

## THE BOIAN - SPANȚOV POTTERY FROM TWO PITS AT NANOV - 'VISTIREASA 3' (TELEORMAN COUNTY, ROMANIA)

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**Rezumat:** În vara anului 2012 au fost efectuate săpături arheologice de salvare pe viitoarea șosea ocolitoare a Municipiului Alexandria, județul Teleorman. Unul dintre siturile cercetate, denumit Nanov – 'Vistireasa 3', a conținut complexe datând din diverse epoci, inclusiv unele din perioada eneolitică (culturile Boian și Gumelnița). Scopul acestui articol este de a prezenta rezultatele unei analize efectuate asupra a două loturi de ceramică de tradiție Boian-Spanțov din acest sit, provenite din două gropi de mari dimensiuni (notate Cpl. 50 și Cpl. 51). Un prim obiectiv a constat în studiul gradului de fragmentare, obținând rezultate interesante cu privire la procesele care au condus la formarea celor două contexte arheologice. Cea mai consistentă parte a studiului este reprezentată de abordarea tehnologică, în care tipurile de pastă, degresanții utilizați, metodele de formare, formele construite, tipurile de decorație și condițiile de ardere sunt prezentate atât calitativ, cât și cantitativ. Interpretările finale sunt bazate pe rezultatele obținute și pe comparații cu alte studii asemănătoare.

**Abstract:** During the summer of 2012 rescue excavations were conducted on the route of the bypass road around the city of Alexandria, Teleorman county. One of the researched sites, denoted as Nanov – 'Vistireasa 3', contained features dated in several epochs, including some from the Eneolithic period (Boian and Gumelnița cultures). The aim of this paper is to present the results of an analysis performed on two complete assemblages of Boian-Spanțov pottery from this site, discovered in two large pits (denoted as Cpl. 50 and Cpl. 51). A first aim was to study the fragmentation of sherds which produced interesting results regarding the formation processes of the archaeological context. The main part of the study is represented by our technological approach, where paste types, tempers used, building methods, constructed shapes, decoration types, and firing conditions are presented both qualitatively and quantitatively. Final interpretations are based on the obtained results and on comparisons with other similar studies.

**Cuvinte cheie:** eneolitic; România; cultura Boian; faza Spanțov; tehnologia ceramicii.

**Keywords:** Eneolithic; Romania; Boian culture; Spanțov phase; pottery technology.

### Introduction

During May-July 2012 a team of specialists from the 'Vasile Pârvan' Institute of Archaeology, Teleorman County Museum and Romanian National Company of Motorways and National Roads conducted archaeological rescue excavations on the route of Alexandria city's (Teleorman County) bypass road. One of the researched sites was denoted as Nanov – 'Vistireasa 3', located near Nanov village, Teleorman County, on a sand bank slightly above the rest of the meadow area, with habitations from the Eneolithic to Late Roman period (Plate I.1, 2). Here a total of 91 archaeological features were investigated, with 42 of them belonging to the Eneolithic period (36 containing Boian-Spanțov and 6 containing Gumelnița type materials). The other remaining features were represented by early Hallstatt, 2nd-3rd c. AD (Chilia-Militari type), 3rd-4th c. AD (Sântana de Mureș-Cerneahov type) and 6th-7th c. AD (Ipotesti-Cândești type). Most of the archaeological features researched were dwellings and pits, but there are also incineration graves. In specific areas, layers and debris from the Eneolithic, early post-Roman or early medieval periods were investigated. The analysis of the Boian-Spanțov type pottery discovered in two large pits is a first step in our attempt to understand the behaviour and the technological aspects of the first dwellers of the Nanov – 'Vistireasa 3' site.

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### Pottery contexts and the nature of the archaeological deposits

The complete batches of Eneolithic sherds that were discovered in two large pits have been macroscopically analysed<sup>1</sup>. Cpl. 50 feature is a pit identified in the south part of the researched area, having an approximately oval shape with dimensions of 4.10 × 3.30 m (Plate II.1). The fill consisted of two distinct stratigraphic units: a 0.20 m thick layer at the base and another one of 0.50 m at the upper part. The first one was a dark brown deposition with ceramic fragments, animal bones, shells and small adobe fragments. The second one was an ash-like soil containing the same categories of artefacts as the former one. At the boundary between the two layers a broken decorated vessel (see endnote 1) was observed which seemed deposited on a structure of combustion (fireplace?). The pit Cpl. 50 was cut by another one, denoted as Cpl. 59 (Plate II.1), of roughly circular shape with dimensions of 1.30 x 1.10 m, with a black coloured fill containing animal bones and pottery sherds (from both the Eneolithic and post-Roman periods). Cpl. 51 feature is a roughly circular pit with dimensions of 3.50 x 3.70 m (Plate II.2), discovered just six meters away from Cpl. 51; the fill of the pit consisted of a dark brown soil out of which Boian type pottery was recovered, animal bones and a piece of flint of the 'saw' type. In its western part, Cpl. 51 was cut by another feature, denoted as Cpl. 52 (post-Roman period pit).

Period	Feature	Provisional dating	Eneolithic pottery	
			Number	Weight (g)
<b>Chilia-Militari</b>	Cpl. 59	2nd-3th C AD	1314	43527
<b>Boian-Spanțov</b>	Cpl. 50	47th-45th C BC		
<b>Boian-Spanțov</b>	Cpl. 51	47th-45th C BC	1694	47440
<b>Chilia-Militari</b>	Cpl. 52	2nd-3th C AD	3008	90967
<b>Totals</b>				

**Table 1.** Nanov – 'Vistireasa 3'. The chrono-cultural sequence of the features and the quantity of the analysed Eneolithic pottery.

Nanov – 'Vistireasa 3'. Încadrarea crono-culturală a complexelor și cantitatea de ceramică eneolitică analizată.

The size analysis results and the lack of complete vessels showed that the sherds reached the pits as a type of secondary refuse (Schiffer 1987) that was substantially fragmented, and its deposition occurred after the presumably initial use of the pits (probably clay extraction pits or pit-houses). Considering the lack of abrasion traces on the sherds' margins and the fact that some of them could be joined (Plate XV.3), we assume that the majority of the fragmentary pottery analysed here was discovered in a primary deposition. However, some differences between the sizes of fragments from the two pits can be spotted (Plate III.1), with a less fragmented pottery in the Cpl. 50 pit. This fact can be linked to specific behaviours such as the presence of an activity area where the pottery was used in close vicinity to the pit Cpl. 50.

### Materials and methods

The total amount of analysed pottery counted 3008 sherds weighing 90967 grams (Table 1). Joins between individual sherds are counted as 1. All the sherds were included in the study of the fragmentation and categorisation of paste, decoration, and firing. From these, a total of 525 fragments that formed complete profiles or were parts of rims or bases have been considered as diagnostic elements in determining the original shape of the vessels. The technological analysis was based on a series of works devoted to the methodological study of archaeological ceramics (e.g. Rye 1981; Rice 1987; Orton *et al.* 1993; PCRG 2010). Thissen (2014) produced a recent study dealing with the technology of Boian type pottery, and to facilitate comparisons we chose to use much of the terminology proposed by the author to define our types of paste, shapes, and decoration. We preferred to treat the paste characteristics separately from the firing categories, and this is the reason why the term *fabric* is not used to describe the pottery analysed below<sup>2</sup>.

### Paste recipes

Regarding the technology of manufacturing the vessels, seven types of paste recipes were identifiable with the naked eye and with the aid of a magnifying glass (×2.25) equipped with white LED light. Four principal types (T1-4) were encountered in both batches, while three (T6-8) were observed with a very low occurrence in the pit Cpl. 51 only (Plate IV.1). Paste T2 and T4-5 are very

common in both pits, but T1 and T3 occur much less often. Paste types T6-8 are represented by a handful of sherds only (Table 2).

*Paste T1 Clay with fine and sparse inclusions (Plate IV.T1)*

Vessels made with this type of paste are few in the pit Cpl. 51, but occur more often in the pit Cpl. 50 (Plate IV.1). The clay has a clean appearance with rare and fine inclusions (<1 mm), well sorted, including grains of quartz and muscovite. Fine and very sparse vegetal remains are also present. All fragments from this category of paste originate from cups or beakers with thin walls and both surfaces well polished. Most of these were decorated on the exterior of the neck with *plissé*, and some of them were also painted with graphite.

*Paste T2 Fine sand (Plate IV.T2)*

This type of paste is characterised by a mass of fine sand that appears with a frequency of up to 30%. The grains are medium-well sorted, of rounded or sub-rounded shapes. Rarely, sparse vegetal remains can be observed, while non-plastics of white mica are a constant presence. The paste recipe with fine sand was used mainly for cups and beakers decorated as those describe above, but also for some bowls, lids and dishes.

*Paste T3 Coarse sand with high density (Plate IV.T3)*

Vessels manufactured with T3 paste type have a very low occurrence in the analysed batches comparable to T1 (Table 2). Their paste contains a high amount (up to 40%) of inclusions conventionally named coarse sand. In fact, there is a bimodal distribution of medium-well sorted sand grains (<2 mm) mixed with sparse gravel inclusions sized up to 10 mm. Both the sand and gravel inclusions have rounded and sub-rounded shapes, indicating that they were formed in natural conditions. Muscovite and sparse fine vegetal remains are also present. Our analysis determined this type of paste was used to build thick-walled bowls and lids of small dimensions.

*Paste T4-5 Chaff (Plate IV.T4-5)*

This type is predominant in both batches, comprising most of the analysed sherds (Plate IV.1). We refer to chaff as a conventional name for dense and well sorted vegetal remains that were added to the vessels' paste as a temper. At least three sub-variants of this type can be identified, each of them containing a high amount of chaff mixed with the three paste types described above (T1, T2, and T3). Chaff was used as a temper for manufacturing all the categories of vessels, leaving specific voids in the vessels walls. The mixing of fine chaff with T1 paste type is particular for some small cups, very rarely for beakers or bowls. When the medium size chaff (2-3 mm) was mixed with T2 type the resulting paste was used most often to make bowls and occasionally for beakers, dishes, strainers, pots or stands. The paste with coarse sand, sparse gravels (T3) and a high amount of medium size and coarse chaff (up to 5 mm) was used for vessels with thick walls, but also for medium and large ones, such as pots, conical plates, and cylindrical body vessels.

Paste type (no. *)	T1	T2	T3	T4-5	T6	T7	T8	Total
Cpl. 50	77	201	70	966	0	0	0	1314
Cpl. 51	4	125	31	1515	7	11	1	1694
<b>Total</b>	81	326	101	2481	7	11	1	3008

**Table 2.** Nanov – <sup>3</sup>Vistireasa 3'. Numerical distribution of Paste types

\* Joined fragments were counted as one individual.

Nanov – <sup>3</sup>Vistireasa 3'. Distribuția numărului de tipuri de pastă.

\* Fragmentele lipite au fost numărate ca un singur individ.

*Paste T6 Limestone and chaff (Plate IV.T6)*

Limestone is a very rare presence in the analysed pottery fragments, being identified in the paste of only seven sherds from pit Cpl. 51. This type of inclusions appears like sparse white-yellowish grains, sub-angular/sub-rounded in shape and with sizes of up to 5 mm. In all these cases, chaff was also added to the paste recipe, and therefore we consider this type as a sub-variant of T4-5. None of the fragments of this paste type were diagnostic.

