

A New Approach to the Periodization of Polished Ceramics of the Saltovo-Mayaki Culture

Evgeny SUKHANOV¹

Abstract. *The article presents a technique of periodization of the Saltovo-Mayaki culture burials based on the shapes of polished vessels. The methodological basis of the research is historical-and-cultural approach. This is a scientific direction developed by the famous Russian ceramic researcher A.A. Bobrinsky. The materials of the study are the most popular categories of vessels from the catacomb cemeteries of the Saltovo-Mayaki culture. These are jugs and cups from Dmitrievka and Yutanovka cemeteries. The main hypothesis of the study is as follows: (1) Burials with polished vessels of the mass traditions of shapes creating are earlier on the cemetery; (2) During the necropolis functioning, the erosion of mass traditions of vessel shapes creating took place; and (3) Distribution of new (possibly mixed) traditions belongs to the late period of necropolis functioning. Burials with vessels of the 'new' traditions should be attributed to the late period of the burial ground's existence. The hypothesis found a number of independent confirmations at both burial sites studied. These are metal inventory, planigraphy, and topography of graves.*

Rezumat. *Articolul prezintă o tehnică de periodizare a înmormântărilor din cultura Saltovo-Mayaki pe baza formelor pe care le prezintă vasele lustruite. Baza metodologică a cercetării o reprezintă abordarea istorico-culturală. Aceasta este o direcție științifică dezvoltată de faimosul ceramolog rus A.A. Bobrinsky. Materialele studiului sunt cele mai populare categorii de vase din necropolele sub formă de catacombe ale culturii Saltovo-Mayaki. Acestea sunt ulcioare și cupe din cimitirele Dmitrievka și Yutanovka. Ipoteza principală de studiu este următoarea: (1) înmormântări cu vase lustruite având forme tipizate sunt cele mai timpurii din necropolă; (2) în timpul funcționării necropolei, s-a produs o diminuare a standardizării formelor vaselor; și (3) distribuția de noi tradiții (eventual mixte) aparține perioadei târzii de funcționare a necropolei. În mormântările cu vase aparținând „noilor” tradiții ar trebui atribuite perioadei târzii a existenței spațiului de înmormântare. Această ipoteză se bazează pe o serie de dovezi independente la ambele locuri de înmormântare studiate. Ele provin din inventarul obiectelor din metal, planigrafia și topografia mormintelor.*

Keywords: Ceramics, Saltovo-Mayaki, polished vessels.

¹ Institute of Archaeology of Russian Academy of Sciences, Department of theory and methods, Dm. Ulyanova, 19, Moscow, 117036, Russia; sukhانov_ev@mail.ru.

Introduction

Chronology is the core of cultural and historical reconstructions based on archaeological sources. The internal chronology of the Saltovo-Mayaki culture is still not well developed in the current time. Perhaps, only belt sets are the only category of the Saltovo-Mayaki items with clear dating capabilities. The current level of knowledge allows us to identify the earliest burial objects related to the formation of the Saltovo-Mayaki culture, and burial with “classic” Saltovo items. Some researchers have proposed their variants of the chronological division of elements of belt elements directly within the “classic” set². However, such schemes sometimes contradict each other.

But the main problem is not even the inconsistency of the chronological schemes mentioned. The fact is that belt sets were a social or age markers in the Saltovo-Mayaki society³. That is why belt sets and their elements are not mass finds in the Saltovo-Mayaki graves.

The recent discoveries show that an important chronological marker may be some types of items that are well known in the North Caucasus but are very rare in the Middle Don. The combination of such items with the earliest belt sets and Byzantine coins strongly suggests that these items were brought to the Don by the first settlers from the Caucasus. Probably they can also be used to highlight the earliest burial complexes of the Saltovo-Mayaki culture on the Middle Don⁴. But such items are too rare to rely confidently on them to develop an internal chronology of the Saltovo-Mayaki culture.

Ceramic vessels are more suitable material for such tasks. This group of sources is more numerous. The most numerous kind of pottery in the catacomb cemeteries of the Middle Don are polished vessels, especially two categories – jugs and cups. They are in the focus of the article.

The article attempts to show the possibilities of historical-and-cultural approach, developed by famous Russian ceramic researcher A.A. Bobrinsky, to the study of the shapes of clay vessels⁵ and the analysis the chronology of the Saltovo-Mayaki contexts. The purpose of ceramics study in the framework of the historical-and-cultural approach is to reconstruct the specific cultural traditions of manufacturers and consumers of pottery, as well as to study the history of the population in ancient times based on data about these cultural traditions⁶.

How can this task be implemented concerning the shapes of clay vessels?

² PLETNEVA 1989; KOMAR 1999.

³ AFANASIEV 1993, 45, 48; FLEROV 1990.

⁴ AKSENOV 2012a.

⁵ BOBRINSKY 1986; 1988; TSETLIN 2018.

⁶ BOBRINSKY 1978.

The choice of historical-and-cultural approach largely related to the historical circumstances of the appearance of Saltovo populations in the Middle Don. It is considered that the main part of the Alans who moved to the Middle Don was from the Kislovodsk basin⁷. In addition to the Central Caucasus population, it was immigrants from other regions, i.e. Western and Eastern Caucasus⁸.

Thus, in the 8th century, several groups of the Caucasian dwellers moved to the Middle Don with their pottery traditions of polished vessel making. These traditions have local origins in the North Caucasus, dating back to the first half of the first millennium AD.

Here it is important to note one thought. There was no other population who practiced the manufacture and widespread funeral use of polished pottery in the Middle Don before (in the 7th–8th centuries) the resettlement of the Alans. This means that different groups of Don Alans who settled this territory in the second half of the 8th century continued their traditions of pottery production at the new place. It follows that polished vessels of the early stage of the Saltovo-Mayaki culture should be made by the traditions that are conversant with a particular human group. Therefore, according to historical-and cultural-approach, the earlier polished ceramics of the Saltovo-Mayaki culture should be vessels made under the most stable traditions of shapes creating.

I will try to prove the hypothesis in the article basing on the analysis of archaeological sources.

The article deals with the results of polished ceramics periodization based on two famous catacomb cemeteries of the Saltovo-Mayaki culture. The first is the Dmitrievka cemetery. It is located in the Upper Seversky Donets. The site was explored since 1957 for eleven field seasons by an expedition led by S.A. Pletneva. More than 170 burials have been studied, most of them are catacombs⁹. The second cemetery is Yutanovka. It is located on the Middle Oskol. The site was investigated in the 1970s and 1980s. 28 catacombs were excavated, most of them were studied by the expedition led by G.E. Afanasiev¹⁰.

In the article, I will try to solve three tasks:

1) To identify vessels that correspond to mass and stable cultural traditions of creating the shape. I mean vessels that have stable and repeated combinations of shape parameters, which are significant in the physiology of the work of the vessel manufacturer. These are the overall proportionality of the vessels, the overall proportionality, and angles of inclination of the functional parts of vessels;

2) To conduct a chronological grouping of the catacombs of Dmitrievka and Yutanovka cemeteries. It is based on the idea that the earlier ones should be catacombs with vessels

⁷ AFANASIEV, RUNICH 2001, 22–23.

⁸ AKSENOV 2012b, 216; MASTYKOVA 2016, 252.

⁹ PLETNEVA 1989.

¹⁰ AFANASIEV 1987, 177.

shapes of mass, stable traditions, and the later ones should be catacombs with vessels shapes made with violations of such mass traditions;

3) To check all conclusions concerning Dmitrievka and Yutanovka periodization using all available independent data.

Methods, materials

The technique used in this article was developed by the famous Soviet and Russian ceramic researcher A.A. Bobrinsky¹¹. He is a founder of historical-and-cultural approach to the ceramic studies in Russian archaeology¹². The technique has not yet started in the English-language scientific literature, and therefore it continues to be unknown. The technique is aimed at the identification of different cultural traditions of potters at the stage of the shaping of vessels.

Objects of analysis are frontal photos of vessels, in exceptional cases – drawings of vessels. At the preparatory stage, the natural shape asymmetry is eliminated by an average contour for each vessel.

A most general level of analysis is a variety of shapes on the general proportions. The analysis of general proportions is the study of the ratio of the height of the vessel to its maximum diameter. This information shows the most common differences in the views of potters and consumers of vessels on the dimensional parameters of clay products. This level of analysis is used in the article.

According to historical-and-cultural approach, the physiology of potter's work is a basis for the division of a vessel's shape into different functional parts. Each act of the shape creation involved two types of accented physical effort of the potter – point and spatial. Potter's point of physical effort is targeted to the separation of one part of the vessel from another. Points of application of such efforts can be identified using, for example, circular patterns (Figure 1). The second level of analysis is based on this information.

A more detailed level of analysis is a variety of shapes on their 'natural structures' and details of the vessel's functional parts. According to historical-and-cultural approach, a vessel can consist of 7 functional parts: 'lip' (top edge of vessel capacity), 'cheek' (part for pouring out), 'neck' (dispenser of pouring out), 'shoulder' (limiter of filling), 'brachium' (additional storage capacity), 'body' (main filler) and 'base' (bottom edge of vessel capacity). Names of functional parts were borrowed from the vocabulary of real potters by A.A. Bobrinsky¹³.

The shape of each functional part of the vessel can be characterized by two parameters – general proportions and angle of inclination. General proportions are responsible for the

¹¹ BOBRINSKY 1986; 1988.

¹² TSETLIN 2017.

¹³ BOBRINSKY 1988, 6.

overall ratio of altitude and latitude parameters of a particular part of the vessel. It is calculated as the ratio of the height of the part to the half-sum of the bases. The angle of inclination is measured by the slope of the line drawn between the points that distinguish a specific functional part on the left or right half of the vessel contour.

In the article I will mention only parameters which give clear result for distinguishing different cultural traditions of vessel shape creation:

- 1) General proportions of the whole vessel;
- 2) General proportions of 'body';
- 3) Angles of 'shoulder' or 'brachium'¹⁴;
- 4) General proportions of 'neck'.

The main task of all the procedures is to identify the most popular and stable traditions of creating the shape of polished vessels basing on a combination of these parameters.

Such sources were investigated: 157 jugs and 103 cups from the Dmitrievka cemetery, 15 jugs, and 10 cups from Yutanovka cemetery. Thus, the material of this study consists of 285 polished vessels.

Analysis

1) *Dmitrievka*

1.1. Jugs

The first step of jugs shape study is to analyze their general proportions (hereinafter – GP). It is the ratio of the most general shape parameters – the height of the vessel and the maximum diameter of the vessel. The distribution of GP-values is not normal (Figure 2.1). The histogram shows two groups of jugs. The borders are located about 0.9–1.15 and 1.15–1.4, with peaks around values 1 and 1.2.

