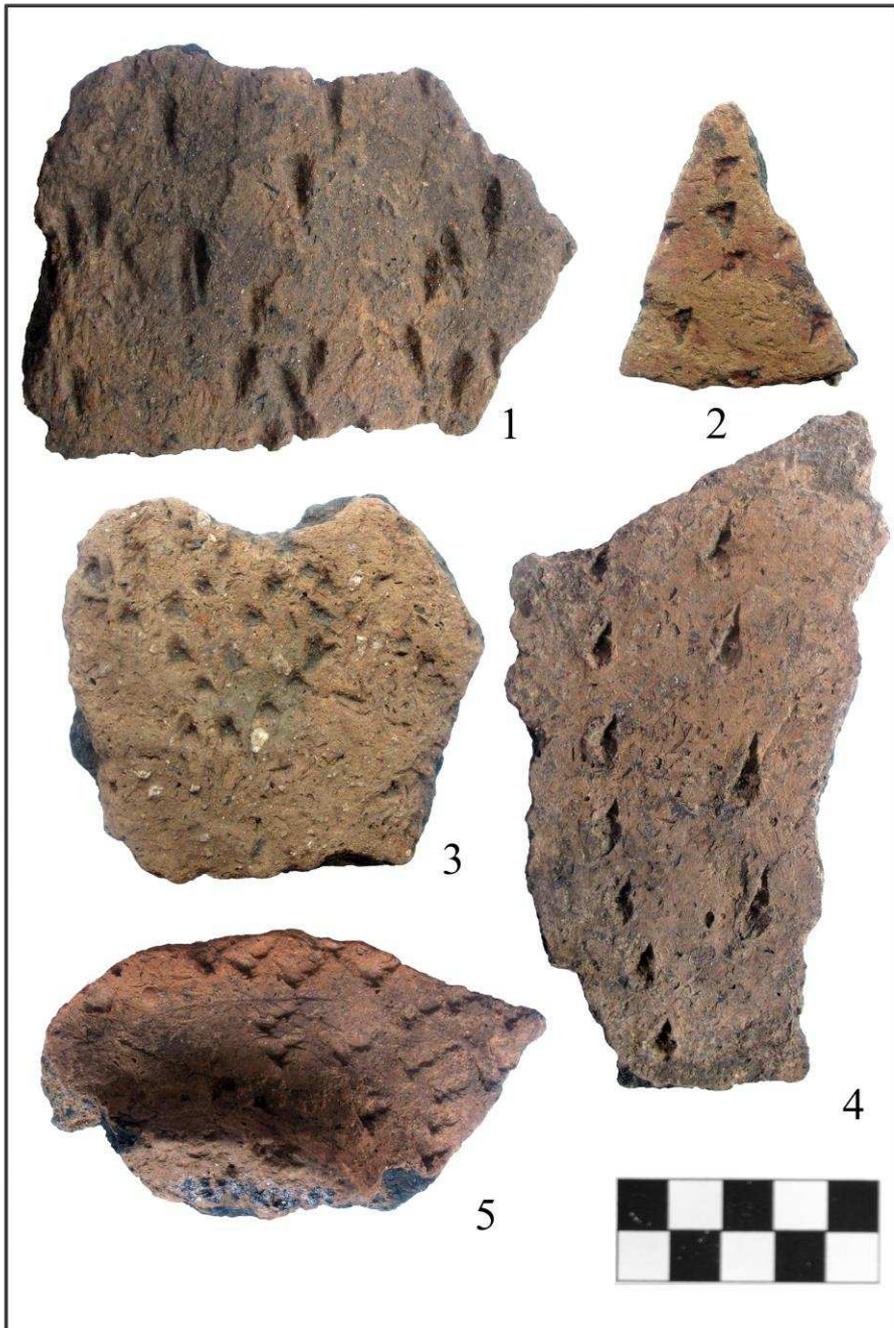


Plate III