*Paste T7 Grog and coarse sand (Plate IV.T7)*

Paste with abundant grog (crushed ceramics) and coarse sand was identified in 11 sherds from pit Cpl. 51. The grog grains have brown, orange and reddish colours and angular shapes, while the sand inclusions are rounded and sub-rounded in shape.

*Paste T8 Grog and chaff* (Plate IV.T8)

Only one pottery fragment from pit Cpl. 51 has this combination of tempers in its paste. The sherd is part of the rim of a large dish, well smoothed on the inside and scraped on the outside. The fracture is entirely black, but most of the grog particles are of orange-reddish colours.

### **Forming sequence**

Construction techniques of prehistoric vessels can be identified based on the marks left on the plastic clay during the making of the pots, and on the partially hardened clay on which various operations have subsequently been performed (Rye 1981: 58). Thus, the marks that help identify the primary construction techniques (shaping) were most often observed as preserved inside the walls and are determined based on the type of fractures and cracks, while those related to interventions on partially dried clay (secondary forming and surface treatments) were identified on their surfaces (Vuković 2014).

The fragmentary pottery from Nanov – ‘Vistireasa 3’ permitted us to observe fractures and breakage patterns on a wide range of constructed shapes. The horizontal-coiling method is the most common among the techniques used for the primary formation of the vessels whose fragments were discovered in the Cpl. 50 and Cpl. 51 features, (Plate VI.1). The abundant organic material in the paste of many vessels led to the formation of voids in the joints between the coils. Thus, the horizontal fractures are very common among fragments tempered with chaff. The most susceptible to fracturing were the areas of connection between different parts of the vessel. Vessels with the rim added as a 1-2 cm wide strip were noted very often, regardless of the type of paste or shape. In some cases, activities of smoothing by fingers were observed on the areas between coils, indicating several stages in the construction of the vessels’ walls. The horizontal-coiling technique was used to build medium and large vessels of all kinds of shapes. The pots were coil-built in stages beginning with a flat or concave base made of clay slabs. The same forming sequences were observed on the walls of the cylindrical body shapes.

The simple type of biconical bowls (Plate VI.2) had their lower and upper parts joined (Thissen 2014), but there are no clear marks for identifying the way in which those two cones were built. The bowls with a thick, round or straight shoulder were formed in the same manner, having the profiled shoulder attached as a clay band after the vessel was built up. This technique was also encountered on Late Vinča bowls from Serbia and has been interpreted as a way of reinforcing the two joined parts of the bowl (Vuković 2014: 192). This could also be the interpretation in the case of the bowls from Nanov – ‘Vistireasa 3’, especially of the rounded-shouldered ones, where the band did not allow breakage for any of the analysed sherds. However, the straight-shouldered bowls have a band that in most cases only covers a small surface of the joined parts and a significant area of the upper part. In these cases, the fracturing also occurred on the joining line (Plate VI.5).

The slab technique was indicated by laminar fractures (Vandiver 1987) observed on several fragments from wide open shapes such as simply truncated vessels with short walls - the so called conical plates (Plate X.1-4), dishes or lids. There are clues that the slabs were attached differentially for each category of open shaped vessels. The short walls of the plates were initially hand-modelled, using one strip of clay or two coils, and attached to the large base. After that, the clay slabs were used to reinforce it from the exterior (Plate VI.3) or both sides (Plate VI.4). The laminar fractures of the body of the dishes are uneven (Plate VI.6) and the parts joined have variable sizes and thicknesses. All these characteristics were observed in experiments that implied the construction of vessels by using slabs in a concave mould (Bințișan 2014; see also Thissen 2015: 12). Straight laminar fractures were observed on fragments from the same lid, having at least one surface already smoothed (Plate VI.7). It was probably the case of a late reinforcement decision.

In the case of small vessels, such as cups or beakers, which do not have traces of coil or slab usage, we consider that they were primarily formed out of a single piece of clay by pinching and/or drawing (Thissen 2014: 99). The base and the thin walls were obtained during a secondary forming process (Rye 1981: 86) by scraping with the aid of tools.

The remaining marks of the tools most frequently used for scraping are of utensils made from vegetable matter, wood or most likely dried reeds (Plate VI.8). These traces are visible on the bases of small vessels with concave bottoms (cups, bowls) and are the evidence of the final action of the forming process. The thinning of the walls by scraping is rarely observable due to final surface finishing methods such as smoothing, burnishing or polishing. However, some drag marks remain on the inside surface of cylindrical body vessels, having the specific effect of retaining the red paste applied after the

firing. The cracks that appeared during the drying process were subjected to repairs. This was the case for a flat base of a large vessel which was repaired by adding clay on the external surface.

### Constructed shapes

The original shapes of the vessels were determined according to diagnostic fragments such as complete profiles, rims or bases (271 from Cpl. 50 and 254 from Cpl. 51). However, this was not an easy task due to the high fragmentation and wide variety of shapes. We tried to follow the categorisation of Thissen for the Boian pottery from Teleor 008 (Thissen 2014: 101), but there were many cases where the analysed pottery from Nanov – ‘Vistireasa’ proved to have its specificity, as will be discussed below.

The ratio of the open vs. the closed forms is approximately 3:2 for both batches (Plate III.2). The open shapes comprise cups, beakers, dishes, conical plates and bowls; the closed shapes consist of pots and cylindrical body vessels. Special and rarely encountered shapes are represented by lids, strainers, pedestal vessels and stands.

#### Open forms

##### *Cups and beakers*

These two types of shapes were counted together because of the high similarities of the rim fragments’ characteristics, which did not permit us to make clear differentiations. Their necks are cylindrical, and rims have slightly flaring shapes. The paste is fine, of T1 and T2 types, and the colour is usually black or greyish-black. The decoration is commonly made with *plissé* and painted graphite on the outside and occasionally red and white colours on the inside. The cases in which larger fragments allowed a clear distinction between cups and beakers are displayed in Plate VII.1-6 and Plate VIII.1-6. The percentage of both cups and beakers is around 15% in both features, while their usage for personal consumption of liquids was already assumed (Thissen 2014: 100).

##### *Conical plates and dishes*

Two types of wide open shapes with mouth diameters larger than 15 cm have been identified, occurring in low percentages in both batches (Plate III.2). Those with short conical walls and wide bases were denoted as conical plates (Plate X.1-4), and the ones with a well-defined neck and rim, oblique lower-body walls and small bases were labelled as dishes (Plate IX.1-5). The first category is specific to the final Neolithic period, while the second was gradually imposed during the Lower Danube Eneolithic, being very common for the Gumelnița pottery production (Voinea 2005). Not only their morphology but also the manufacturing methods differ. The conical plates are made with paste T4-5, having large flat bases and short walls constructed by coils and/or slabs. Their inner surfaces are well smoothed or polished and external surfaces are rough or finished by barbotine. The dishes were built using paste T2, T3, T4-5, and T8. The shape is shallow, having a small base (or probably a foot), straight or curved walls and upper parts that can differ substantially from one dish to another (Plate IX.1-5). Considering the presence of uneven laminar fractures, the mould technique could have been one of the forming methods used. Both inside and outside surfaces are usually well finished while the decoration was applied on the external one, comprising flutes (Plate IX.3), incisions (Plate IX.2) or excision filled with red paste (Plate IX.1). These morphological differences can be linked to specific functional activities such as the use of conical plates in cooking processes and the use of dishes for serving shared meals.

##### *Bowls*

Four sub-types of bowls were identified: *hemispherical bowls* (Plate XI.1), *carinated bowls* (Plate XI.2), *round-shouldered bowls* (Plate XI.3) and *straight-shouldered bowls* (Plate XI.4, 6, 7). Also, multiple types of rim variants were identified. This variability in morphology can also be observed in the paste types used, forming sequences (discussed above), surface finishing, decoration and firing (see below). Their percentage in both batches is around 30%.

Average of the rim diameter (cm)						
Feature	Cups/Beakers	Conical plates	Bowls	Pots	Cylindrical body	Lids
<b>Cpl. 50</b>	13.4 (n=27)	25.6 (n=12)	20.3 (n=13)	22.4 (n=27)	27.5 (n=4)	18.5 (n=3)
<b>Cpl. 51</b>	13 (n=5)	29.5 (n=8)	25.3 (n=16)	21.1 (n=15)	26.6 (n=3)	30 (n=4)

**Table 3.** Nanov – ‘Vistireasa 3’. Average of the rim diameters measured for principal form categories from the Cpl. 50 and Cpl. 51 features.

Nanov – ‘Vistireasa 3’. Media diametrelor la gură măsurate pentru principalele categorii de formă din complexe Cpl. 50 și Cpl. 51.

### Closed forms

#### *Pots*

Pots represent the most often encountered category of forms within the analysed pottery. They are of three types: *hole-mouth pots* (Plate XIII.1, 4), *biconical pots* (Plate XIII.2, 3, 5-9) and *collar-neck pots* (Plate XIII.6). The pots were most frequently made with the paste recipe denoted as T4-5. The bases were formed by clay slabs, and the walls were built in several stages with the aid of the horizontal-coil technique. The well finished inner surfaces and rough or barbotined external surfaces are other specific treatments for these types of forms. The firing was incomplete oxidizing. Many of them have soot traces and carbonisation marks (Skibo 2013) resulting from their usage as cooking containers (Thissen 2014: 101).

#### *Cylindrical body vessels* (Plate XII.1-4)

This type comprises medium-sized and large vessels with cylindrical walls, thick shoulders, and short inward rims. The lower parts are conical, and their bases are flat or footed. A flat base was observed on one restored medium-sized vessel of this type (Plate XII.1), discovered from Cpl. 50 feature<sup>3</sup>. Flat bases are specific to large cylindrical vessels, while the identified fragments of feet could have also originated from this type of shapes of medium dimensions, as these are known from other Lower Danube sites from the same period (Comșa 1974: 108-9). The paste of this form category is usually of T4-5 type and the only forming technique observed was the horizontal-coil method. External excision is the main decoration method related to this type of form, very often being filled with white paste. The interiors of the walls were scraped and red/white paste was applied after firing.

### Special forms

#### *Lids*

The identified fragments are from lids of two types: the simple conical (Plate XIV.4) and the type with shallow walls and cylindrical or slightly conical necks (Plate XIV.1-3). The first one is made with T4-5 paste type, roughly finished and incompletely oxidised. The second one varies concerning paste, surface treatments, decorations, and firing. Paste types T2, T3, and T4-5, were used to build these lids. The presence of slabs was also noted. Excised (Plate XIV.1) and graphite painted decoration (Plate XIV.2) were identified only in one case each.

#### *Strainers*

Having a rare occurrence, the fragments of the so-called strainers present in the two analysed batches are at least of two types: conical (Plate XV.4) and hemispherical (Plate XV.5). Based on the abrasion traces observed on the conical type it is obvious that they were used with the larger diameter as the base, and therefore cannot be considered proper strainers. Most probably, the hemispherical ones had this function.

#### *Pedestal vessels* (Plate XV.3)

The amount of items in this category was based on the number of ceramic feet fragments identified. It is possible that these feet originate from categories already counted, such as cylindrical body vessels or dishes (see above).