What is the significance of these groups? We can take the answer if to divide all jugs into 2 groups based on GP of 'body' by the technique used: jugs with 'low body' and jugs with 'middle/low body'¹⁵. Interval of 'low body' GP is 0.1768–0.3534, interval of 'middle/low body' GP is 0.3535–0.7069¹⁶. The comparison of these groups on the GP of whole vessels shows important differences (Figure 2.2). The most of 'low body' jugs are located in the interval from 1.0 to 1.2. The most of 'middle/low body' jugs are located in the interval from 1.2 to 1.4. Thus, the jugs' differences in GP of the whole vessel are closely related to the differences in GP of 'body'.

¹⁴ In this study, we do not draw a strict line between these two functional parts and consider them together.

¹⁵ See TSETLIN 2018.

¹⁶ TSETLIN 2018, Tab. 2.

The next step is the analysis of 'shoulder' or 'brachium'. The density of the distribution of the values of the angles demonstrates the presence of two groups of vessels (Figure 2.3). They are located at intervals of approximately 115–123° and 125–132°. The border that appears on the histogram around the 123–124° becomes understandable if we compare the angles of 'shoulder'/'brachium' between jugs with 'low body' and jugs with 'middle/low body'. Angles values in the range of 115–123° are found mainly for jugs with 'low body' (Figure 2.4). The situation with 'middle/low body' jugs is somewhat different. In the right part of the histogram (angles values 125–132°), jugs with 'middle/low body' are about 2.5 times more than jugs with 'low body'. Also 'middle/low body' jugs are few in the left part of the histogram.

The results show that there is a certain relationship between the morphological parameters of jugs considered. The general trend is as follows¹⁷:

- jugs with a relatively lower GP usually have 'low body' and low angles of 'shoulder'/'brachium';
- jugs with a relatively higher GP usually has 'middle/low body' and high angles of 'shoulder'/'brachium'.

It is demonstrated by the graph with the results of canonical analysis (Figure 3). The method is shown similarities/differences between objects for several groups of variables set by the researcher. The general trend is quite obvious here. Differences on GP of 'body', i.e. on the horizontal axis, are associated with the characteristics of jugs on two other parameters (GP of whole vessel, angles of 'shoulder'/'brachium'). Therefore, 'low-body' jugs are mostly located in the lower-left part of the graph, and 'medium/low-body' jugs are mostly located in the upper-right part of the graph.

It seems possible to conclude that in this case, we are dealing with jugs made by potters of two different traditions of shaping. These traditions differ both on the most general ideas about the proportions of vessels and the parameters of basic functional parts. The first tradition includes jugs with a lower GP of the vessel (i.e. up to 1.2), 'low body' and angle of 'shoulder' of up to 123° (Figure 5.1–3). The second tradition includes jugs with GP of the vessel (i.e. more than 1.2), 'medium/low body' and angle of 'shoulder' more than 125° (Figure 5.4–6).

1.2. Cups

The analysis of cups is based on a similar algorithm. There is only one difference. Handles of the Saltovo-Mayaki culture cups can be ring-shaped or zoomorphic. It is generally accepted that these differences are significant. I took it into account in this study. Therefore, the cups

¹⁷ The 'neck' analysis was performed, but it did not yield results. Therefore, this information is not provided in the article.

analysis content is the definition of typical traditions for cups with a ring-shaped handle and cups with a zoomorphic handle.

The analysis of 'neck' GP shows some differences between ring-shaped handle cups and zoomorphic handle cups (Figure 4.1). Based on the histogram, it is possible to draw a boundary between the groups around the value of 0.6. Among zoomorphic handle cups, the majority (34 out of 55, i.e. 62%) have 'neck' GP up to 0.6. Among ring-shaped handle cups, the majority (25 out of 39, i.e. 64%) have 'neck' GP above 0.6.

Analysis of 'shoulder'/'brachium' angles showed the following (Figure 4.2). The most of zoomorphic handle cups are in the range of about 123-130°, i.e. actually in the right part of the histogram (36 vessels out of 55). Another result is shown by ring-shaped handle cups. Almost all vessels are in the range of approximately 110-123°.

Based on the data considered¹⁸, it is possible to determine the combinations of shape parameters that are most 'typical' for different groups of cups. Ring-shaped handle cups often have high 'neck' GP (more than 0.6) and lower angles of 'shoulder'/'brachium' (up to approximately 123-124°) (Figure 5.7-9). Zoomorphic handle cups often have relatively lower 'neck' (up to 0.6) and the relatively higher angles of 'shoulder'/'brachium' (more than 125°) (Figure 5.10-12). I assume these variants can claim to be different traditions of the shapes creating for each of the groups of cups considered. In total, about 68% of all studied cups from Dmitrievka are within the framework of these two traditions.

At this stage, the investigation of different traditions of shaping vessels is completed. Now we can move on to the following task.

1.3. Periodization

This part of the article is dedicated to directly testing the main hypothesis of this study. According to this, the main reason of chronological changes of polished vessels were two processes. The first was the erosion of mass traditions of vessels shapes creating; the second was the distribution of new (possibly mixed) traditions.

To check that, it is necessary to divide burials into three groups following polished vessel shapes. The principle of dividing based on a testable hypothesis. The early group (№ 1) includes burials where polished vessels of only mass traditions were found. The intermediate group consists of burials where a combination of polished vessels of mass traditions and polished vessels not corresponding with mass traditions is recorded. Finally, the late group includes burials where all polished vessels do not correspond with the mass traditions of shape creating.

¹⁸ 'Body' analysis and GP of whole vessel analysis were performed, but it did not yield bright results. Therefore, this information is not provided in the article.

After grouping the burials, we have the following result. Group 1 (early) includes 34 contexts: burials 3, 6, 21, 44, 46, 49, 52, 55, 56, 58, 50, 61, 62, 64, 70, 74, 86, 98, 102, 103, 109, 114, 121, 135, 137, 140, 150, 154, 159, 165, 168, 173, 178, 179. Group 2 (intermediate) includes 38 contexts: burials 11, 14, 22, 23, 26, 28, 30, 38, 45, 51, 57, 63, 69, 72, 77, 81, 83, 89, 94, 101, 106, 107, 108, 110, 111, 118, 119, 123, 125, 126, 134, 151, 152, 164, 170, 171, 174, 177. Group 3 (late) includes 29 contexts: burials 1, 5, 7, 8, 10, 15, 17, 32, 36, 43, 54, 59, 67, 71, 73, 79, 82, 84, 88, 91, 92, 116, 120, 122, 124, 130, 138, 155, 167.

Thus, all three selected groups are approximately equal to each other in the number of burials. The next step is to check that these groups reflect the internal chronology of the cemetery. If it is true, these groups should have differences in metal items from burials each of them.

Based on the data of S.A. Pletneva, I make a summary table including information about items found in burials with jugs and cups. It contains information about the most common inventory categories: jewelry, decorations, tools, toilet items, and clothing. Based on the summary table data, it is possible to compare the three burial groups.

First, we consider the results of discriminant analysis (Figure 6.1–3). According to the table of classification (Figure 6.2), the reliability of differences between groups is on average 88%. Three burial groups are distinguishable on the chart (Figure 6.1). Those results would be impossible if compared groups are the same on types of a metal item. The distances between the compared groups (p-values) does not show any contradictions (Figure 6.3). Probably it is interesting the differences between groups 2 and 3 are more pronounced than the differences between groups 1 and 2.

Thus, we find out that burial groups selected by the shapes of polished vessels are distinguishable by the types of metal items.

These differences are also explored by another method of comparison – the principal component analysis. According to the results, the most significant for us is the differences between the two “extreme” positions from the proposed sequence: between group 1 (early) and group 2 (late). The areas of the densest concentration of burials on the chart (Figure 6.4) schematically separated by a dotted line. Group 1 burials are mainly located at the left bottom of the graph. Group 3 burials are mostly located at the top right of the graph. Burials of “intermediate” group 2 are not located compactly (Figure 6.5). They occupy both the zone of group 1 and the zone of group 3.

Thus, the principal component method confirms the presence of some differences in metal items between the compared groups.

The next step of the periodization verification is the search for the types of metal items, which distinguish burial groups. For realize that, charts of frequency distribution were developed. Following the results, some markers of relatively earlier groups 1 and 2 were dedicated.

Finger-rings of type 1 (Figure 5.6a) are found in 15 burials (I mean here only burials with jugs or cups, but not all burials of Dmitrievka). All 15 contexts present in groups 1 and 2. Burials of group 3 have not finger-rings of type 1. Earrings of type 1 (Figure 5.6b) are found in 13 burials. All that burials belong to groups 1 and 2. Burials of group 3 have not earrings of type 1. Mirrors of type 2, kind 1 (with concentric circles and zigzags) (Figure 5.6c) are found in 16 burials, 14 of them are in groups 1 and 2. Among group 3 such mirrors are found only in 2 burials. Amulets of type 9 ('amulet-mirrors') (Figure 5.6d) are found in 17 burials, 15 of them are in groups 1 and 2. Among group 3 such amulets are found only in 2 burials. Axes of type 3, kind 1 (Figure 5.6e) are found in 11 burials. All they are part of groups 1 and 2. Mattocks of type 4 are found in 10 burials. All they are part of groups 1 and 2.

It is necessary to notice that according to S.A. Pletneva's conclusions, most of the mentioned types are characteristic markers of the earliest catacombs of Dmitrievka. We came to a similar conclusion here independently, using only the shapes of polished vessels.

An important addition to the results is the distribution of the earliest types of belts elements by the groups. Early belt sets and their elements are present in 15 complexes (burials 5, 21, 51, 52, 54, 55, 79, 81, 83, 88, 106, 111, 121, 164, 165). 12 of them must belong to groups 1 and 2.

Thus, three crucial points should be noted. First, the periodization of the Dmitrievka cemetery proposed on polished vessel shapes reflects some changes in the types of metal items. Second, these changes occur among metal items that can be considered as chronological markers. Third, these changes occur precisely at the time when the shapes of jugs and cups of mass stable traditions are no placed in the graves – a time of group 3.

Another issue that should be considered is the spatial distribution of burials assigned to different groups. In this case, we are interested in the part of the cemetery where most of the burials are located. According to S.A. Pletneva, these are areas I, II, III, IV, VII, and VIII¹⁹.

The mapping shows some regularities concerning the location of the earliest burials (group 1) and later graves with vessels of non-mass traditions (groups 2, 3). The plan (Figure 7. 1) clearly shows that the earliest burials (group 1) have a minority at the South-Eastern part of the cemetery. Only 6 graves of group 1 are located here. Graves with polished vessels of non-traditional shapes (groups 2, 3) have significant superiority in this part of the cemetery. There are almost 4.5 times more: a total of 27, including 15 of group 2 and 12 of group 3. In front of it, 20 of 26 the earliest burials (group 1) located on the North-Western part of the Dmitrievka cemetery.