Plate IV

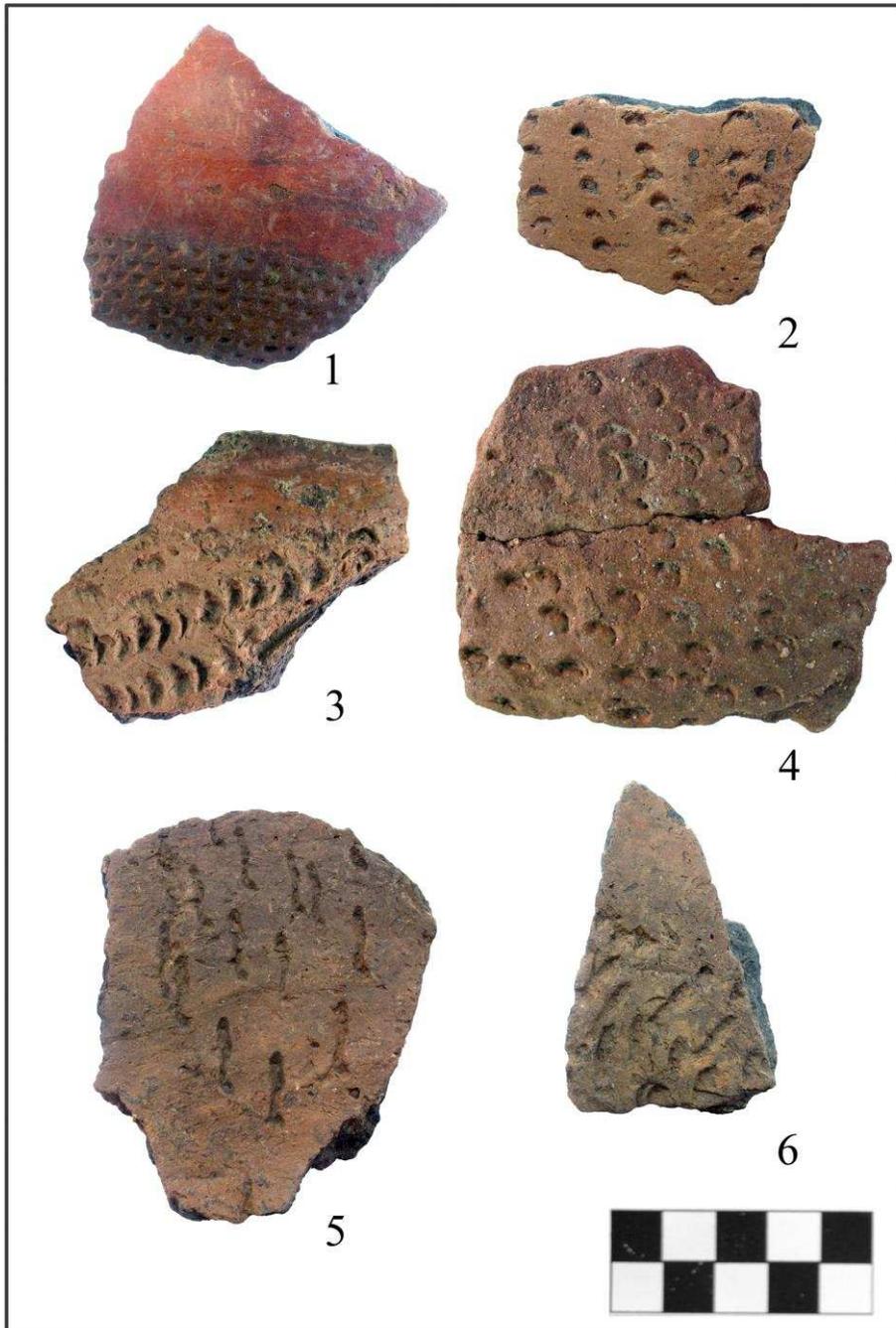