#### *Stands*

Two fragments of ceramic stands were identified, both discovered in the Cpl. 50 feature. One of them belonged to a cylindrical stand (Plate XV.2) decorated with horizontal flutings on the external surface and scraped on the inside. Another fragment originated from a parallelepiped stand (Opris and Lazăr 2015) with the outer surface polished and the internal one smoothed. Both of them have visible traces of abrasions on their tops, formed during usage.

### **Decoration**

The same range of decoration methods was used for the pottery from both features (Table 3), but slight differences could be observed in the proportions related to every pottery batch (Plate V.1). Barbotine was the most common and was applied on the external surfaces of most of the pots (in the strict sense) (Plate XIII) and conical plates (Plate X). It is an external surface finishing method, which consists of a coat of clay applied soon after the vessel's final forming process. Also, it is considered a decoration method because very often this procedure implied the creation of vertical, horizontal or oblique lines drawn with the fingers. The so called *impresso* decoration was observed in correlation with barbotine, and it is represented by stripes of clay with finger impressions, attached horizontally, under the rim of hole-mouth pots (Plate XIII.4) or obliquely, on the walls of conical plates (Plate X.3).

Small polished channels, commonly denoted as flutes or *plissé* (Thissen 2014) have been made on the necks of cups, beakers, and more rarely on dishes and bowls (Plates VII.3-6, VIII.1-5,

IX.3 and XI.7). The same categories of shapes were decorated with graphite paint that was applied before the firing on burnished surfaces and very often used together with *plissé* (graphite paint on the lower part of the neck and horizontal parallel flutes in the upper part) (Plate VIII.1-6). Graphite paint decoration was also rarely encountered on the rims of some highly decorated cylindrical body vessels (Plate XII.3) or on the rim zones of lids (Plate XIV.2).

Feature	Painted			Incised	Excised	Flutes/ <i>Plissé</i>	Impresso	Barbotine	Undecorated
	Graphite	Red	White						
<b>Cpl. 50</b>	36	28	14	66	45	61	12	359	727
<b>Cpl. 51</b>	12	7	5	64	43	97	13	410	1054

**Table 4.** Nanov – ‘Vistireasa 3’. Numerical distribution of decoration types.

Nanov – ‘Vistireasa 3’. Distribuția numărului de tipuri decorative.

The red and white pastes were encrusted in the excised/incised patterns or coated the inside of particular black vessels after the firing process in an unoxidised/reducing atmosphere. In the interior of cups and beakers, the paste (most often red and very rarely white) was applied on a roughened strip under the rim (Plate VIII.4). It was a common practice observed on beakers from a wide range of final Boian phase sites on both sides of the Danube (Morintz 1953; Berciu 1961; Todorova 1975, 1983; Comşa 1990). The cylindrical body vessels had the upper half or the entire internal surface dyed with red (Plate XII.2-3), sometimes over a white layer. Pottery samples with white or red paste from feature Cpl. 50 were subject to archaeometric analysis in order to establish the recipes used for red and white pastes (Opriş *et al.* 2016), but the final results will only be published in the spring of 2017. However, at this point of research, it became clear that the red paste is commonly based on iron oxides<sup>4</sup>, while the white paste is more heterogeneous, containing calcite, gypsum, kaolin and other compounds that will be determined in the near future.

Incised designs were made on the bowls and very rarely on dishes and bi-conical pots (Plate IX.2). The patterns were created with parallel lines, cuts or circles, in some cases being filled with white paste. Excised decoration encrusted with white paste (Plates XII.3, XIV.1 and XV.3), and occasionally with red (Plate IX.1), is considered to be the defining technique used for the Boian ceramics (Comşa 1954: 372; Pandrea 2000: 39). In the two analysed batches, the percentage of this type is very low with only 3.3% in the Cpl. 50 and 2.5% in the Cpl. 51 (Plate V.1). The widely excised models are specific for the vessels with a cylindrical body (Plate XII.1-4). The excision was performed using sharp tools. It was allegedly considered that flint blades were used for this purpose (Comşa 1990: 57). However, the inside of the excisions preserved marks of the tools used for removing the clay, and it is more likely that the utensils were made out of plant fibers, probably wood or dried stems. This supposition was confirmed by our experiments with leatherhard vessels. The marks made with spatulas of dry reed were very similar to those observed on the original vessels. Moreover, flint tools have proved troublesome for this type of activity, especially for the vessels tempered with chaff.

### Firing

Remains of pottery firing structures were not discovered on the site and probably the firing of pottery took place outside the dwelling areas. Four firing categories were identified based on the colours observed in the fractures (Rye 1981: 114-19; PCRG 2010: 28). The pottery from both features is characterised mainly by incompletely oxidised and unoxidised/reducing firing atmospheres, while completely oxidised and irregularly fired sherds have a very low frequency (Plate V.2). The ratio between the oxidising and reducing firing categories is almost equal for the pottery batches from Nanov – ‘Vistireasa 3’, with preferential treatment for certain categories of form and decoration. Thus, most of the cups, beakers, bowls, dishes and excised vessels were fired in a controlled environment where the access of oxygen was interrupted at a time of combustion, resulting in black pottery. This type of firing took place in specially arranged structures, probably pits covered at a specific moment (Rye 1981: 98; Tencariu 2015). The uniform black colours as observed in most fractures suggest that the firing structures were closed while cooling down (Rye 1981: 118; Thissen 2014: 100). Pots of different shapes and rough surfaces or with barbotine decoration were incompletely oxidised, sometimes irregularly, both distinct patterns of an uncontrolled combustion such as an open firing (Rye 1981: 97-8; Comşa 1990: 66). Also, the abundance of organic material used as temper had a certain role in maintaining the black cores of the vessels fired in an oxidising atmosphere (Rye 1981: 115). This preferential system for firing pottery can be interpreted as the result of production environments with

different degrees of specialisation: a highly specialized one for the potters who were making black fine ceramics or excised vessels and a household local production for incompletely fired vessels (Thissen 2014: 104).

Secondary firing marks were identified as soot traces linked to cooking on the open fire and were observed on the pots and conical plate fragments from both features. Some sherds from a largely excised vessel from Cpl. 50 feature were over-fired, but we could not determine if this was the effect of the primary firing or a secondary firing.

### Discussions and conclusions

The pottery from the features Cpl. 50 and Cpl. 51 excavated at the Nanov – ‘Vistireasa 3’ is representative of the shapes and decorations associated with the final phase of the Boian culture<sup>5</sup>, similar materials being discovered in settlements in Northeastern Bulgaria (Ovcharovo, Polyanitsa, Radingrad, Rousse) and South/Southeastern Romania (Căscioarele-Ostrovel, Petru Rareș, Radovanu, Spanțov, Tangâru). However, in both batches a few, but specific, shapes (Plates IX.4-5, XII.1 and XV.1) that can be assigned to the later A1 phase of the Gumelnița culture were identified. The relatively high percentage of graphite decorated vessels identified in the Cpl. 50 feature is another characteristic of the Gumelnița A1 phase. These elements date the production of the pottery from the two pits at the beginning of the middle Eneolithic, in a transitional phase between the Boian and Gumelnița cultures. Recent aDNA analysis has demonstrated that both populations, Boian and Gumelnița, have similar genetic features that are due to a common origin in Southwestern Anatolia from where they arrived in the Balkans after a slow process of migration (Hervella *et al.* 2015).

Regarding the paste recipes, it is important to note that the observed intensive usage of chaff as temper is not a common practice for the final Boian phase (Berciu 1961, Comșa 1974), or for the later Gumelnița ceramic tradition (Voinea 2005), in which the use of grog prevails. As Comșa has noted after studying Eneolithic pottery from Ipotești (Comșa 1973), the usage of chaff as temper for pottery of Boian final phase is specific only to the Western Wallachian area and this assertion has been confirmed to date by the later studies performed on pottery from Teleor 008 (van As *et al.* 2006; Thissen 2014) and by the results of the current analysis.

The majority of the clays used were of an alluvial nature, containing white mica and quartz inclusions of various dimensions, suggesting different sources or a single source but special treatments in the separation of inclusions, by using methods including sieving or levigation. The near watercourse of the Vedea River could have been the area from which the clay for the pottery was collected (cf. van As *et al.* 2005: 63, 66-7). The seven sherds with abundant limestone inclusions are an exotic presence, probably originating from other production sites or indicating an uncommon clay source.

The paste recipes were prepared according to the size and function of the future vessel. The T1 and T2 paste types broadly correspond to the F1 fabric type identified by Thissen in the Boian pottery batches from Teleor 008 (Thissen 2014: 98) and were mainly used for making cups and beakers. The major differences consist in the presence of painted decoration (graphite on the outside/red and white paste on the inside) on the fine pottery from Nanov – ‘Vistireasa 3’, and the reddish-orange-yellow colour of some sherds. The paste type T4-5 (chaff tempered) is very similar to the F7 fabric from Teleor 008, being also the most often encountered and having percentages up to 80% in the latest phase (Thissen 2014: Fig. 2).

At the site level, the technological analysis reveals a common pottery production for specific categories of vessels. Similarities can also be observed in the percentage of the constructed shapes and their relation to specific manufacturing techniques, even though some differences can be spotted. The main vessels that were produced were common pots made with chaff tempered unsorted clay and fired under incompletely oxidising circumstances, most probably reflecting a household pottery production. A specialised pottery production (Thissen 2014: 104) can be upheld by the recurrence of the well sorted clay and sophisticated shapes, decorations and reduced firings such as those used for cups, beakers, shouldered bowls, dishes, and cylindrical body vessels.

### Acknowledgements

We are grateful to Pavel Mirea for enabling us the access to the pottery from Nanov – ‘Vistireasa 3’ site and for the valuable discussions we had. Special thanks go to Laurens Thissen, Theodor Ignat and Cătălin Lazăr for their helpful comments and suggestions. Marius Blasko helped us by providing valuable assistance in drafting the text in English.

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## Note

<sup>1</sup> This study did not include three partially restored vessels from the Cpl. 50 feature and one from the Cpl. 51. These were in the process of restoration in the laboratory of Teleorman County Museum at the time of our direct analysis of the two batches described here.

<sup>2</sup> In Anglo-Saxon literature, the equivalent of *paste* is the term *fabric* (rarely *paste*), which besides physical characteristics of matrix constituents also takes into consideration the firing conditions (Orton *et al.* 1993: 67).

<sup>3</sup> This is one of the vessels indicated at Note 1, which was not available at the time of our analysis and therefore was not included in our study.