It follows, that the periodization of burials, built based on polished ceramics, allows recording a significant predominance of relatively later graves at the south-eastern end of the cemetery.

¹⁹ PLETNEVA 1989, Fig. 118.

The result seems not accidental. It is well connected with the topography of the site. Dmitrievka cemetery is located on the gentle slope of the hill (Figure 7.2). The hill has bounded the territory of the cemetery on the north-western side. Therefore, it seems very logical that we record a significant preponderance of later burials in the South-Eastern part of the site. This could happen if, over time, the territory of the cemetery expanded in a direction down the hill. This scheme of chronological zoning of the cemetery is confirmed by two other circumstances. First, we observed the highest density of the catacombs in the south-eastern part of the cemetery. Second, southern and south-western boundaries of the cemetery are still not reliably established. The plan of the cemetery shows many catacombs tending to the south-eastern border of the excavation trench.

Thus, the periodization of Dmitrievka based on only shapes of polished vessels has found confirmations by independent groups of data – the inventory of burials, planigraphy, and, in part, the topography of graves.

2) *Yutanovka*

2.1) Jugs

The second example under consideration is the Yutanovka catacomb cemetery.

Based on the results of Dmitrievka ceramics analysis, all jugs divided into 2 groups: jugs with 'low body' and jugs with 'middle/low body'.

The values of GP jugs from Yutanovka are in the range from 0.95 to 1.3. But most of 'low body' jugs have GP values in the range 0.95–1.13 and most of 'middle/low body' jugs have GP values in the range 1.1–1.3 (Figure 8.1). It follows two groups of jugs are distinguishable on the GP of the whole vessel. Only 4 jugs do not correspond to this dependence (here and further – on the graph, such vessels are marked with a dotted line). First, there are two jugs with 'low body'. They are in the range that is more typical for jugs with 'medium/low body'. Second, these are two jugs with 'medium/low body' in the interval typical for 'low body'.

The next step is to analyze the parameters of 'shoulder' or 'brachium' (Figure 8.2). Jugs with 'low body' are located mainly in the range of 125–134°. Jugs with 'medium/low body' generally occupy the interval of 116–121°.

The next object of analysis is GP of 'neck' (Figure 8.3). 'Low body' jugs are most densely located in the range of 0.8–1. 'Middle/low body' jugs are located in the lower part of the chart, mainly in the range 0.4–0.75. Only one 'middle/low body' jug is located in the range more typical for 'low body' jugs.

Thus, differences between 'low body' jugs and 'middle/low body' jugs are very clear. It is fair for all considered parameters of jugs shape: GP of the whole vessel, angles of 'shoulder' or

'brachium' and GP of 'neck'. Based on these results, it is possible to distinguish two variants of stable combinations of shape parameters of Yutanovka jugs.

The first tradition (Figure 10.1–3) is characterized by 'low body', relatively low GP of the whole vessel (appr. up to 1.1/1.15), relatively stronger angles of 'shoulder' (125–134°), and a relatively higher 'neck' (0.9–1.6). The second tradition (Figure 10.4–5) is characterized by 'middle/low body', relatively high GP of the whole vessel (more than 1.15), relatively lower angles of 'shoulder' (up to 120–121°), and a relatively lower 'neck' (0.4–0.8).

In total, 9 of 15 studied jugs from Yutanovka are within the framework of these two groups.

2.2) Cups

As we noticed for Dmitrievka cemetery, Saltovo cups can have either a ring-shaped handle or zoomorphic handle. Both types of cups are represented in Yutanovka.

GP of cups (Figure 9.1). The highest density of values among cups with a ring-shaped handle is recorded in the interval 0.95–1.15. Cups with zoomorphic handles are located mainly in the range of 0.7–0.9. Only one cup with a zoomorphic handle has the GP that typical for other cups group.

GP of 'neck' (Figure 9.2). All cups with zoomorphic handles are located at the bottom of the chart. It is the range of 0.5–0.7. Almost cups with ring-shaped handles are located in a different range – 0.8–0.95. The only one cup is not in this range.

Angles of 'shoulder'/'brachium' (Figure 9.3). All cups with zoomorphic handle form compact clusters in the range of 120–123°. Cups with ring-shaped handle has not shown a clear situation: 2 vessels are located in 120–123°, 3 vessels are located near 130°.

The analysis results show that differences between the two groups of cups are real almost for all the studied parameters of shapes. The relatively lower GP of the whole vessel (up to 0.9), the relatively lower 'neck' (GP up to 0.7), and the relatively lower 'shoulder'/'brachium' angles (120–123°) are typical for cups with zoomorphic handle. Another combination is traditional for cups with a ring-shaped handle. It includes high GP of whole vessel (0.9–1.1) and high 'neck' (GP 0.8–0.9). It is more difficult to distinguish the typical values of the 'shoulder'/'brachium' angle. However, we note that three of the 5 cups are very different in the angle 'shoulder'/'brachium' from cups with a zoomorphic handle.

Out of 10 cups of Yutanovka cemetery, 7 cups show compliance with the identified mass traditions for this site.

Thus, based on the analysis results we can distinguish polished vessels made in compliance with the mass traditions. I remind that according to the hypothesis of this study, these vessels should be markers of earlier burials. This thesis was confirmed earlier when

analyzing the materials of the Dmitrievka cemetery. Now we will perform the same check for Yutanovka.

2.3) Periodization

All Yutanovka catacombs containing polished vessels are divided into 2 groups. Early group contains vessels of only mass traditions: graves № 5, 7, 8, 10, 11, 12, 13, 14, 15, 16, 18, 19, 1N, 2N, 3P. Late group includes catacombs contains vessels of non-mass traditions: 1, 2, 3, 4, 6, 20, 23, 1P, 2P.

The number of catacombs in Yutanovka cemetery is much less than in the Dmitrievka cemetery. Therefore, using multidimensional statistics methods (discriminant analysis, principal component analysis) to check the proposed periodization is not reasonable.

For verification ceramic's periodization, all inventory from catacombs was used, except elements of the belt sets²⁰.

All metal items were divided into types. I followed the typology proposed by S. A. Pletneva for Dmitrievka when it was possible. After dividing the inventory into types and entering all the data in the summary table, I compared two chronological groups of catacombs by types and categories of items. The results of this procedure revealed a list of finds that characterize an exceptionally early group of catacombs.

1) Toilet boxes (Figure 12.1-2).

Toilet boxes were used probably as pectoral items. Generally, these items are rare in the Saltovo-Mayaki cemeteries. According to S.I. Vladimirov, toilet boxes were found in 13 burials. 9 of such burials contained elements of belt sets of the 2nd half of the 8th–early 9th centuries. Thus, the toilet boxes are indicators of the earliest stage of the Saltovo-Mayaki culture²¹.

This conclusion is similar to V.S. Aksenov's observations on the chronology of early medieval metal objects with embossed ornaments. This ornament adorns all toilet boxes. According to V.S. Aksenov data, the similar technique of ornamentation is more typical for the pre-saltovo antiquities of the South of Eastern Europe in the 5th–the first half of the 8th centuries. Finds of these items indicate the stage of formation of the Saltovo-Mayaki culture²². In addition to the toilet boxes, another object with an embossed ornament was

²⁰ Most of the belt elements from the catacombs of both groups (Fig. 11.4–7) belong in general to the period of the end of the 8th–first half of the 9th century according to A.V. Komar chronology (1999). Elements of the belts of the second half of the 8th century are recorded in three burials (Fig. 11.1–3). However, in all cases, they were found together with the later elements of the belts.

²¹ VLADIMIROV 2019, 109.

²² AKSENOV 2018, 302.

found in Yatanovka. This is the tip of the belt from the catacomb 3P (Figure 11.3). This grave fell into the early group according to my periodization.

2) Zoomorphic amulets (Figure 12. 7–9).

The first amulet from catacomb 20 (Figure 12.7) is a figurine of a horse standing calmly with straight front and hind legs. Amulets of this type did not appear until the middle of the 8th century²³. The close date is also noted for the antiquities of the Middle Don – the second half of the 8th–early 9th century²⁴.

The second amulet was found in catacomb 20, too. This is a figurine of deer (Figure 12.8). Similar amulets are not found in the Saltovo-Mayaki culture. I know a very close analogy to this item in the catacomb 87 of Mokraya Balka cemetery in the North Caucasus. This context is dated by the end of the 7th–early 8th century²⁵.

Nothing definite can be said about the date of the third amulet of this group – the figurine of goat (Figure 12.9). Such amulets are unknown in the Saltovo-Mayaki graves. But in general, amulets in the form of goats were common in the Caucasus since the Early Iron Age²⁶. Figurines of goats and rams are known in the early medieval burial grounds of the Caucasus. But stylistically they are very far from the objects of Yutanovka²⁷.

3) Amulets of Pletneva type 9 ('amulet-mirrors') (Figure 12.5–6).

According to S.A. Pletneva, this type is a marker of early graves in the Dmitrievka cemetery. I came to the same conclusion independently during the analysis of the polished vessels of Dmitrievka (see previous part of the article). The early chronological position of amulets-mirrors is substantiated by strictly dated contexts of Mokraya Balka. The analogies are known in catacombs dated by the end of the 7th–early 8th centuries or the 1st half of the 8th century²⁸.

4) Earrings of Pletneva type 1 (Figure 12.13–14).

This type is widespread at the Saltovo sites. According to S.A. Pletneva, these earrings are a marker of early graves from the Dmitrievka cemetery. As shown earlier, this type of earring is also to indicate earlier graves according to my periodization based on the polished vessels. Earrings with a composite pendant do not go beyond the 8th century in D.A. Stashenkov chronology²⁹.

5) Earrings of "Caucasian" types (Figure 12.10–12).

They are very rare for the Saltovo cemeteries. On the North-Western Caucasus, they are typical for contexts of the second half of the 8th – the first half of the 9th century (Uspenskiy

²³ ALBEGOVA, KOVALEVSKAYA 2011, 278.

²⁴ AKSENOV 2016, 17–18.

²⁵ AFANASIEV, RUNICH 2001, Fig. 98. 13.

²⁶ ATAEV 1963, 156.

²⁷ ATAEV 1963, Fig. 21. 14, 16; ALBEGOVA 2001, Fig. 4. 13.

²⁸ AFANASIEV, RUNICH 2001, Fig. 18. 5; 36. 3; 64. 10; 98. 14; 128. 15.