Plate V



Plate VI

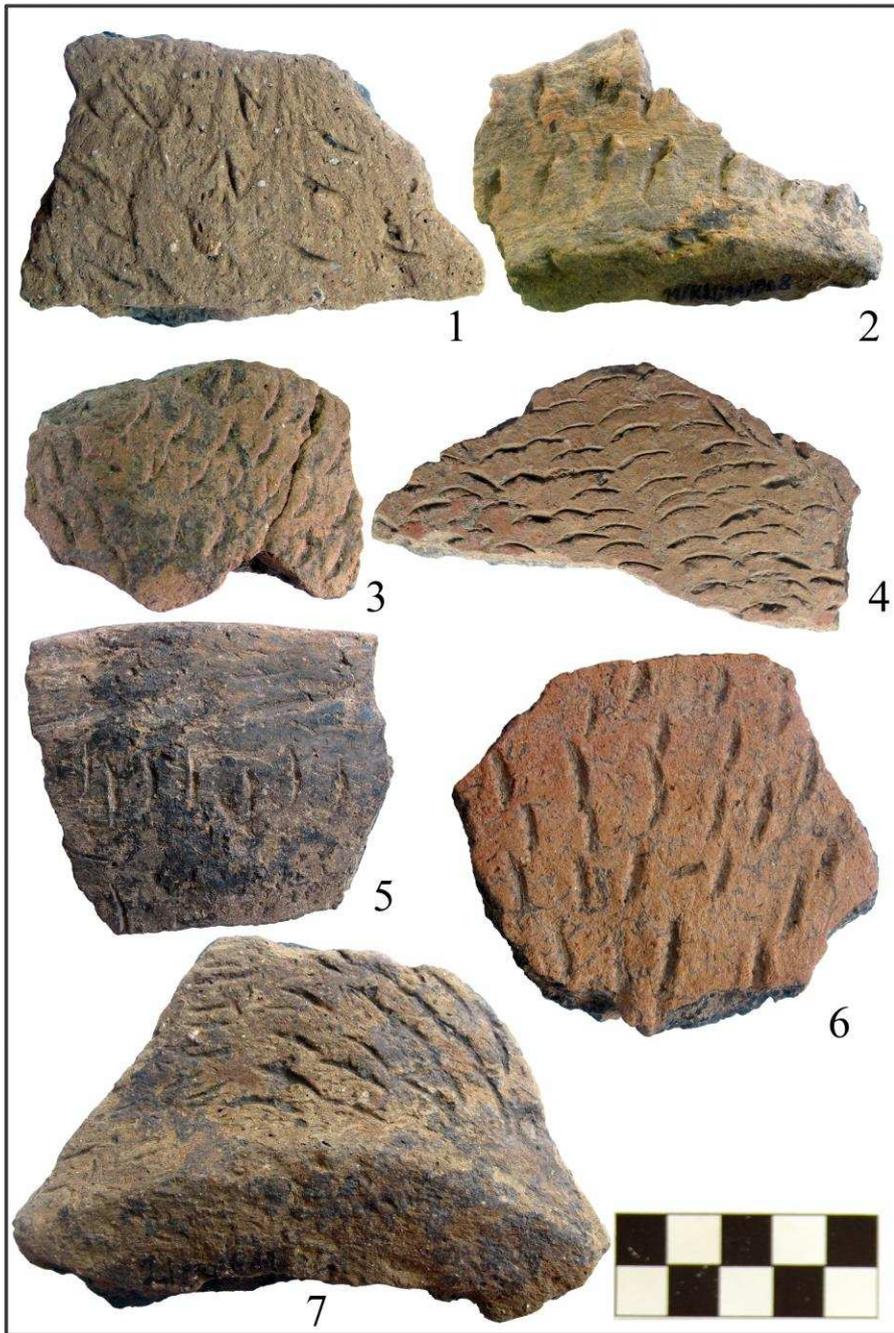