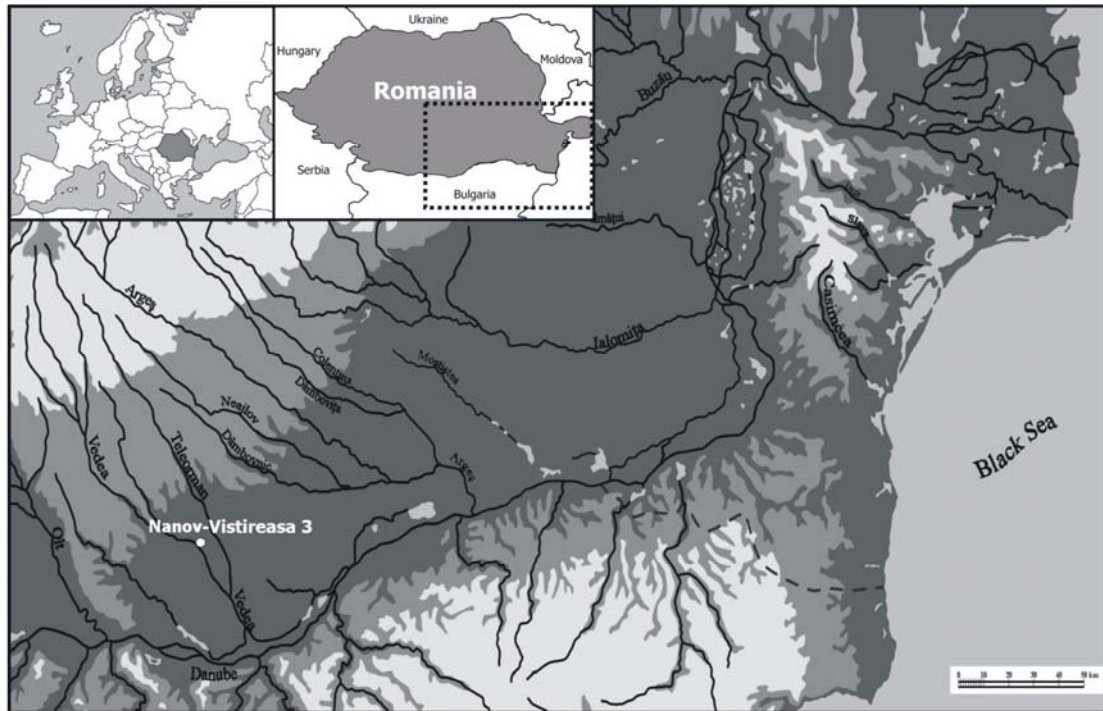
<sup>4</sup> See also Găță and Mateescu 1999-2001 for a review of the use of ochre in southern Romania Neo-Eneolithic period.

<sup>5</sup> In Romania it is called the Spantov aspect (Morintz 1953) or the transition phase from the Boian culture to the Gumelnița (Comșa 1974), and in Bulgaria is considered the IV<sup>th</sup> stage of the Polyanitsa culture (Todorova 1978; Naydenova 2010).

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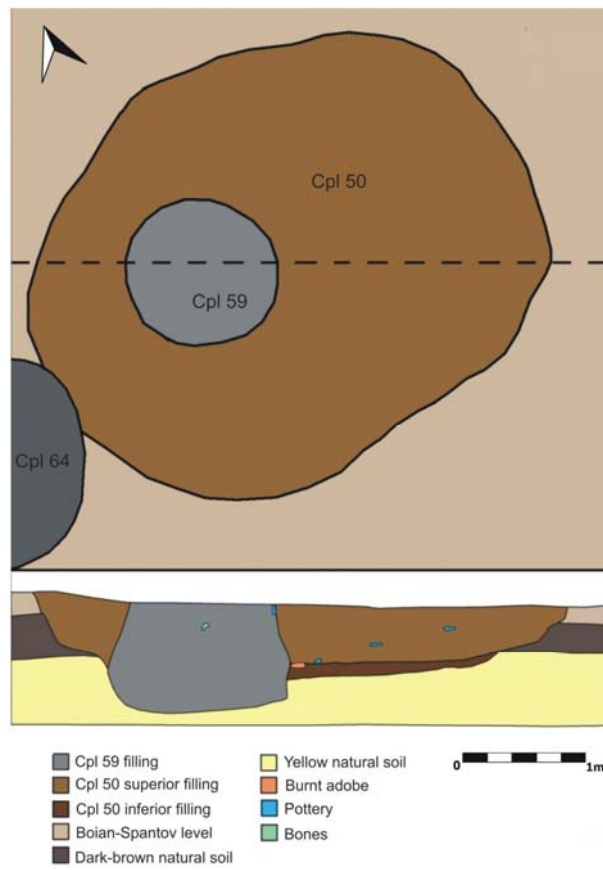
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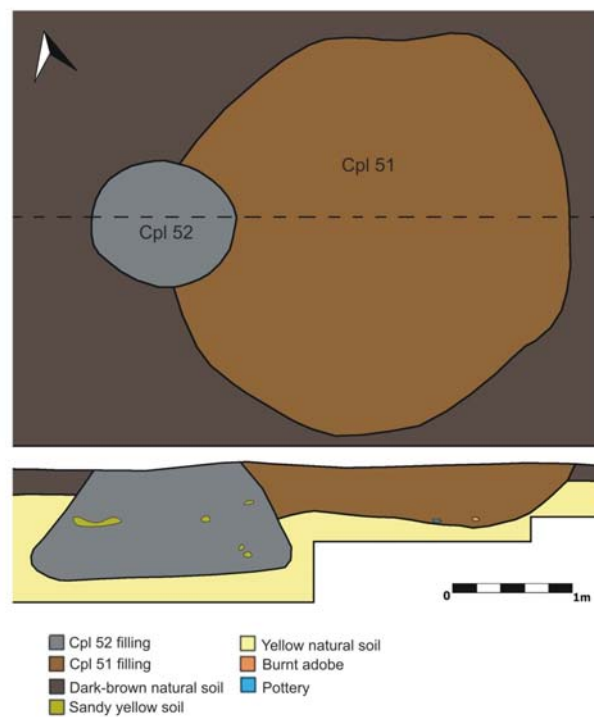
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**Plate I.** Nanov – 'Vistireasa 3' 1. Location of the site (map after Lazăr and Parnic 2011, modified); 2. Researched surface and the site position on the route of the Alexandria's bypass road (km 7+450 - 7+780).

Nanov – 'Vistireasa 3' 1. Localizarea sitului (hartă după Lazăr și Parnic 2011, modificată); 2. Suprafața cercetată și amplasamentul sitului pe ruta șoselei ocolitoare a Alexandriei (km 7+450 - 7+780).

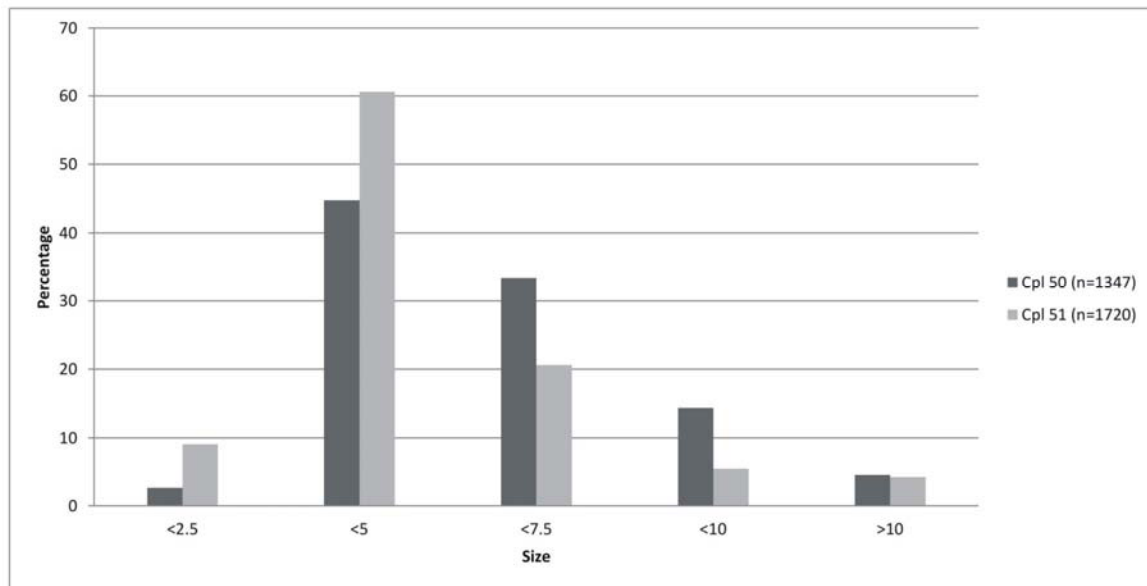


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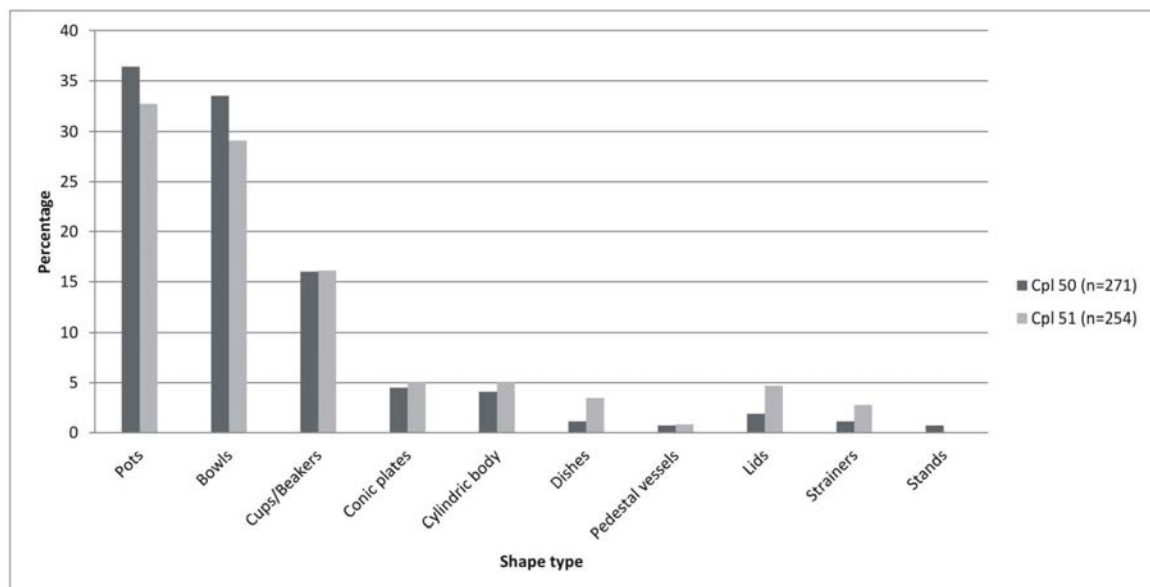


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**Plate II.** Nanov – ‘Vistireasa 3’. Features drawings: 1. Cpl. 50 and Cpl. 59; 2. Cpl. 51 and Cpl. 52.  
 Nanov – ‘Vistireasa 3’. Reprezentarea grafică a complexelor: 1. Cpl. 50 și Cpl. 59; 2. Cpl. 51 și Cpl. 52.