²⁹ STASHENKOV 1998, Fig. 6.

2015, 96–97). Finds of such earrings on the Middle Don are known in graves dated to elements of belts sets of the 2nd half of the 8th century³⁰. V.S. Aksenov suggests such earrings as a part of the early sets of personal jewelry of the population of the Saltovo-Mayaki culture, brought to the Middle Don by the first settlers from the Eastern regions of the North Caucasus³¹.

6) Mirrors with rare ornaments (Figure 12.15–17).

The item from the catacomb 15 (Figure 12.15) belongs to a rather rare group of early medieval mirrors. In contrast to mirrors with geometric and solar symbols, they carry stylized images of reptiles (lizards) and insects (scolopendras). A recently published report takes into account 14 such items, 11 mirrors come from burial grounds from the territory of Dagestan³². Graves with such mirrors date from the 6th–9th centuries.

Despite the wide chronology of such mirrors, it is important that here we are talking about products that are extremely rare in the Middle Don, and more typical in the North Caucasus and probably associated with the graves of the first settlers.

A mirror from the catacomb 10 can also be considered as rare for the Saltovo-Mayaki culture (Figure 12.16). On one of the surfaces of the product, two circles of inclined, and sometimes slightly curved, notches are applied. A similar style of decoration is marked on the mirror from the catacomb 14 of the Starosaltovsky cemetery of the second half of the 8th century³³.

7) Imitation of the Byzantine solidus of Leo III the Isaurian and Constantine V (717–741)³⁴.

In conclusion, a few words should be said about a coin from catacomb 10 of the early group. The find of this item in the early group of Yutanovka is very significant. Among researches, the point of view about the small-time lag of the Byzantine solidus of the 7th–8th centuries is widespread. This makes it possible to use them as a reliable chronological indicator for determining the earliest Saltovo-Mayaki graves³⁵. The appearance of coins of Leo III and Constantine V in the Don occurred during the period of the closest relations between the Khazar Khaganate and Byzantium (approximately 730–750s)³⁶. They are markers of the final third of the 8th century³⁷. It corresponds to the time of the formation of the Saltovo-Mayaki culture. After the end of this period, the flow of Byzantine coins to the territory of the Khazar Khaganate stopped due to foreign policy reasons.

Thus, at least 7 kinds of items that characterize an exceptionally early group of Yutanovka can be considered as real chronological indicators. The first case is when the item

³⁰ AKSENOV 1999, 141, Fig. 3. 22; 6. 44; 7. 5.

³¹ AKSENOV 2012b, 215–216.

³² GADZHIEV, DAVUDOV 2018.

³³ AKSENOV 1999, Fig. 6. 43.

³⁴ AFANASIEV 1980, 3.

³⁵ SEMENOV 1993, 95.

³⁶ KRUGLOV 2005, 90.

³⁷ KRUGLOV 2002, 91.

type is rare for the Saltovo-Mayaki culture, but typical for the early medieval Caucasian graves. Such items probably correspond with the first resettlers from the Caucasus. The first case is when item type has analogies in the Saltovo context, which includes elements of the earliest belt sets.

In conclusion, it is necessary to consider the question about the planigraphy of burials from different chronological groups. Some regularities in the spatial position of the catacombs of the early and late groups are revealed (Figure 13.1). Almost all the catacombs of the late group (except № 20, 23) form a fairly clear line that limits the area of the excavation trench on the eastern side.

One detail makes special attention to this result. We are talking about the topography of the site (Figure 13.2). Like Dmitrievka, Yutanovka cemetery is located on a slope of a hill. Catacombs of the late group occupy the lower part of the slope. They are located at the hill's base.

We have already recorded the same thing based on the results of planigraphic analysis at the Dmitrievka cemetery. There later graves occupied the lower part of the slope like on Yutanovka. I think it is very important that the shapes of the polished vessels show similar trends in chronological zoning on both burial sites considered.

Conclusion

The article tested the assumption that the violation of the mass traditions of creating shapes of polished vessels may be the new basis for the periodization of the Saltovo-Mayaki culture cemeteries. The sources were vessels from two different catacomb cemeteries. Based on the traditions of the shapes creating of polished vessels, earlier and later groups of graves are identified. The hypothesis found several confirmations.

The earlier groups of graves (according to polished vessels) on both sites are characterized by metal objects typical of the early Saltovo period (the second half of the 8th–early 9th centuries). This picture is supplemented by planigraphic and topographical trends of the location of the catacombs of the late group, which have direct parallels between Dmitrievka and Yutanovka cemeteries. Later graves were usually arranged on the lower part of the slope.

All this allows us to conclude that it is possible to use the shapes of polished vessels to clarify the relative chronology of the Saltovo-Mayaki culture cemeteries.

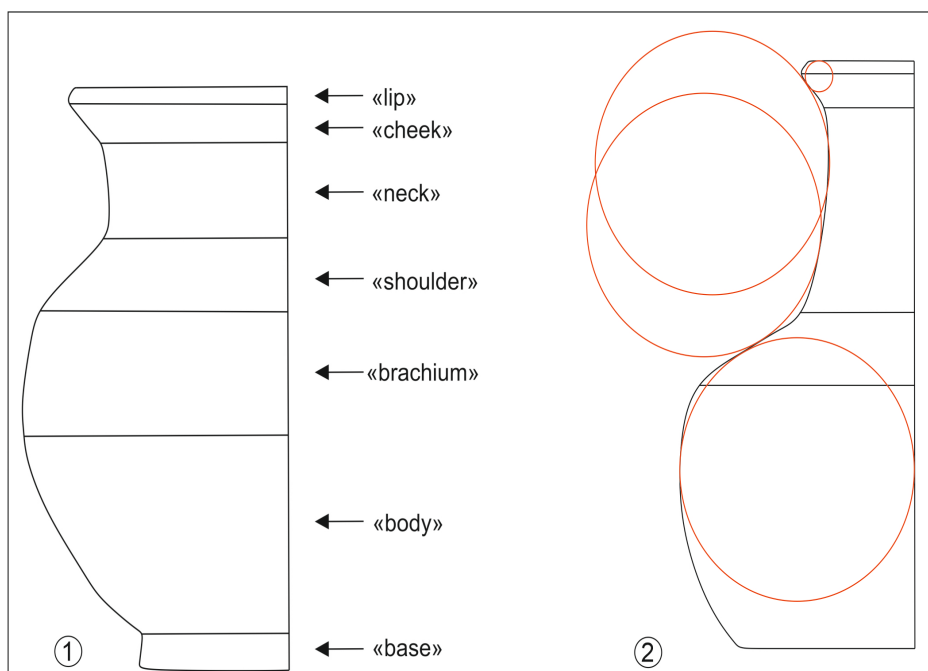


Figure 1. Functional parts in the vessel's structure. 1 – location of different parts, 2 – the technique of allocation of different functional parts (on the example of the jug)

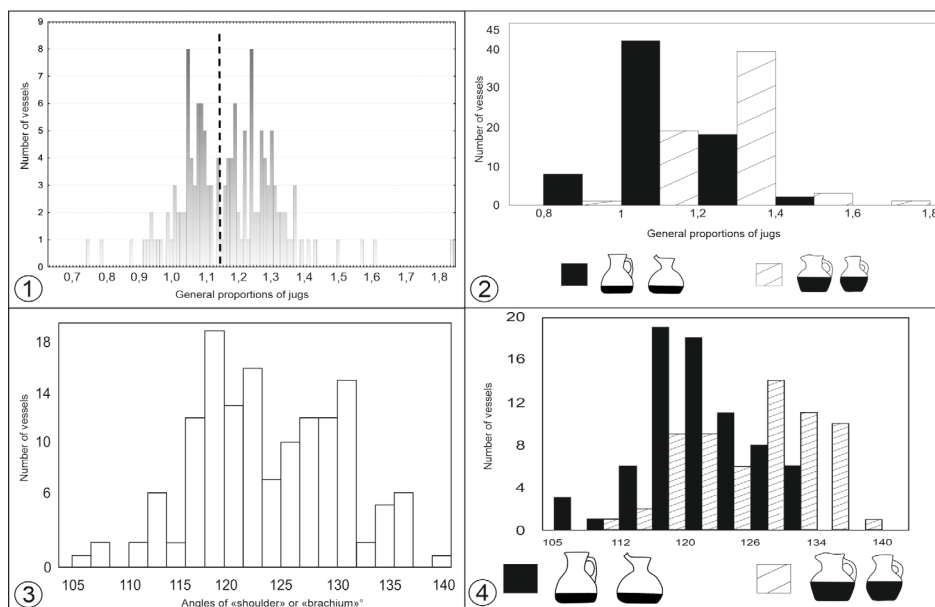


Figure 2. Jugs of Dmitrievka cemetery. Analytical charts. 1 – general proportions of jugs, 2 – general proportions of 'low body' jugs and 'middle/low body' jugs, 3 – angles of 'shoulder' or 'brachium' of jugs, 4 – angles of 'shoulder' or 'brachium' of 'low body' jugs and 'middle/low body' jugs