Plate VII

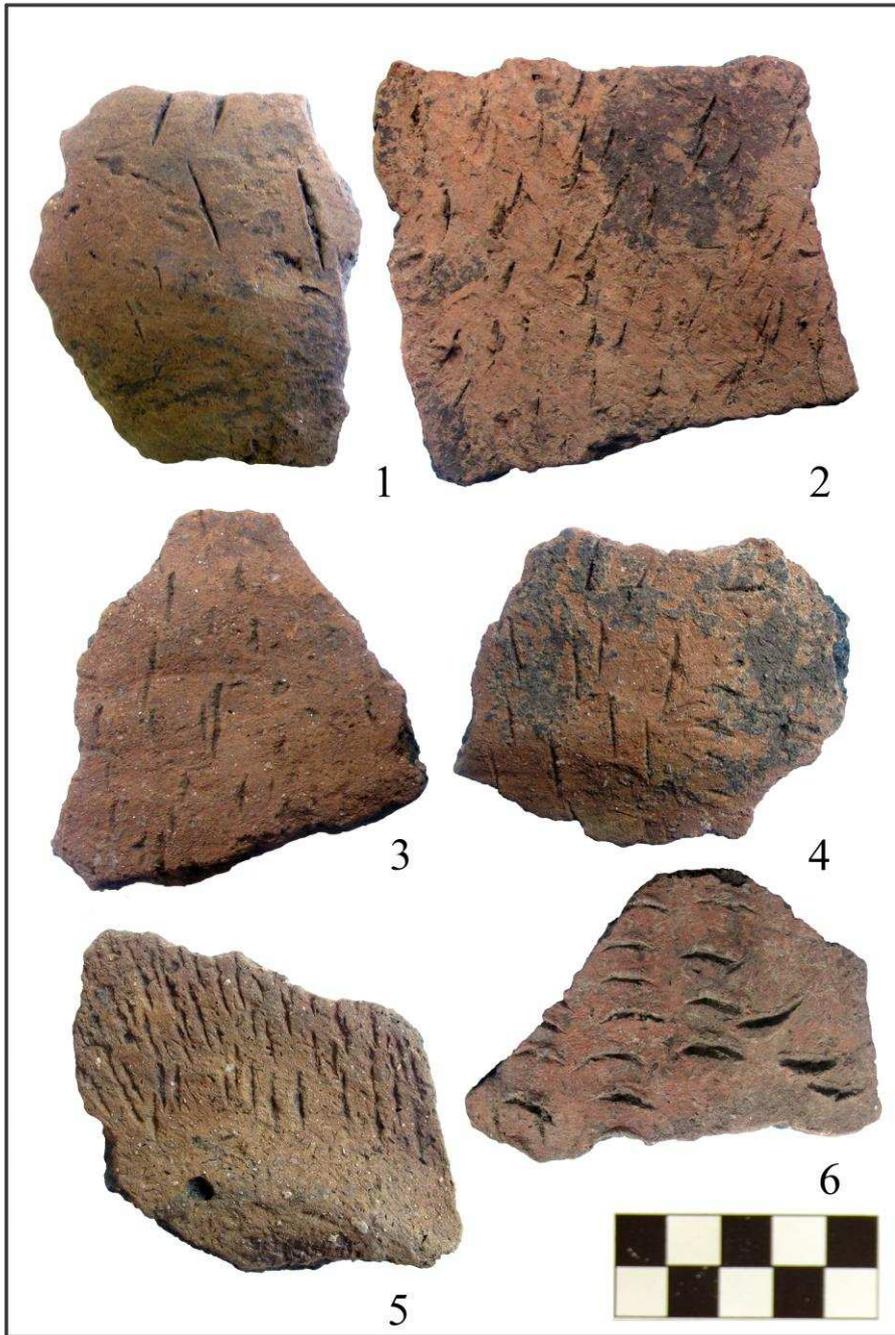