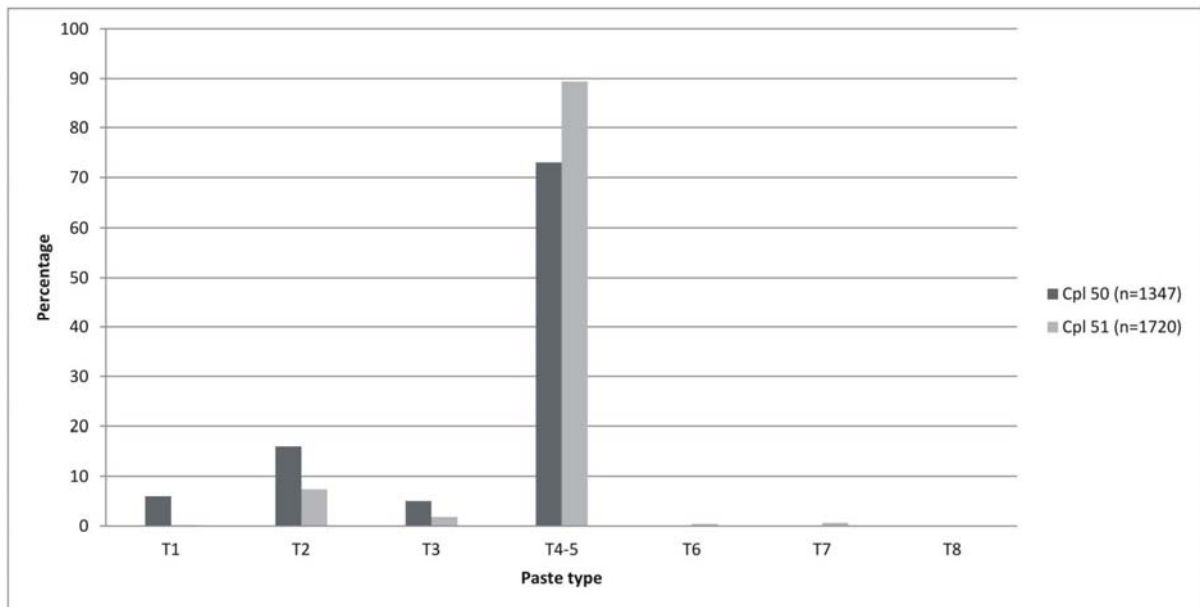
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**Plate III.** Nanov – ‘Vistireasa 3’. 1. Fragmentation by sherd size; 2. Shape type distribution according to diagnostic sherds.

Nanov – ‘Vistireasa 3’. 1. Gradul de fragmentare raportat la dimensiunea cioburilor; 2. Distribuția categoriilor de formă bazată pe fragmentele de diagnostic.



1



T1



T2



T3



T4-5



T6



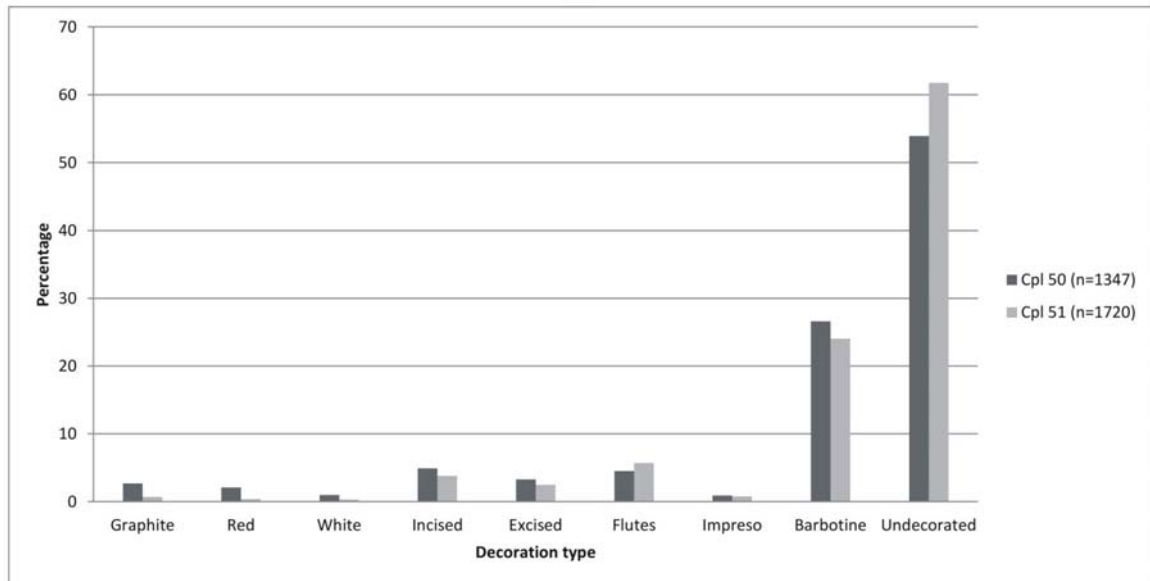
T7



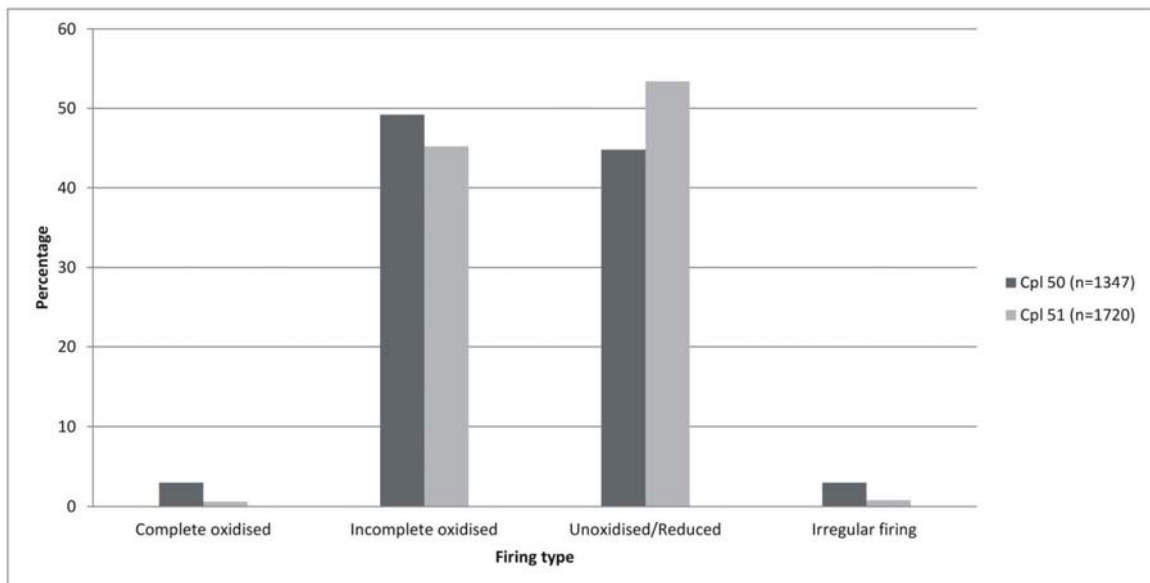
T8

**Plate IV.** Nanov – 'Vistireasa 3'. 1. Distribution of principal paste types; T1-8. Examples of paste types identified (without scale).

Nanov – 'Vistireasa 3'. 1. T1-8. Exemple de tipuri de pastă identificate (fără scară).



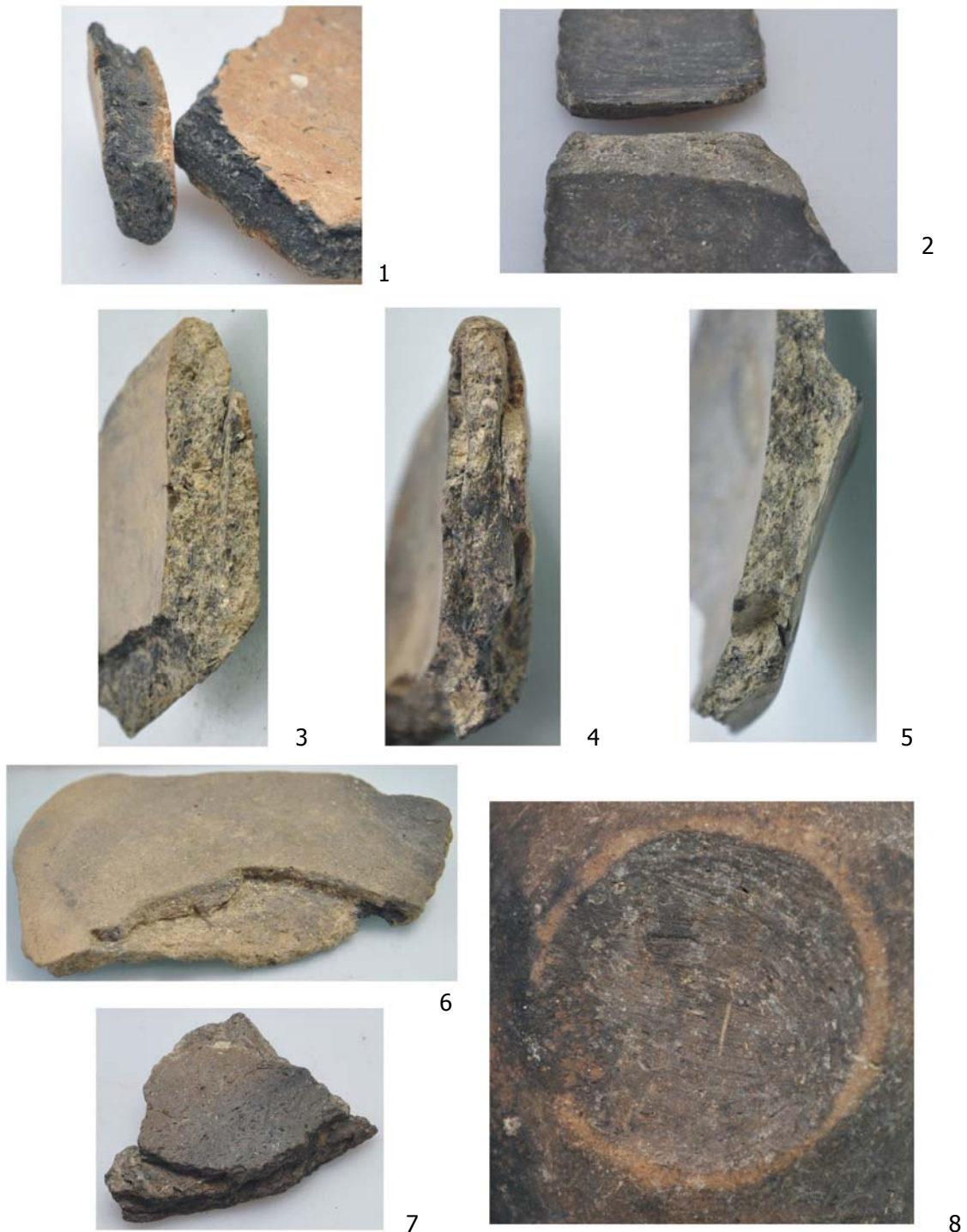
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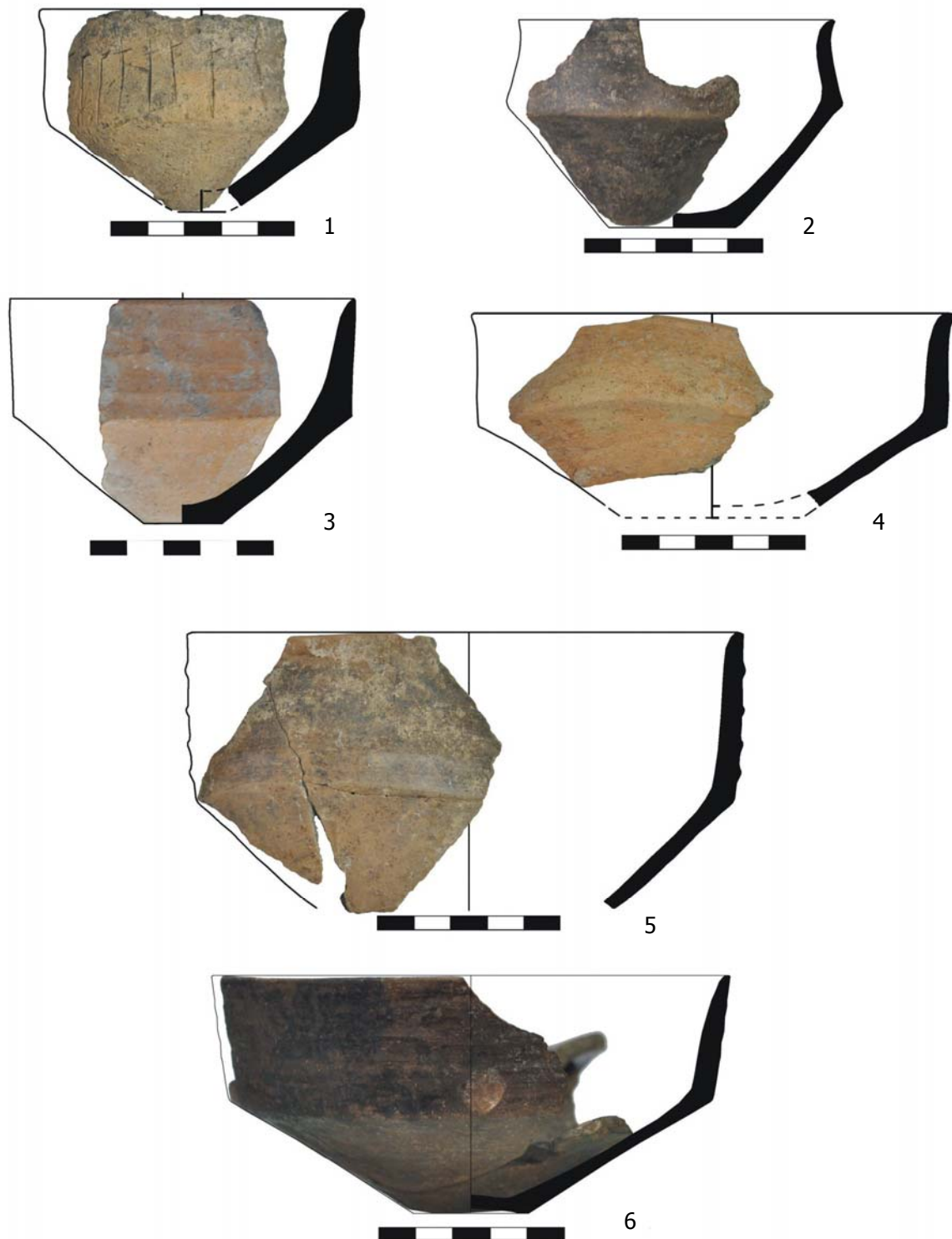
**Plate V.** Nanov – ‘Vistireasa 3’. 1. Frequency of decoration methods in the analyzed batches; 2. Distribution of principal firing types.