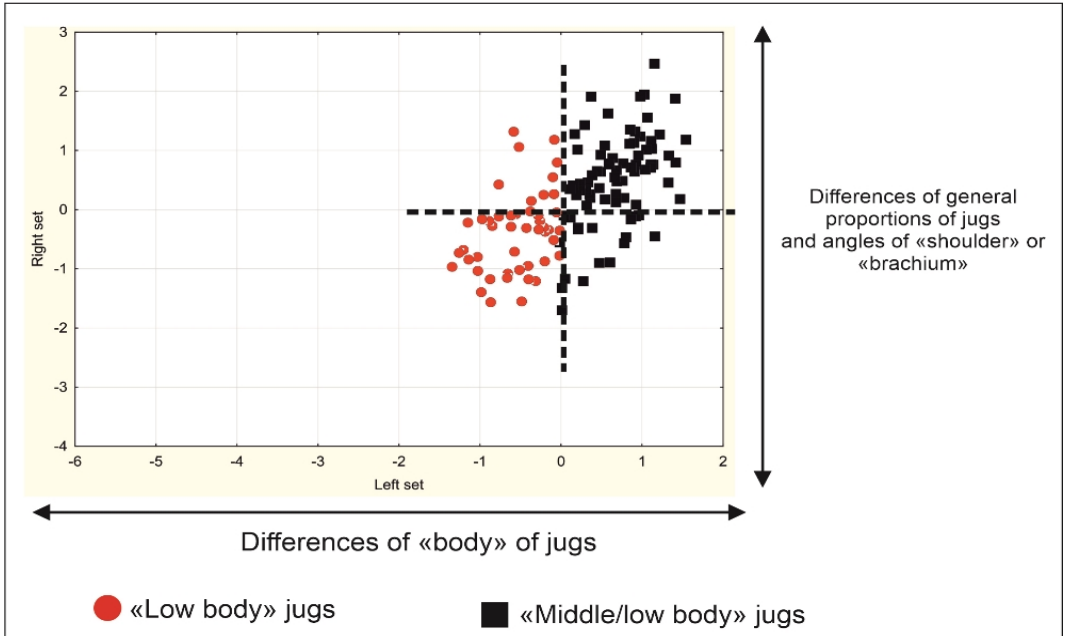


Figure 3. Jugs of Dmitrievka cemetery. Results of canonical analysis

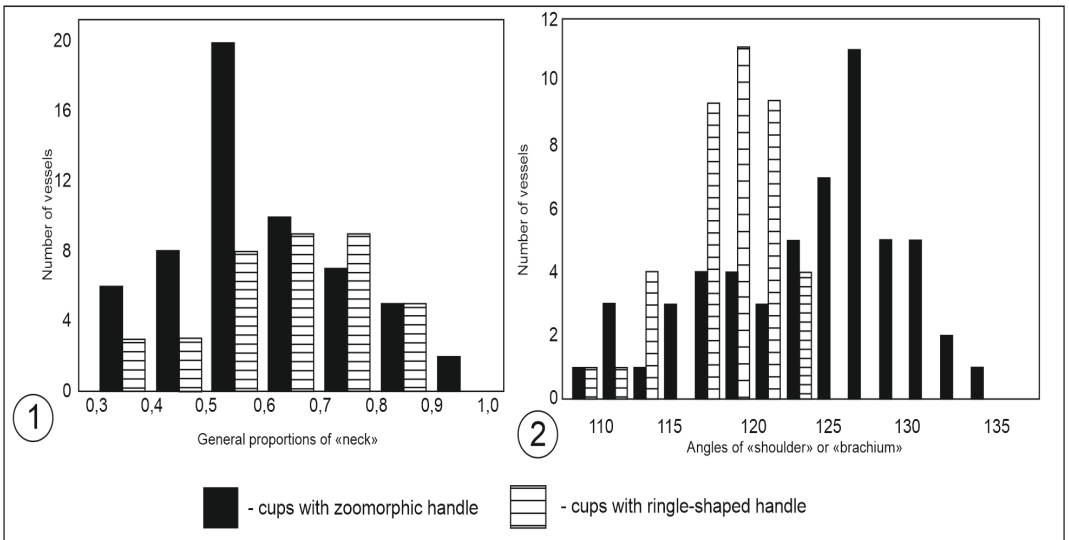


Figure 4. Cups of Dmitrievka cemetery. Analytical charts. 1 – general proportions of ‘neck’,
2 – angles of ‘shoulder’ or ‘brachium’

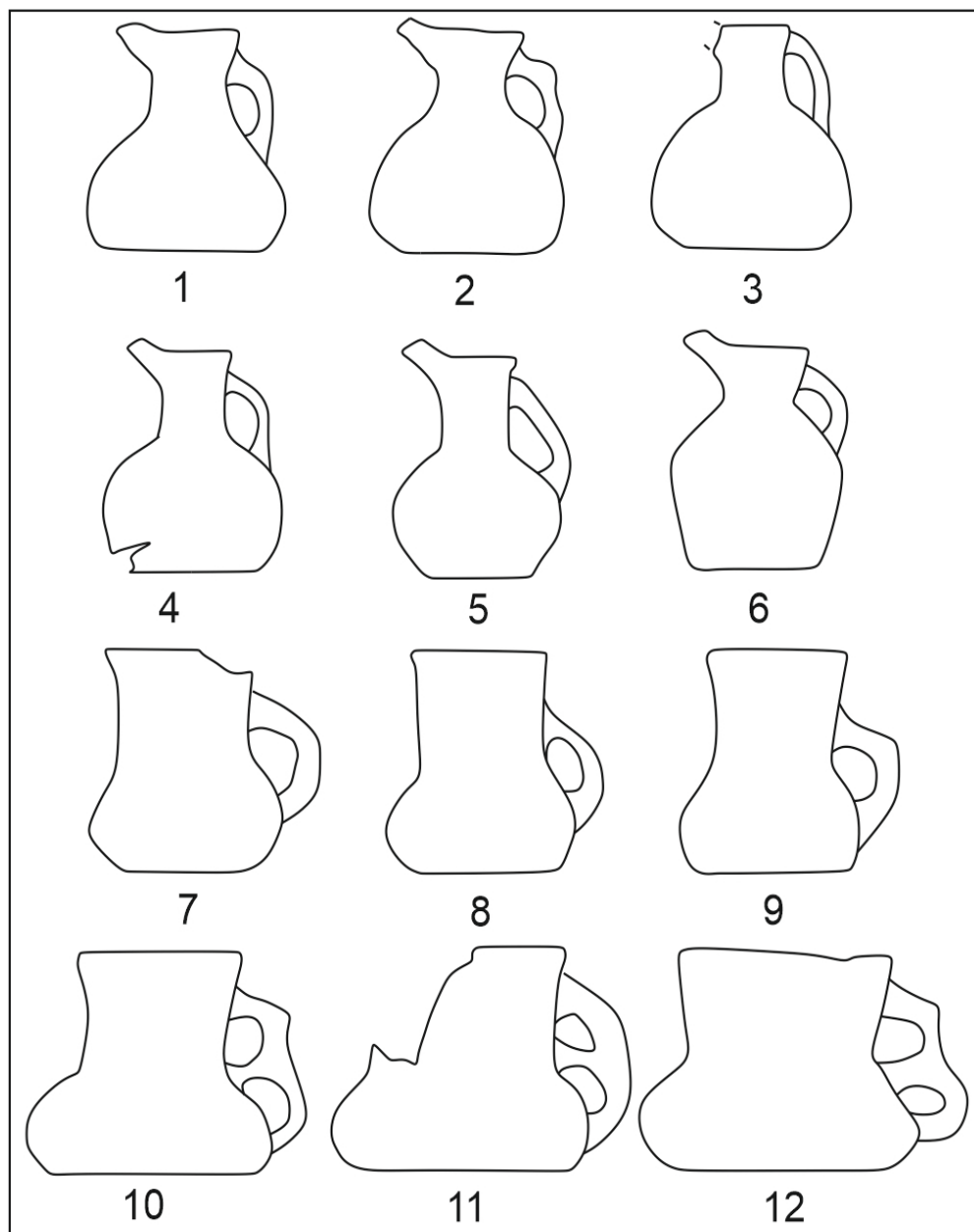


Figure 5. Mass traditions of shapes of polished vessels from Dmitrievka (not to scale) (by E.V. Sukhanov).
 1-3 – jugs, the first tradition, 4-6 – jugs, the second tradition, 7-9 – cups with ring-shaped handle,
 10-12 – cups with zoomorphic handle

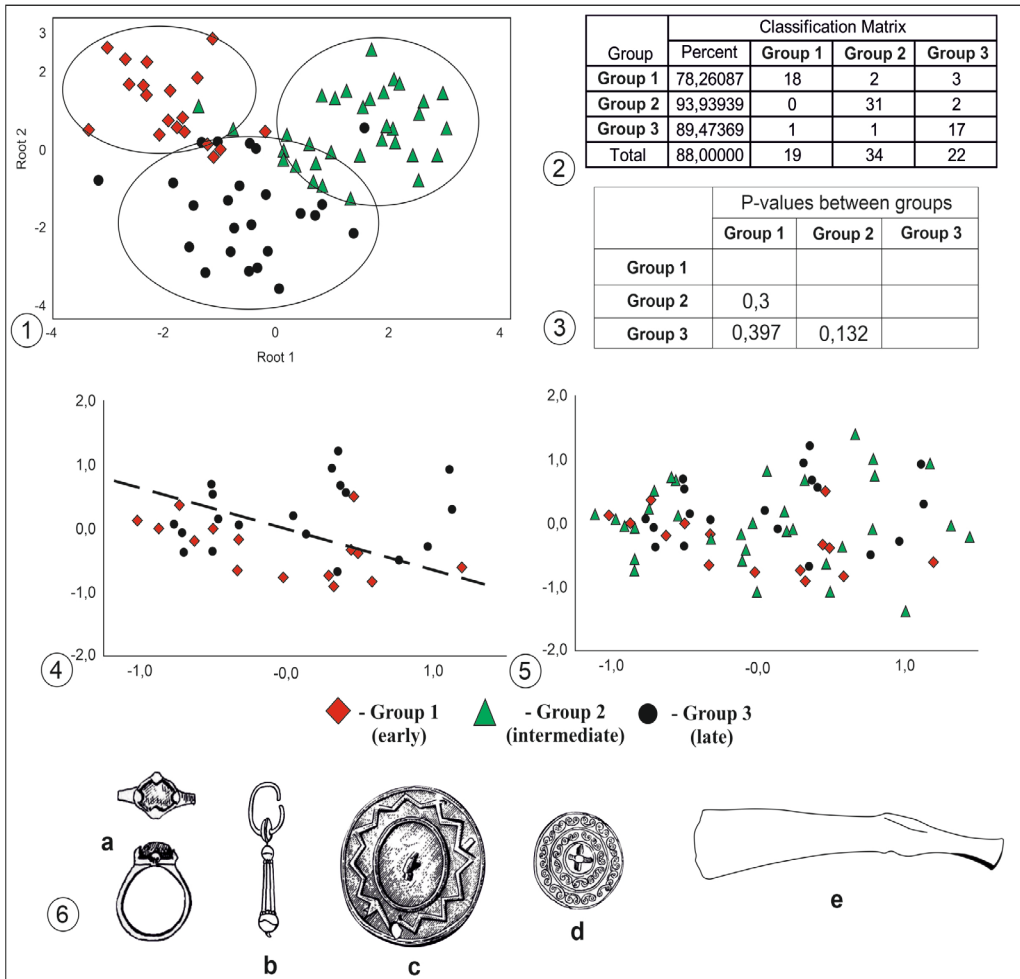


Figure 6. Checking of periodization based on polished vessels. 1 - chart of discriminant analysis, 2 - table of classification, discriminant analysis, 3 - p-values between groups, discriminant analysis, 4 - chart of principal component analysis (only groups 1 and 3), 5 - chart of principal component analysis (all groups), 6 - indicators of groups 1 and 2. Figures of items after Pletneva 1989, fig. 35. I. 3; 49. 9; 53; 57; 61. 1