Plate VIII

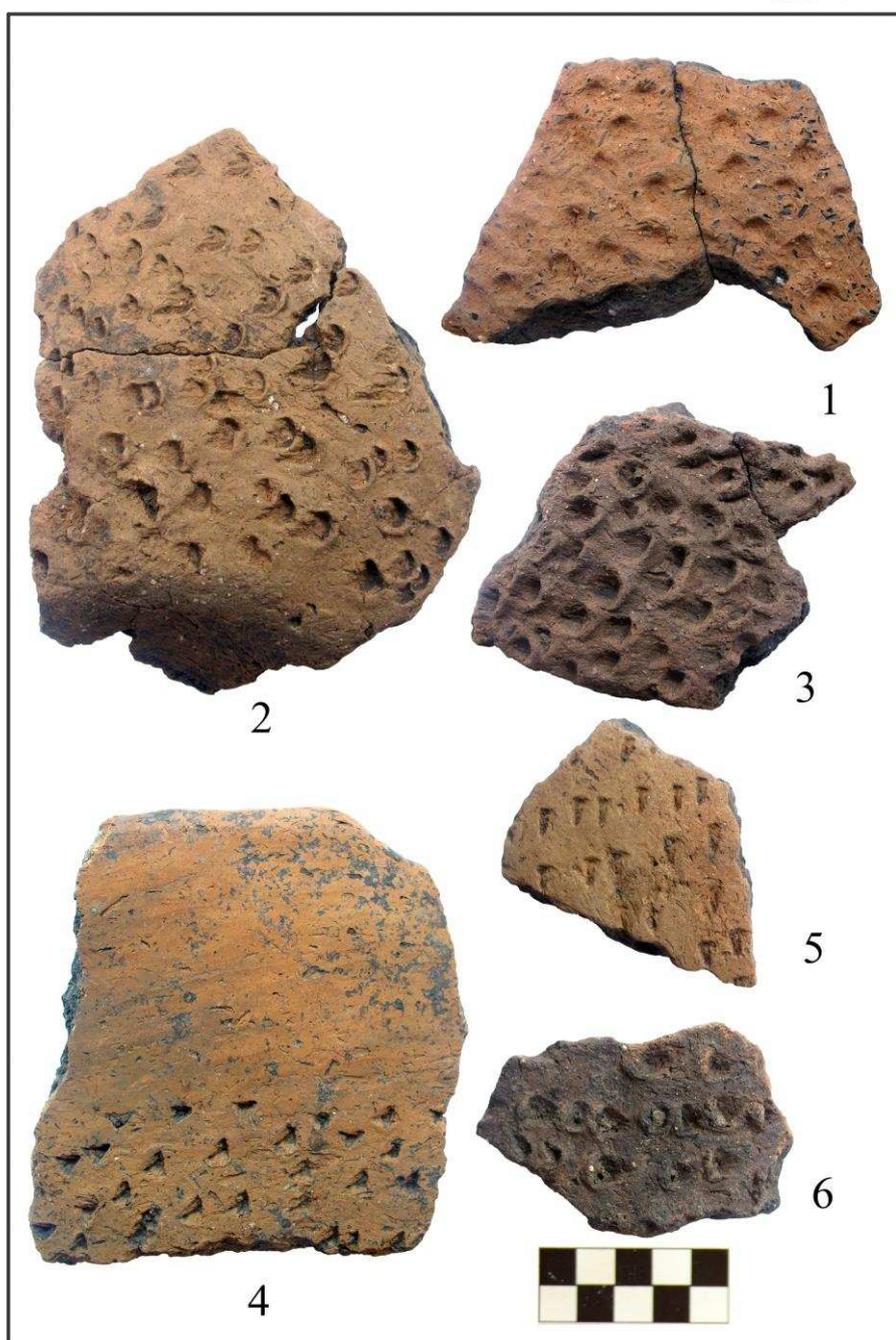