Nanov – ‘Vistireasa 3’. 1. Frecvența metodelor decorative în loturile analizate; 2. Distribuția principalelor tipuri de ardere.

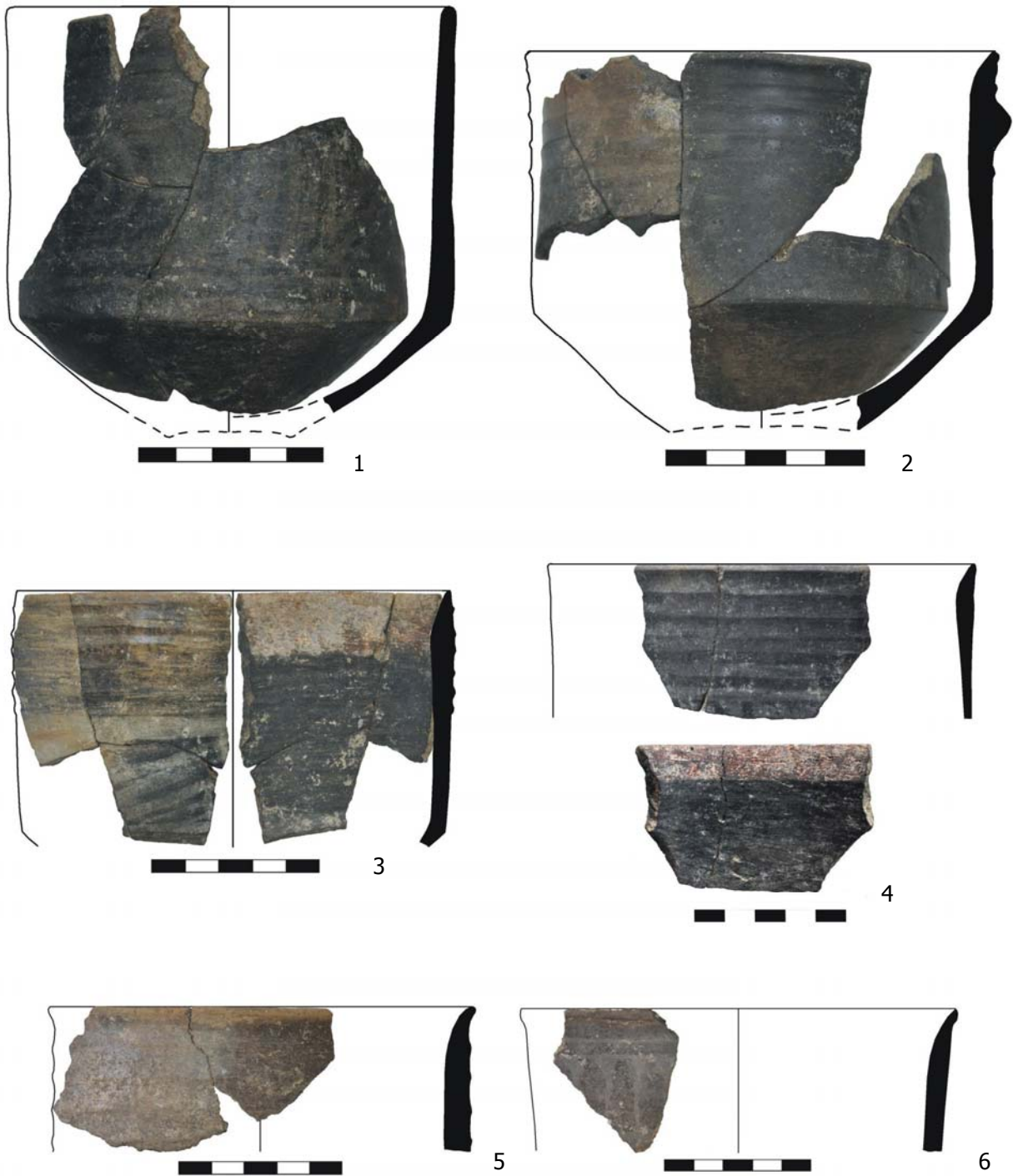


**Plate VI.** Nanov – 'Vistireasa 3'. Forming methods: horizontal coils (1); two cones of a bowl joined together (2); trapezoidal plate wall: two coils and a slab on the external surface (3); plate wall reinforced with slabs (4); joining of cones and clay slab on the shoulder of a bowl (5); uneven laminar fracture on a pedestal dish (6); straight laminar fracture on a lid (7); prints of a vegetal tool on the bottom of a cup (8) (1, 2, 7, 8 from Cpl. 50; 3-6 from Cpl. 51) (without scale).

Nanov – 'Vistireasa 3'. Metode de formare: colaci orizontali (1); castron din două trunchiuri de con lipite (2); perete de platou tronconic: doi colaci și placă pe suprafața exterioară (3); perete de platou întărit cu plăci (4); lipitura trunchiurilor de con și a unei plăci din lut pe umărul unui castron carenat (5); fractură laminară neregulată pe o strachină cu picior (6); fractură laminară dreaptă pe un fragment de capac (7); amprentele unei ustensile din fibre vegetale pe fundul unei cupe (8) (1, 2, 7, 8 din Cpl. 50; 3-6 din Cpl. 51) (fără scară).

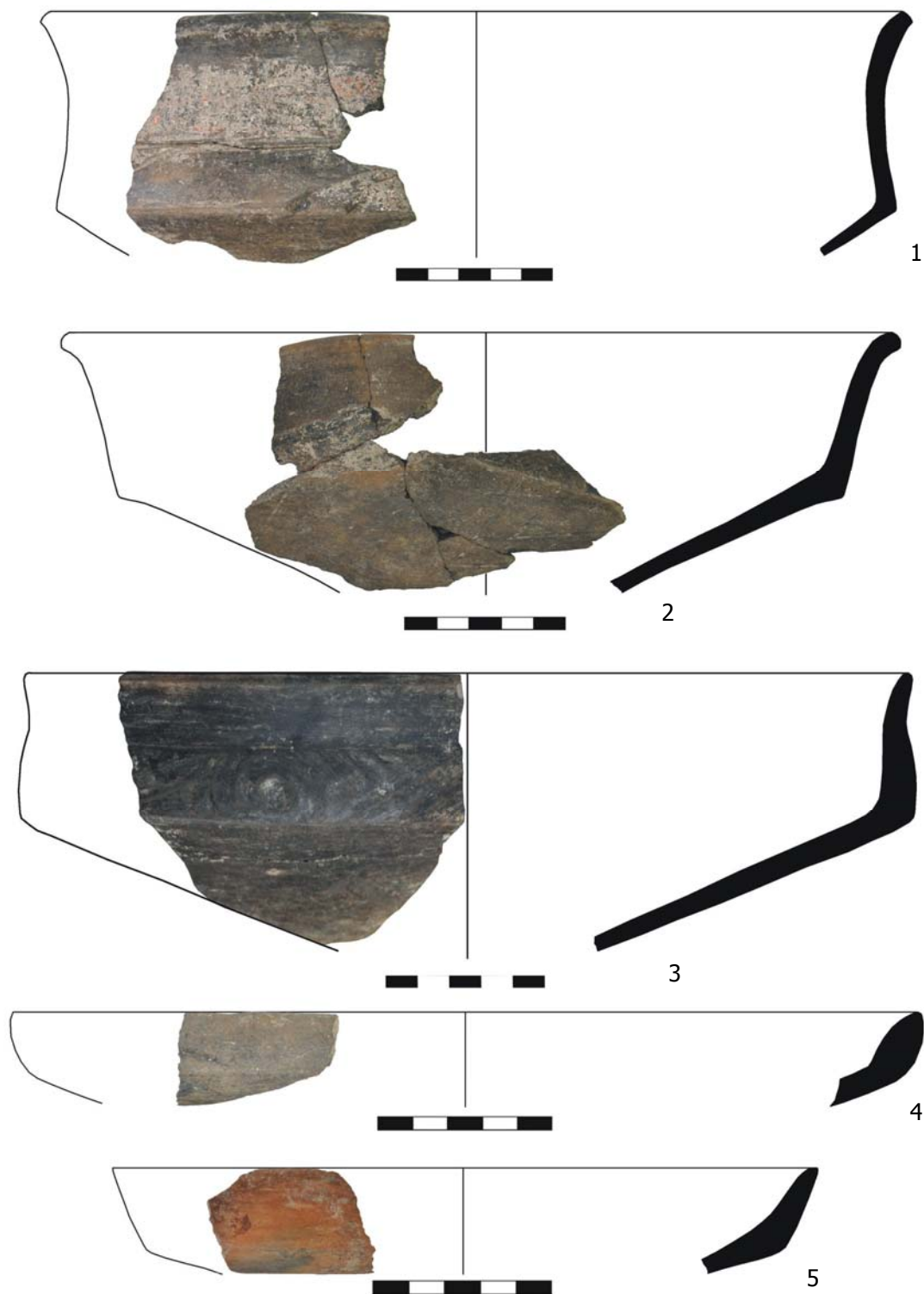


**Plate VII.** Nanov – *'*Vistireasa 3'. Cups: 3, 6 from Cpl. 50; 1, 2, 4, 5 from Cpl. 51.  
Nanov – *'*Vistireasa 3'. Cupe: 3, 6 din Cpl. 50; 1, 2, 4, 5 din Cpl. 51.