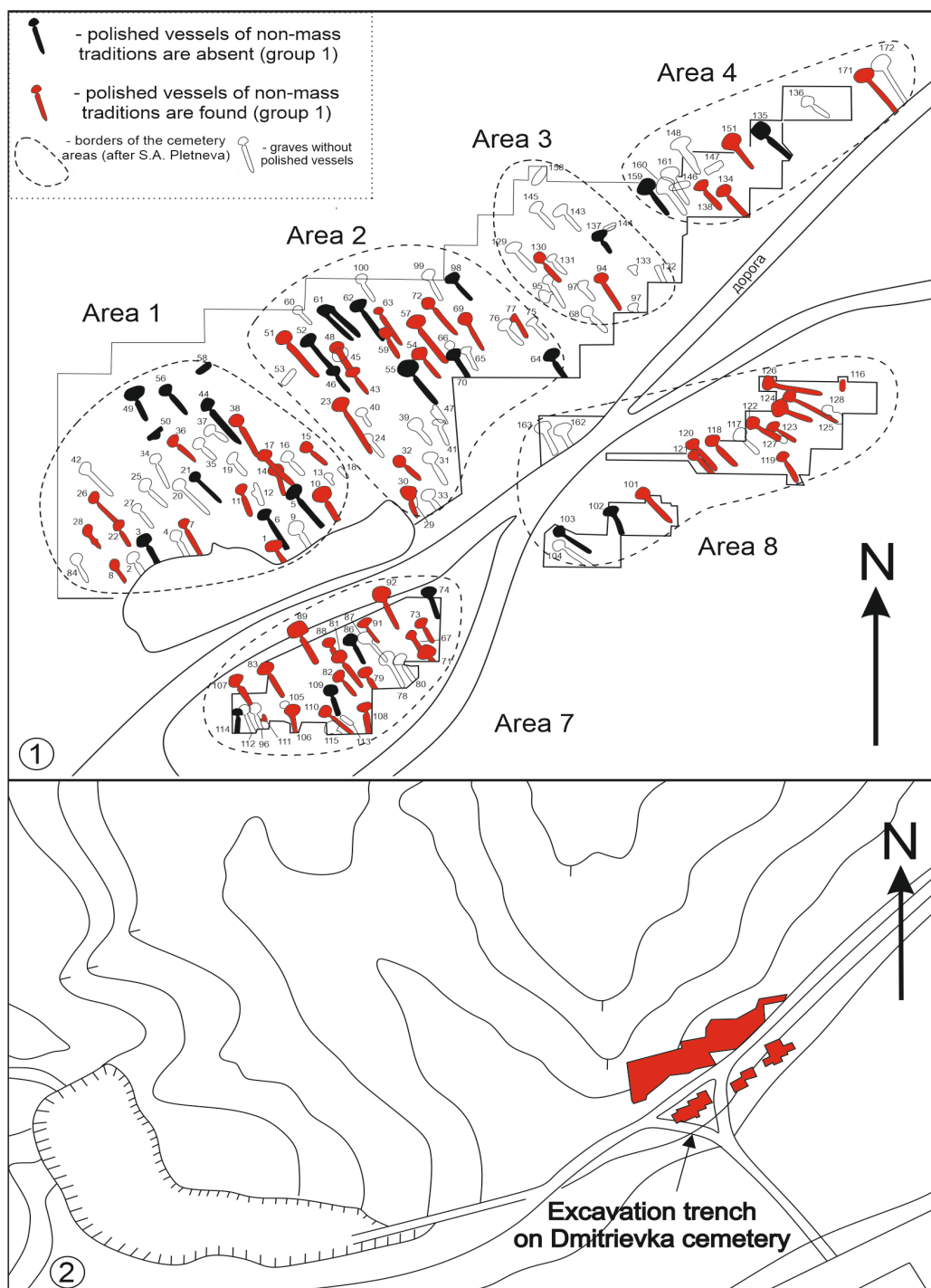


Figure 7. Plans of Dmitrievka cemetery. 1 – planigraphy, 2 – topography

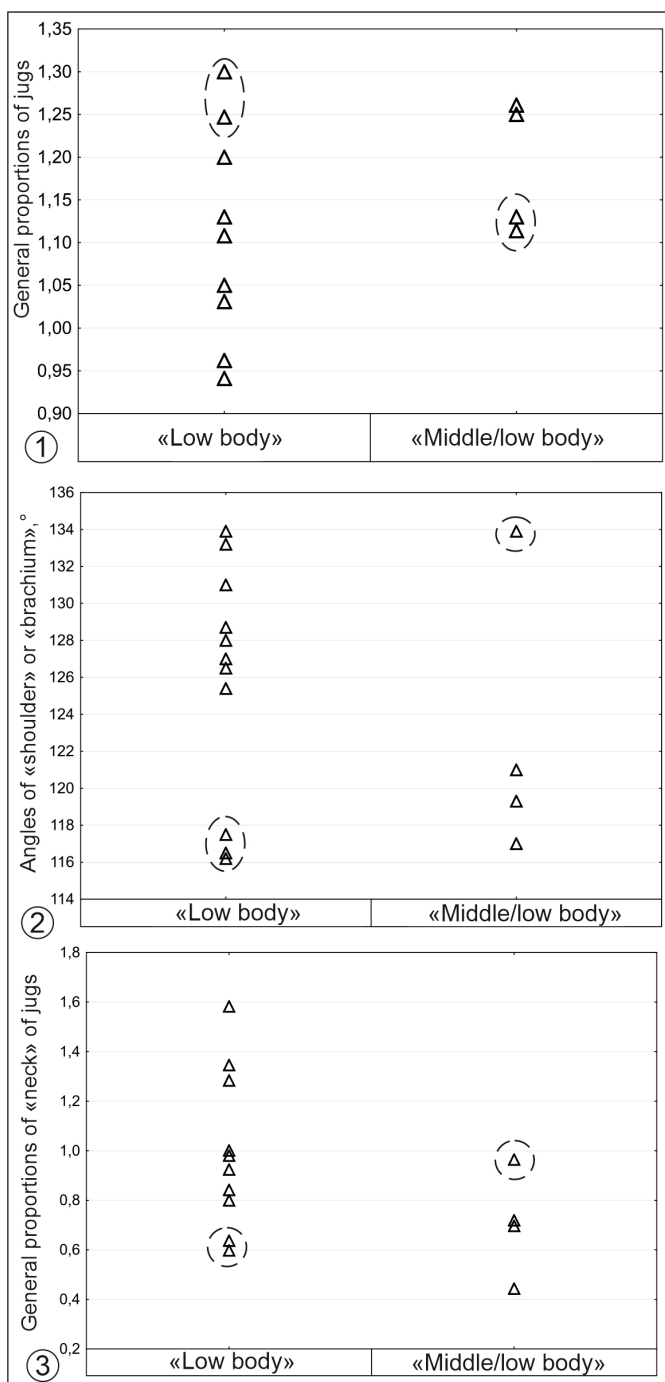


Figure 8. Jugs of Yutanovka cemetery. Analytical charts. 1 – general proportions of jugs, 2 – angles of ‘shoulder’ or ‘brachium’, 3 – general proportions of ‘neck’

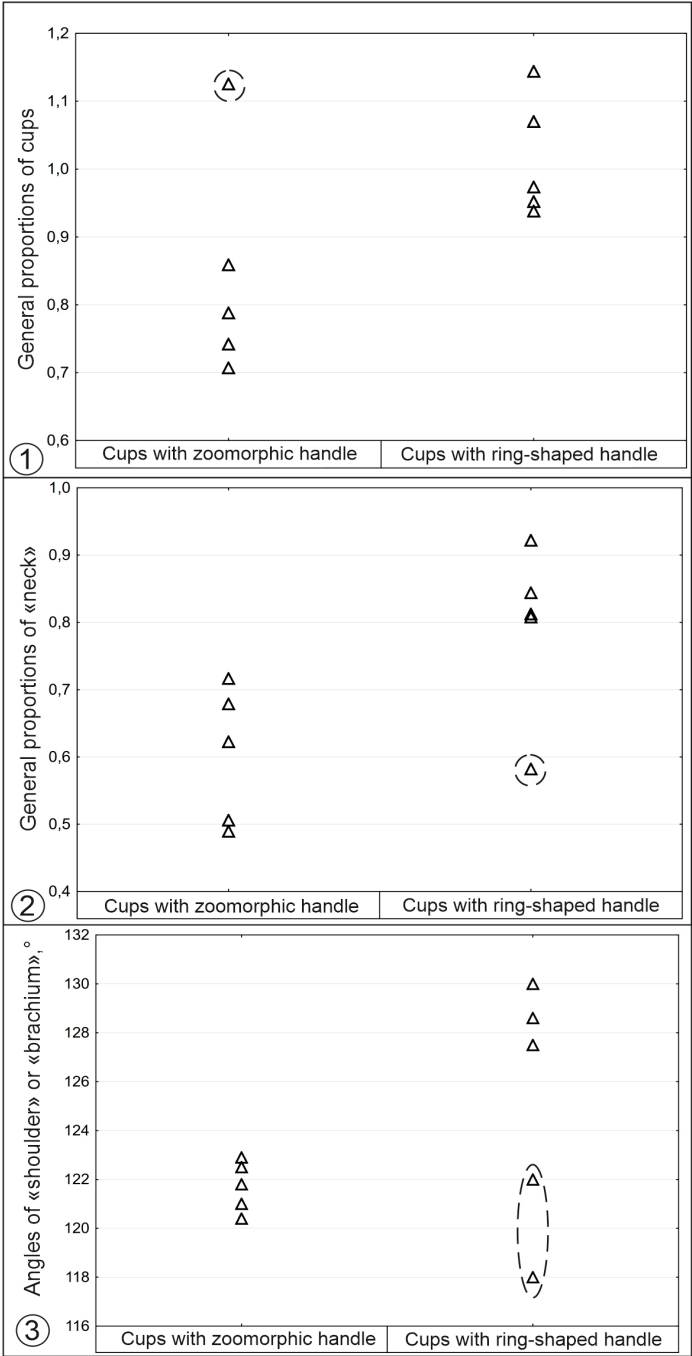


Figure 9. Cups of Yutanovka cemetery. Analytical charts. 1 – general proportions of cups, 2 – general proportions of ‘neck’, 3 – angles of ‘shoulder’ or ‘brachium’