Plate IX

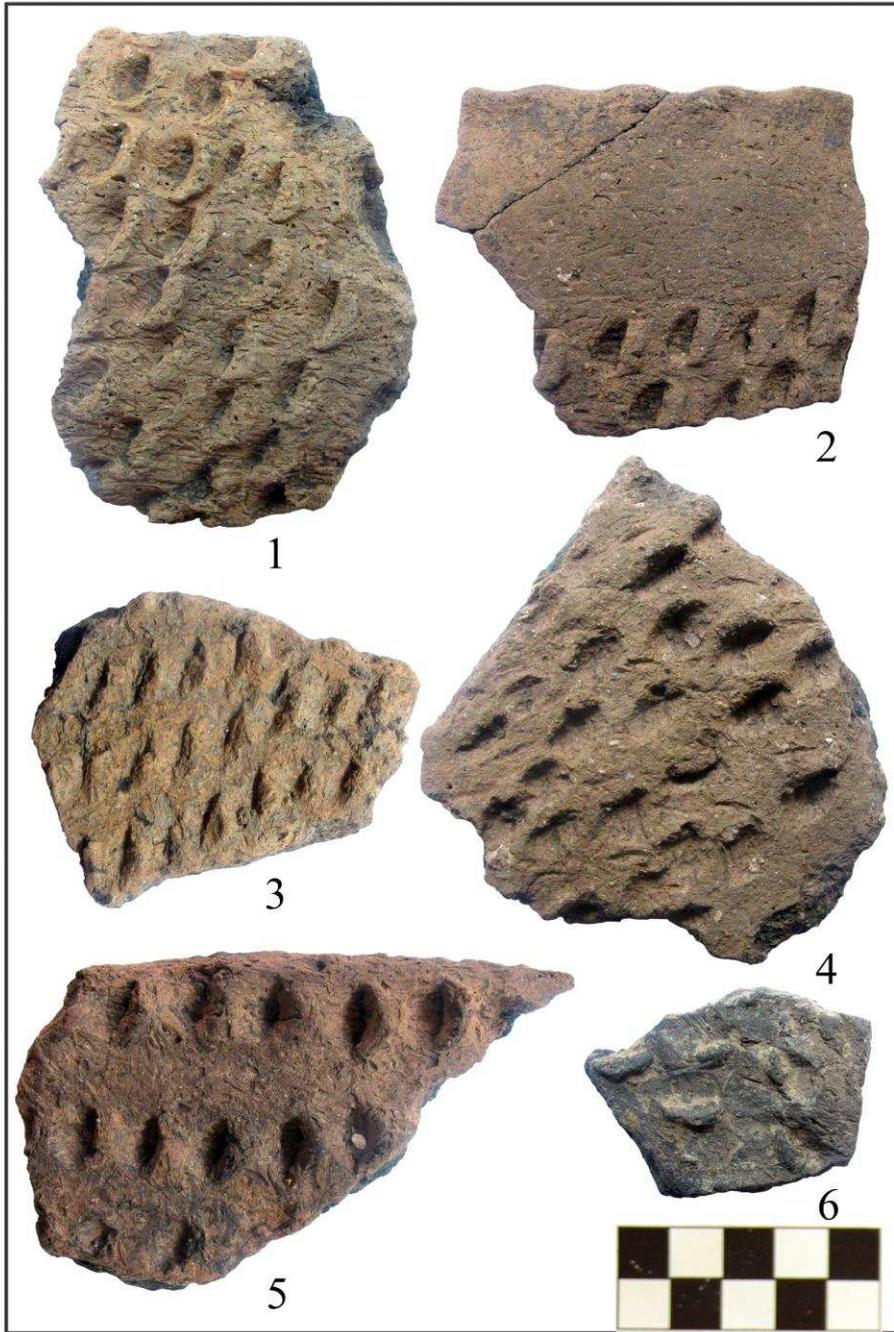