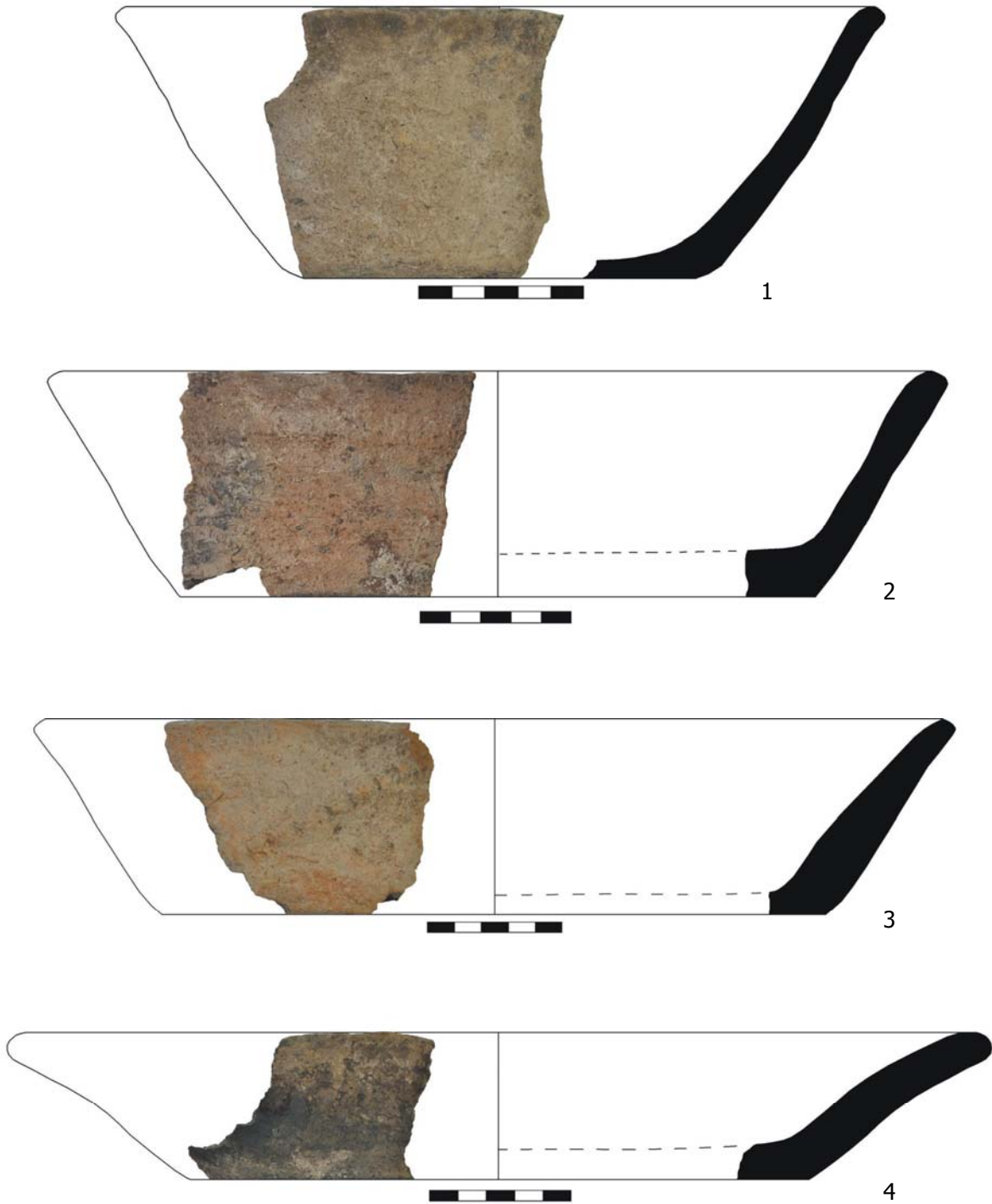


**Plate VIII.** Nanov – 'Vistireasa 3'. Beakers: 1-4 from Cpl. 50; 5-6 from Cpl. 51.

Nanov – 'Vistireasa 3'. Pahare: 1-4 din Cpl. 50; 5-6 din Cpl. 51.

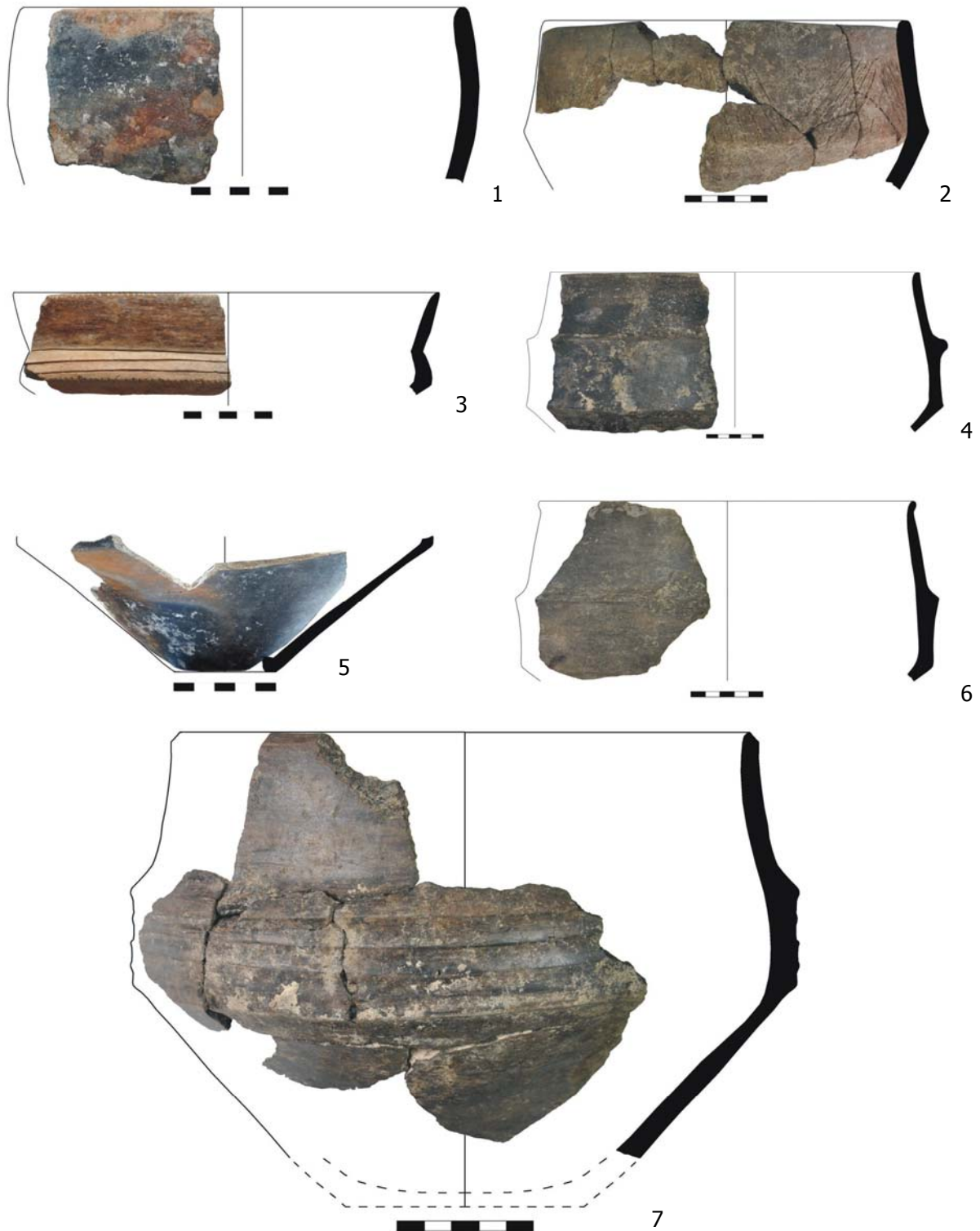


**Plate IX.** Nanov – *'*Vistireasa 3'. Dishes: 3 from Cpl. 50; 1, 2, 4, 5 from Cpl. 51.  
Nanov – *'*Vistireasa 3'. Străchini: 3 din Cpl. 50; 1, 2, 4, 5 din Cpl. 51.



**Plate X.** Nanov – 'Vistireasa 3'. Conic plates:1 - 4 from Cpl. 51.

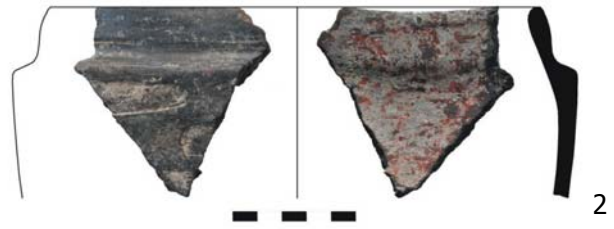
Nanov – 'Vistireasa 3'. Platouri tronconice:1 - 4 din Cpl. 51.



**Plate XI.** Nanov – *Vistireasa 3'*. Bowls: 1, 3, 5 from Cpl. 50; 2, 4, 6, 7 from Cpl. 51.  
Nanov – *Vistireasa 3'*. Castroane: 1, 3, 5 din Cpl. 50; 2, 4, 6, 7 din Cpl. 51.