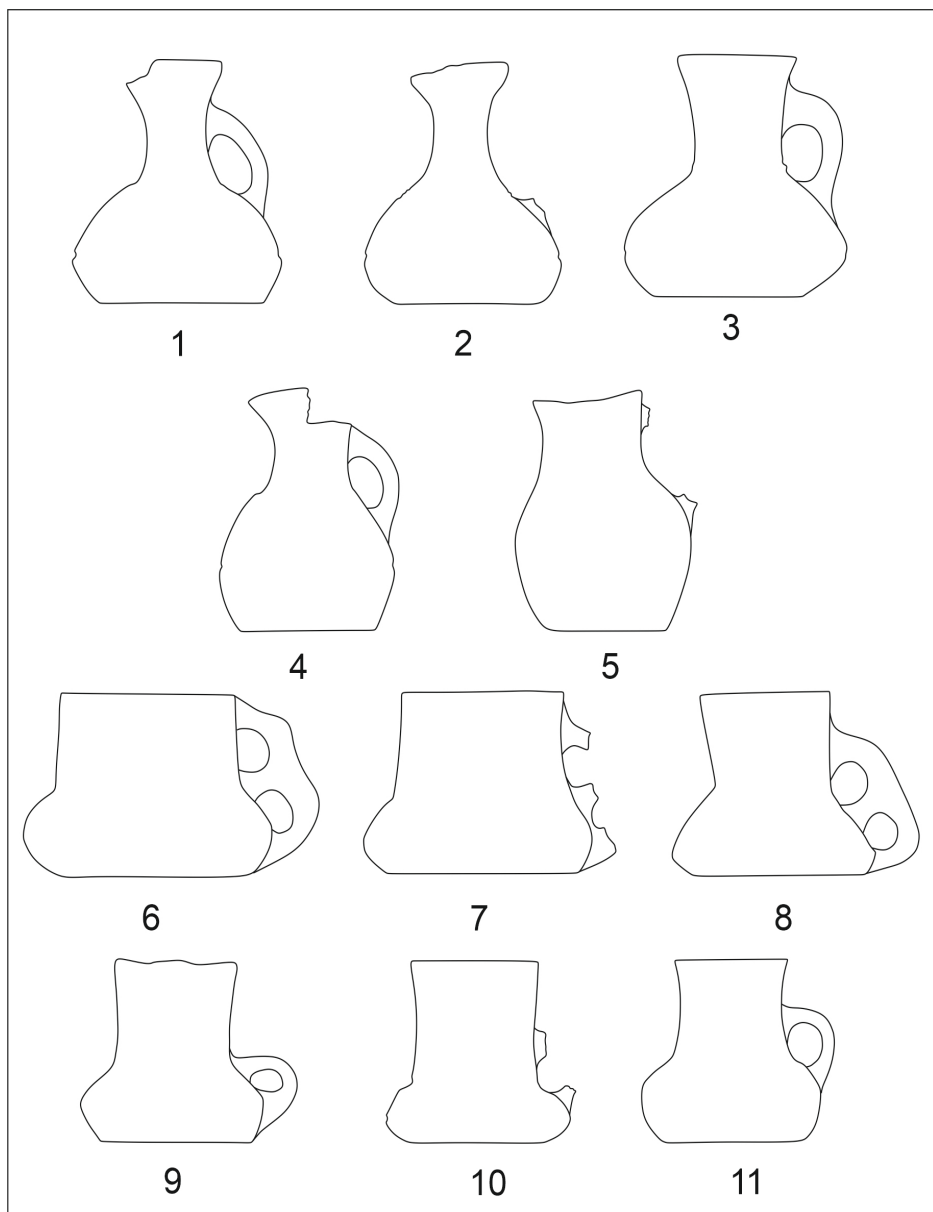


Figure 10. Mass traditions of shapes of polished vessels from Yutanovka (not to scale) (not to scale).
1-3 – jugs, the first tradition, 4-5 – jugs, the second tradition, 6-8 – cups with zoomorphic handle,
9-11 – cups with ring-shaped handle

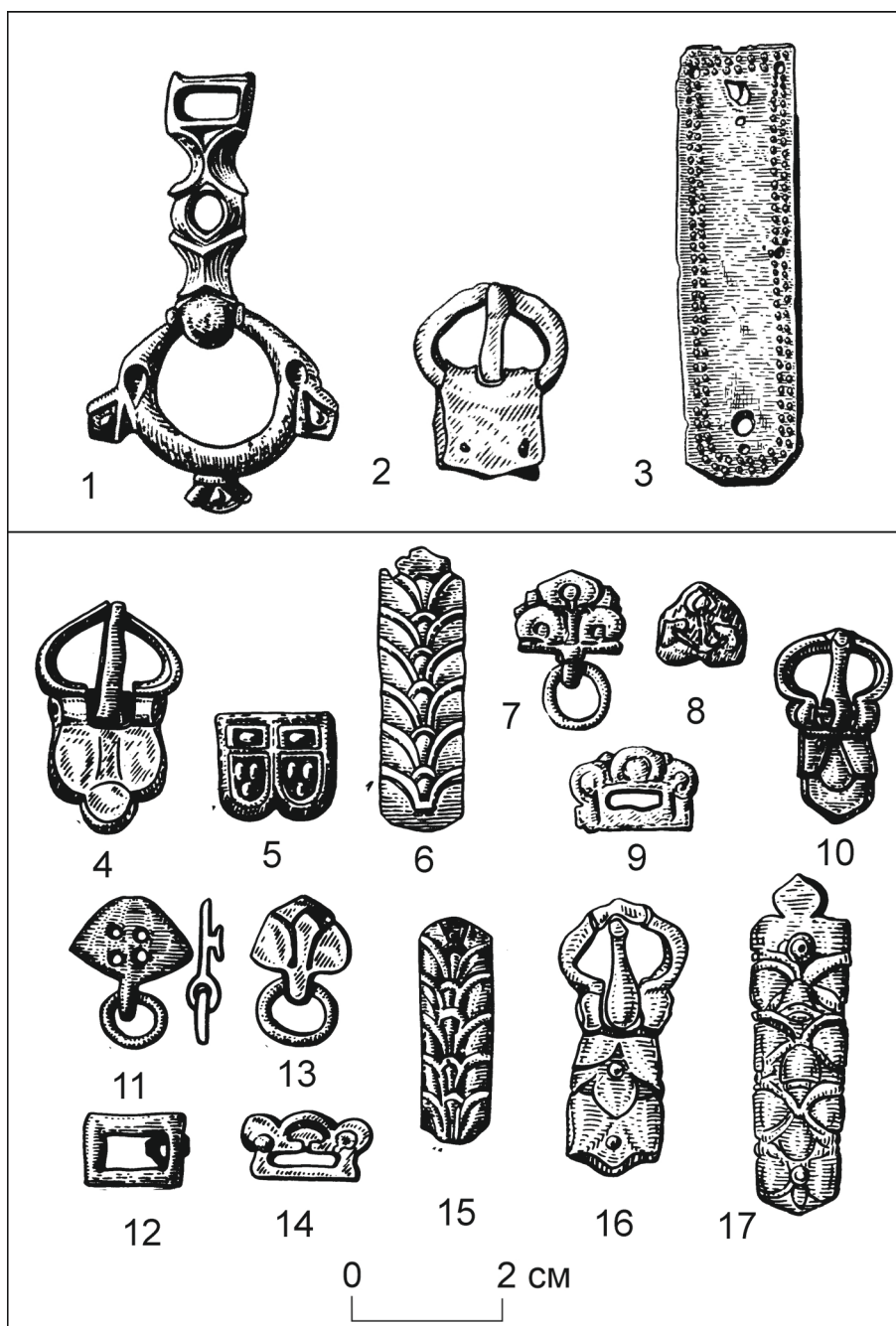


Figure 11. Elements of belts sets from Yutanovka (by G.E. Afanasiev). 1-3 – items of the second half of the 8th century, 4-17 – items of the end of the 8th – the early of the 9th century

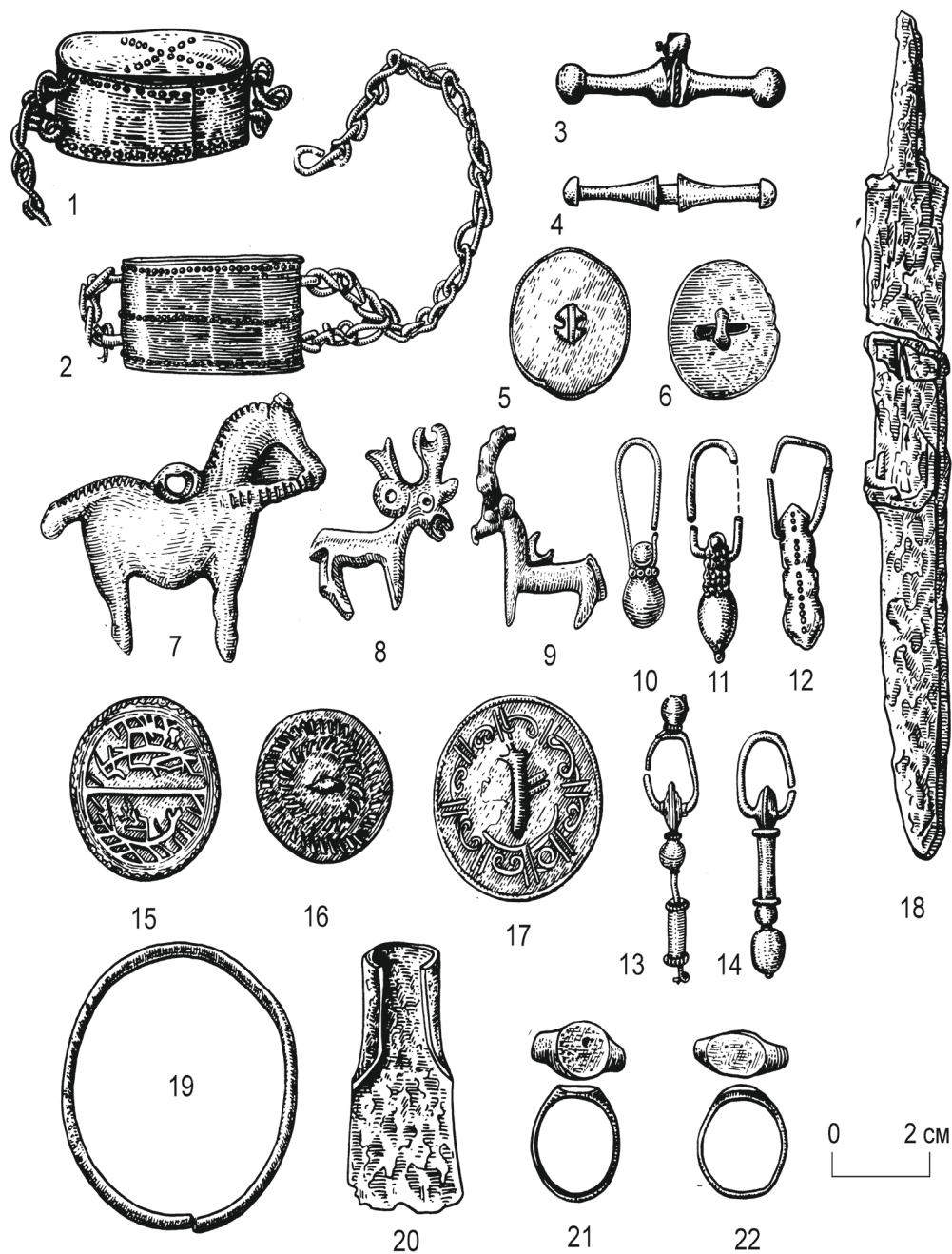


Figure 12. Markers of early graves group of Yutanovka (by G.E. Afanasiev)