Plate X

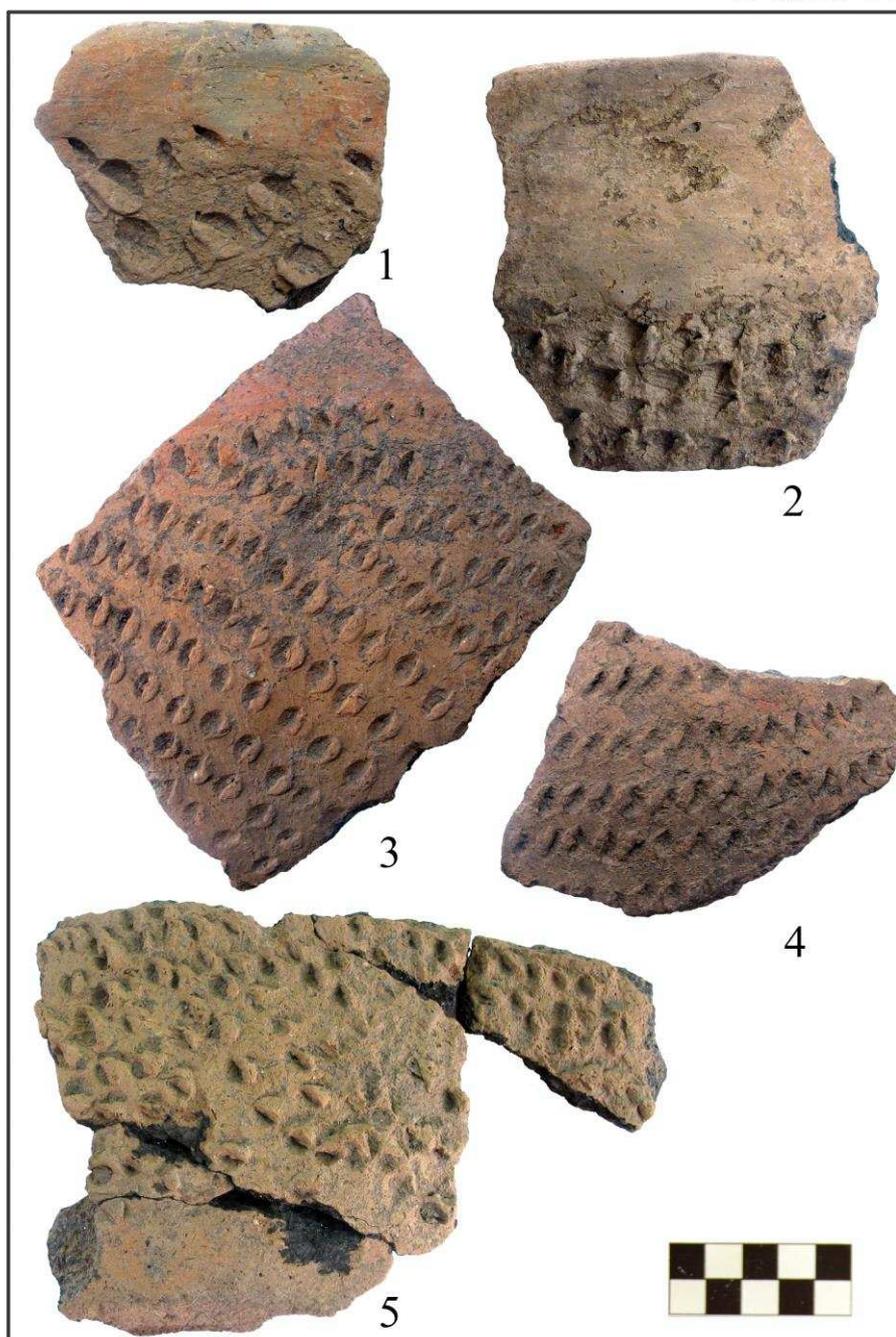


Plate XI