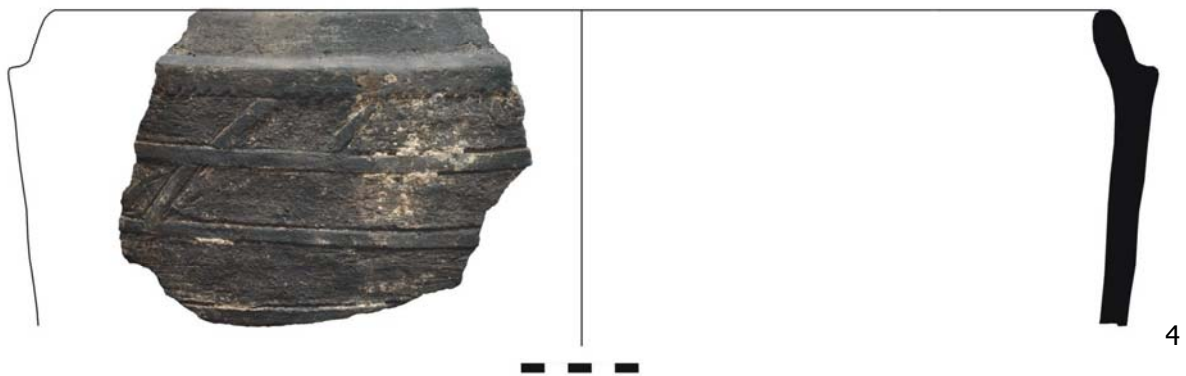
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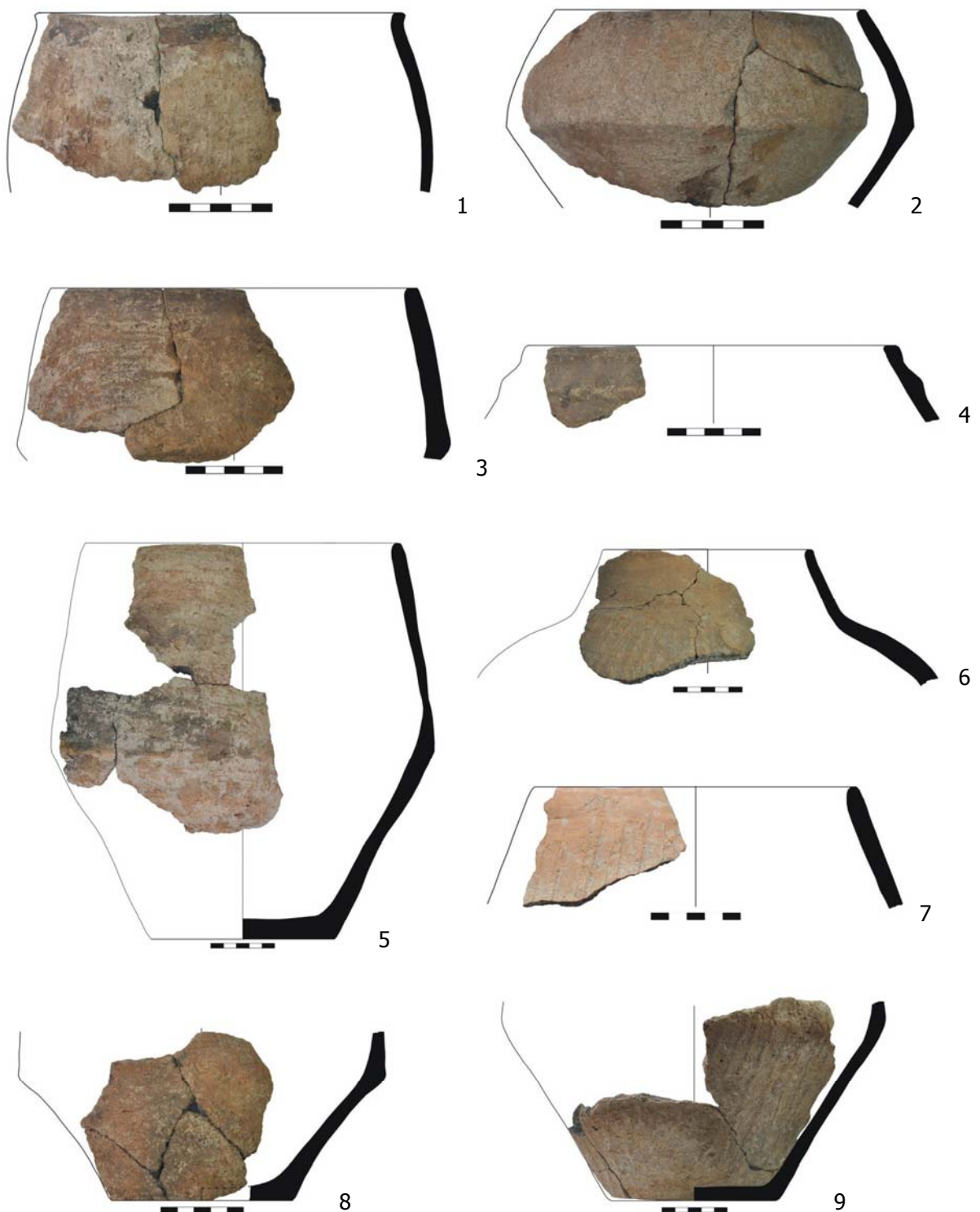


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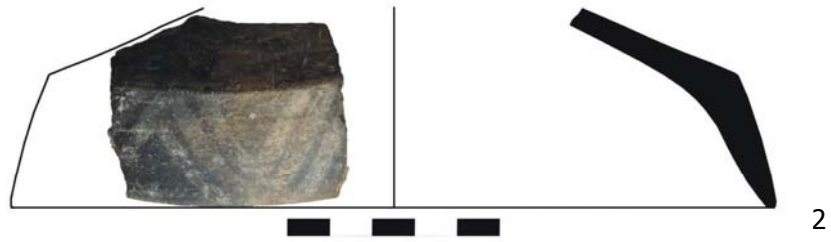
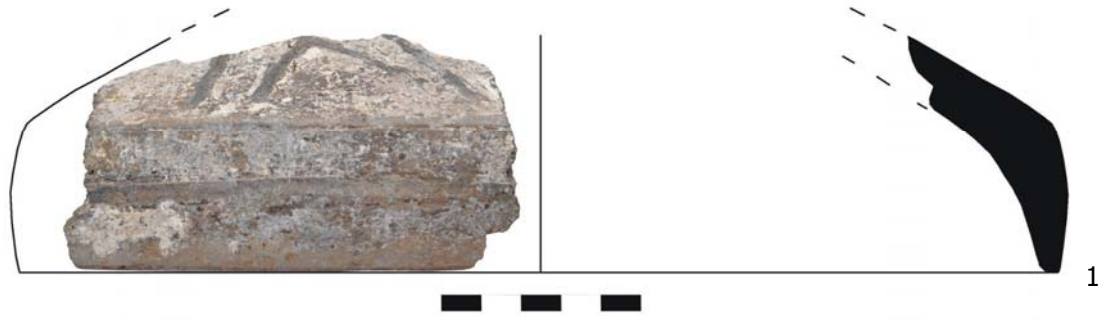


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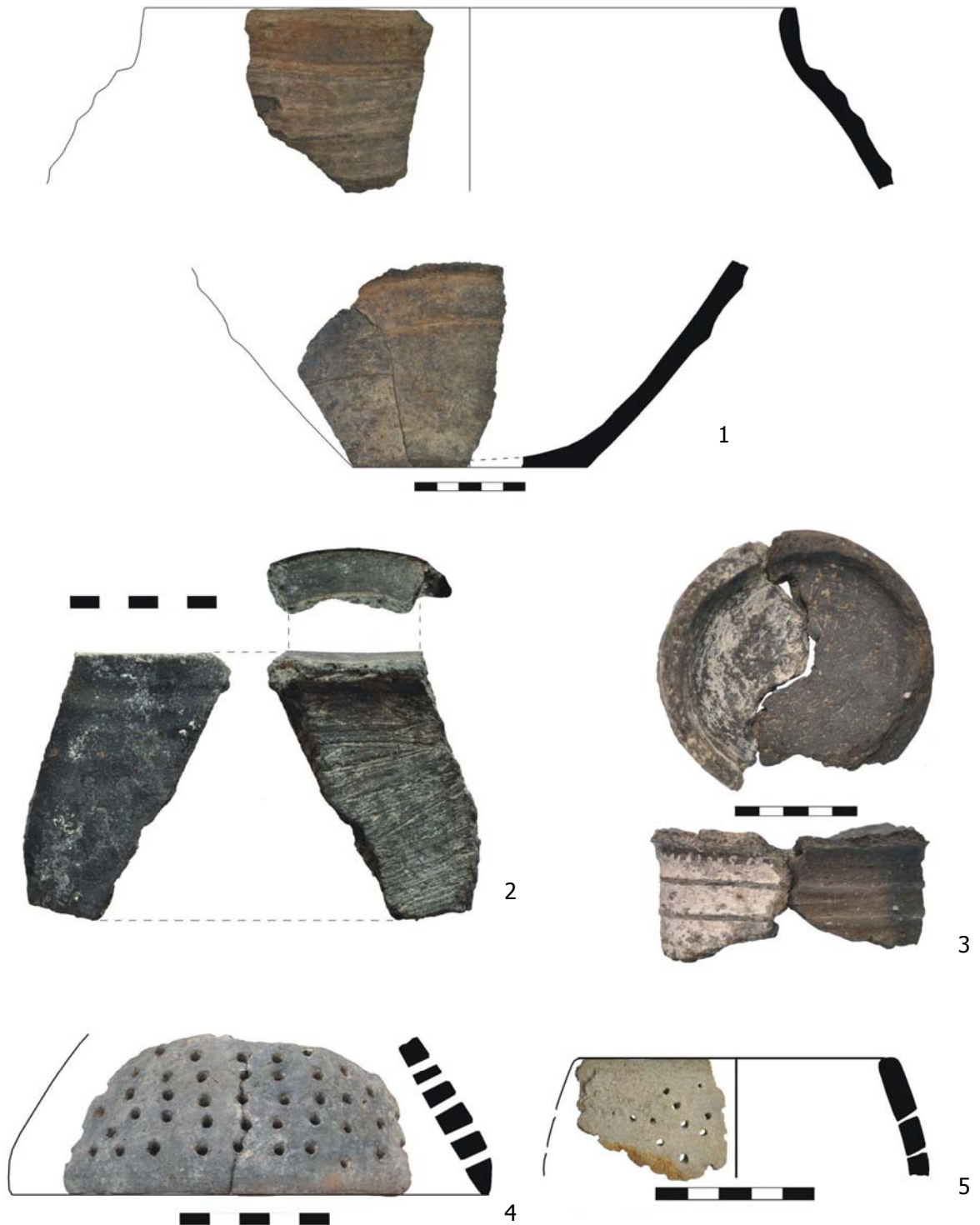
**Plate XII.** Nanov – 'Vistireasa 3'. Cylindrical body vessels: 1 - 4 from Cpl. 50.  
Nanov – 'Vistireasa 3'. Vase cu corp cilindric: 1 - 4 din Cpl. 50.



**Plate XIII.** Nanov – ‘Vistireasa 3’. Pots: 7 from Cpl. 50; 1 - 6, 8-9 from Cpl. 51.  
Nanov – ‘Vistireasa 3’. Oale: 7 din Cpl. 50; 1 - 6, 8-9 din Cpl. 51.



**Plate XIV.** Nanov – ‘Vistireasa 3’. Lids: 1 - 3 from Cpl. 50; 4 from Cpl. 51.  
Nanov – ‘Vistireasa 3’. Capace: 1 - 3 din Cpl. 50; 4 din Cpl. 51.



**Plate XV.** Nanov – *Vistireasa 3'*. Lower and upper parts of a large pear-shaped vessel (1); Circular stand (2); Excised decorated foot of a pedestal vessel (3); Strainers (4-5) (2-4 from Cpl. 50; 1, 5 from Cpl. 51).

Nanov – *Vistireasa 3'*. Vas mare piriform (1); Suport circular (2); Picior de vas decorat cu excizie (3); Strecurători(4-5) (2-4 din Cpl. 50; 1, 5 din Cpl. 51).