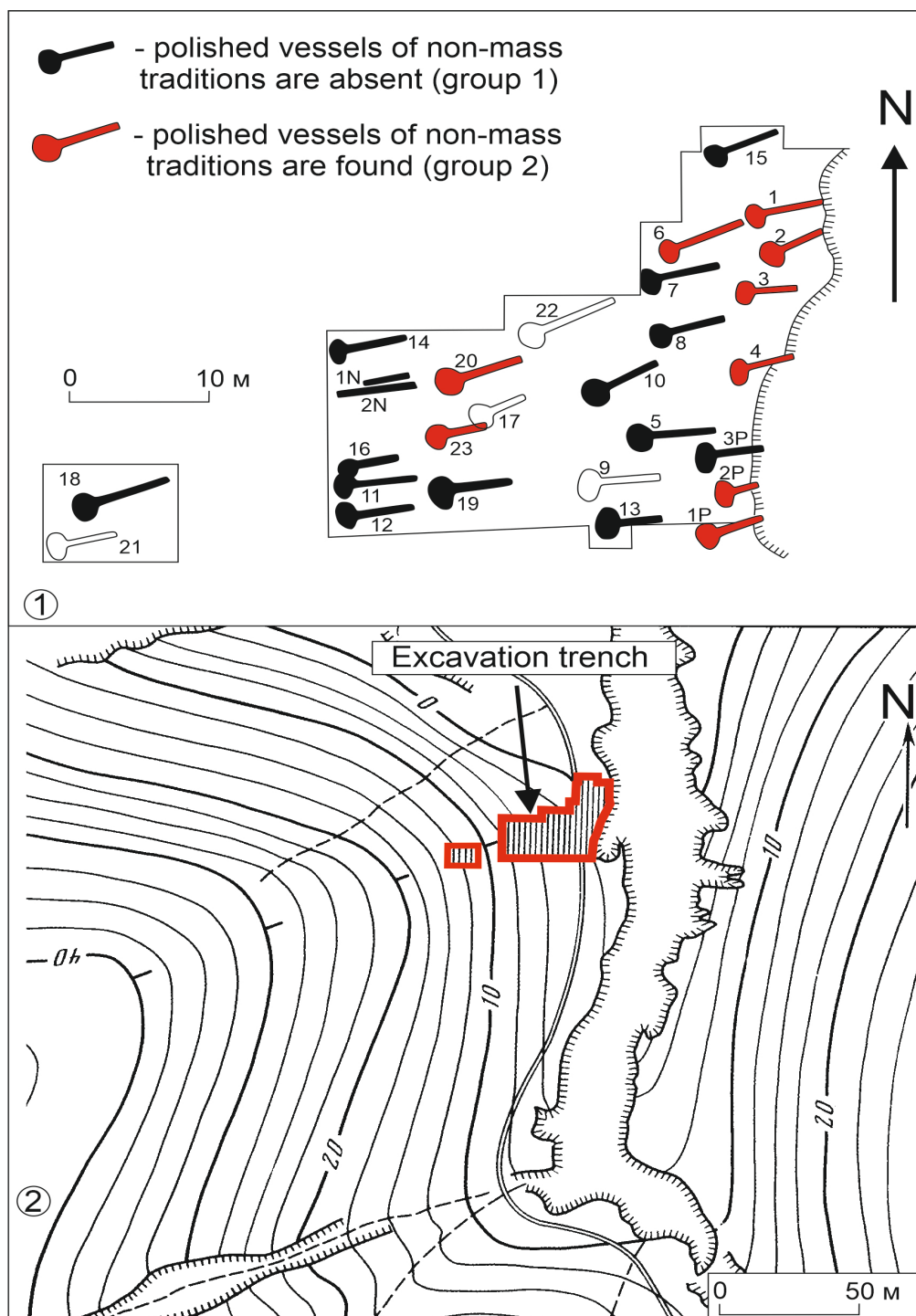


Figure 13. Plans of Yutanovka cemetery. 1 – planigraphy, 2 – topography

References

- AFANASIEV, G.E. 1980. *Report on the work of the Oskol detachment of the Soviet-Bulgarian-Hungarian expedition for 1979*. Archive of IA RAS. R-1, no. 7994.
- AFANASIEV, G.E. 1987. *Population of the forest-steppe zone of the Middle Don basin in the 8th–10th centuries (the Alan variant of the Saltovo-Mayaki culture)*. Moscow.
- AFANASIEV, G.E. 1993. *Don Alans: social structures of the Alano-Asso-Burtas population of the Middle Don basin*. Moscow.
- AFANASIEV, G.E., RUNICH, A.P. 2001. *Mokraya Balka. Issue 1: Diary of excavations*. Moscow.
- AKSENOV, V.S. 1999. Starosaltovsky catacomb burial ground. *Vita Antiqua* 2, 137–149.
- AKSENOV, V.S. 2012a. Early group personal jewelry of Dotens Saltov population (on materials of burials with brooches Netailovka burial). *Antiquity. Kharkiv historical and archaeological Yearbook* 11, 172–187. Kharkiv.
- AKSENOV, V.S. 2012b. Sets of metal decorations from early sites of the Saltovo-Mayaki culture of Kharkiv region (ethnic aspect). In: Yu.D. Razuvaev (ed.), *East European antiquities: collection of scientific works*, 208–219. Voronezh.
- AKSENOV, V.S. 2018. Belt set of catacombs No. 141 of early medieval cemetery at S. Verkhniy Saltiv. In: V.A. Sarapulkin (ed.), *Archaeology of the Eastern European forest-steppe: proceedings of the international scientific-practical conference dedicated to 80th birthday of A. G. Nikolayenko (Belgorod, 14–16 December 2017)*, 298–307. Belgorod.
- ALBEGOVA, Z.H. 2001. Paleosociology of the Alan religion of the VII–IX centuries (based on the materials of amulets from the catacomb burials of the North Caucasus and the Middle Don. *Russian Archaeology* 2, 83–96.
- ALBEGOVA, Z.H., KOVALEVSKAYA, V.B. 2011. Amulets in the shape of horses and riders in the site of the North Caucasus and the Middle Don. In: H.M. Mamaev (ed.), *Questions of ancient and medieval archeology of the Caucasus*, 277–293. Grozny–Moscow.
- ATAEV, D.M. 1963. *Nagorny Dagestan in the early middle ages (based on the materials of the archaeological excavations of the Avaria)*. Makhachkala.
- BOBRINSKY, A.A. 1988. Functional parts in the clay vessels shapes. In: A.A. Bobrinsky (ed.), *Problems of archaeological ceramics researches*, 5–21. Kuybishev.
- BOBRINSKY, A.A. 1978. *The Pottery-Making of Eastern Europe: Sources And Methods of Study*. Moscow.
- BOBRINSKY, A.A. 1986. About technique of study of clay vessel shapes from archaeological excavations. In: G.I. Matveeva (ed.), *Eastern Europe cultures of the I millennium AD*, 137–157. Kuybishev.
- FLEROV, V.S. 1990. On the issue of social differentiation in the Khazar Khaganate. *Questions of the ethnic history of the Volga-Don Region in the middle ages and the problem of Burtas*, 38–43. Penza.
- GADZIEV, M.S., DAVUDOV, Sh.O. 2018. About the group of early medieval metal mirrors of Dagestan. *Problems of History, Philology and Culture* 4, 153–164.
- KOMAR, A.V. 1999. Pre- and early Saltovo horizons of Eastern Europe (questions of chronology). *Vita Antiqua* 2, 111–136.

- KRUGLOV, E.V. 2002. Some problems of analysis of the peculiarities of circulation of Byzantine coins of the VI–VIII centuries in the Eastern European steppes. *Khazar almanakh* 1, 79–93. Kharkiv.
- KRUGLOV, E.V. 2005. Stages of circulation of Byzantine coins of VI–VIII centuries in the Eastern European steppes and their dating possibilities for archaeology sites. *Archaeological notes of the Don Archaeological Society* 4, 87–95. Rostov-on-Don.
- MASTYKOVA, A.V. 2016. Mirrors of the Karpovka type. To question of the formation of the Saltovo-Mayaki culture of the Middle Don. *Divnogorsk collection* 6, 241–254. Voronezh.
- PLETNEVA, S.A. 1989. *On the Slavs-Khazar border (Dmitrievsky archaeological complex)*. Moscow.
- SEMENTOV, A.I. 1993. About dating abilities of the Byzantine solids of the VII–VIII centuries. In: I.I. Marchenko (ed.), *Second Kuban archaeological conference. Abstracts of reports*, 94–95. Krasnodar.
- STASHENKOV, D.A. 1998. Eurasian fashion in the early middle ages (to pose the problem). In: D.A. Stashenkov (ed.), *Culture of the Eurasian steppes of the second half of the first millennium AD (questions of chronology)*. *Proceedings of the II International archaeological conference, 17–20 November 1997*, 213–231. Samara.
- TSETLIN, Yu.B. 2017. *Ceramics. Concepts and definitions of the historical-and-cultural approach*. Moscow.
- TSETLIN, Yu.B. 2018. On the General approach and method of systematic study of shapes of clay vessels. In: Yu.B. Tsetlin (ed.), *Shapes of clay vessels as an object of study. Historical and cultural approach*, 124–179. Moscow.
- USPENSKIY, P.S. 2015. *Cremation burials of the North-Western Caucasus of the VIII–XIII centuries as a historical source*. Dissertation of PhD. Moscow.
- VLADIMIROV, S.I. 2019. Breast decorations of the Saltovo-Mayaki culture: chronological aspect. In: R.S. Berestnev (ed.), *Proceedings of the Voronezh regional Museum of local lore. Issue 3. Materials of the international conference “I Zverev readings-modern local history: historical, environmental, natural and ethno-cultural aspects” (Voronezh, September 20–21, 2019)*, 106–110. Voronezh.



© 2020 by the authors; licensee Editura Universității Al. I. Cuza din Iași. This article is an open access article distributed under the terms and conditions of the Creative Commons by Attribution (CC-BY) license (<http://creativecommons.org/licenses/by/4.0/>).