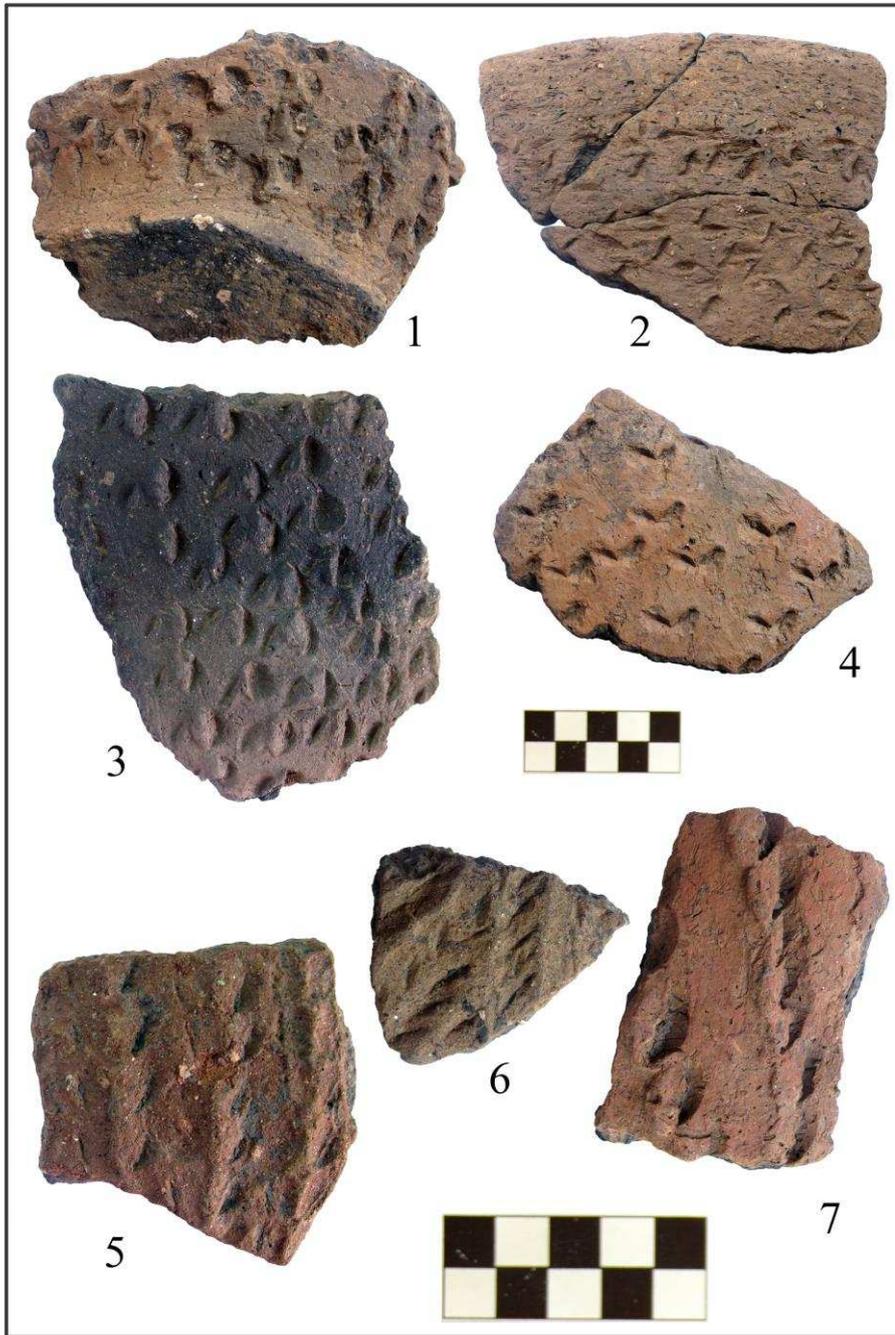


Plate XII

