

## The development of early pottery in the forest zone of the Middle Volga region (Eastern Europe)

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**ABSTRACT** – *The article is devoted to the Neolithisation in the forest zone of the Middle Volga River basin. The different conceptions of the process are considered. The archaeological materials from different sites located on this territory and neighbouring regions have been compared. The question was raised regarding animal domestication and its attributes in the forest zone of the Volga region in the Neolithic period. The hypothesis that pottery spread in the forest zone of the Middle Volga region under the influence of cultures from a forest-steppe zone of the Volga region was examined, and the chronological frame of this process was determined. However, the process has been essentially one of migration and was not autochthonous. The mobile lifestyle of early Neolithic hunters played a major part in their movements and did not connect with a productive economy (i.e. domestication). An indicator of these changes is pottery style. For the forest zone of the Middle Volga region, the earliest Neolithic vessels are characterized by rare ornamental patterns that appeared earlier than other types.*

**KEY WORDS** – *Neolithic; Middle Volga region; earliest pottery; pottery technology; domestication; chronology*

### Razvoj najstarejše lončenine na območju gozdne cone ob srednjem toku reke Volge (Vzhodna Evropa)

**IZVLEČEK** – *V članku predstavljamo neolitizacijo gozdne cone na območju srednjega toka reke Volge. Pri tem smo upoštevali različne zasnove tega procesa. Arheološki material smo primerjali tako na ravni različnih najdišč na tem območju kot v primerjavi s sosednjimi regijami. Predstavljamo tudi vprašanje domestikacije živali in njenih lastnosti na območju gozdne cone ob Volgi v času neolitika. Raziskali smo tudi hipotezo, da se je lončenina razširila v gozdni coni na območju srednjega toka reke Volge pod vplivom različnih kultur iz območja gozdne stepe ob Volgi, in določili kronološki okvir tega procesa. Proces lahko predvsem vežemo na migracije, ne na avtohton razvoj. Mobilnost lovcev v starejšem neolitiku je imela pomembno vlogo pri njihovem gibanju in ni bila povezana s produktivnim gospodarstvom (tj. domestikacijo). Eden od kazalnikov teh sprememb je slog lončenine. Za najstarejše neolitske posode na območju gozdne cone ob srednjem toku reke Volge so značilni redki okrasi, ki so se pojavili pred drugimi tipi posod.*

**KLJUČNE BESEDE** – *neolitik; območje srednjega toka reke Volge; najstarejša lončenina; tehnologija lončenine; domestikacija; kronologija*

## Introduction

The region examined in this study is situated in the basin of the Volga River. There are several main archaeological sites along the Volga. In the southern part of the Lower Volga there is an expansive steppe area, with the Samara River acting as the natural border between the steppe and the forest-steppe zone in the Volga region. Meanwhile, the Lower Kama River is the border of the forest-steppe zone to the north. The forest zone extends to the west in the Middle Volga basin (Mariyskii region) up to the mouth of the Oka River (Fig. 1).

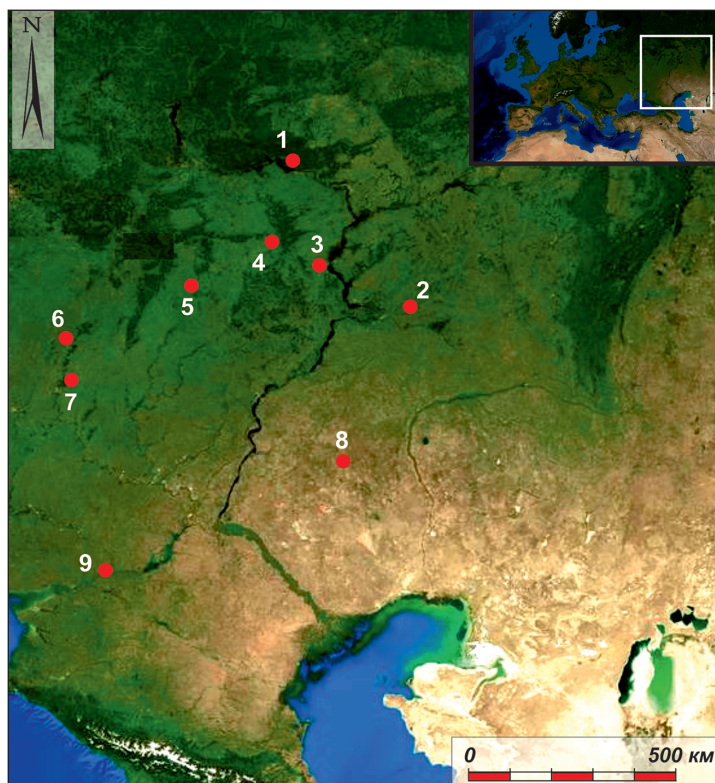
In recent years archaeologists have shown interest in the study of the development of Neolithisation in the forest zone of the Upper Volga (Kostyleva 2003; Dolbunova et al. 2017; Tzvetkova 2019) and the Kama River regions (Vybornov 2008; Lychagina 2020). Here we should note different interpretations of the term 'Neolithic'. Domestication is the main criteria of the 'Neolithic package' in the southern territories (Cilingiroglu 2005; Budja 2013), while some scholars consider other criteria for the forest zone of Eastern Europe: the appearance of ceramic manufacture, new technologies of stone treatment (polishing, drilling, etc.), and a sedentary lifestyle (Oshibkina 1996). More recently a new conception of the Neolithisation was proposed for the northern regions (Nordkvist, Kriiska 2015; Piezonka 2015). Some researchers see the appearance of pottery as the main indicator of the transition to the Neolithic, and have proposed the concept of a 'ceramic revolution' (Mazurkevich 2006). Other specialists point to the emergence of some stone tool features as critical new technologies (Leonova 2019). Archaeological

investigations focusing on the forest zone of the Middle (Mariyskii) Volga region have a significant role in addressing such questions (Nikitin 2011; Vybornov 2017). Notably, the bones of domesticated animals have been found on several sites in this region. In the other words, the southern component of the 'Neolithic package' can be found in the focal studying region. The authors of the current article have their own views on this issue, as explored below.

## Conceptions of Neolithisation process in the Volga region

According to Valeriy V. Nikitin (1996; 2011) the Neolithisation in the forest zone of the Middle Volga region happened as a result of the interaction of the local Mesolithic groups with inhabitants coming from the southern parts of the Lower Volga region. The migrants brought with them the skills of pottery making and elements of animal domestication. If the first component of the Neolithic formation on the base of local tradition (the Mesolithic without pottery) on this territory has been accepted without questions, the second component (animal domestication) is still under discussion (Vybornov 2017). In this article two critical aspects will be considered in this context. The first is about the region of cultural traditions that impacted the emergence of ceramic production in the Mariyskii Volga region. The second

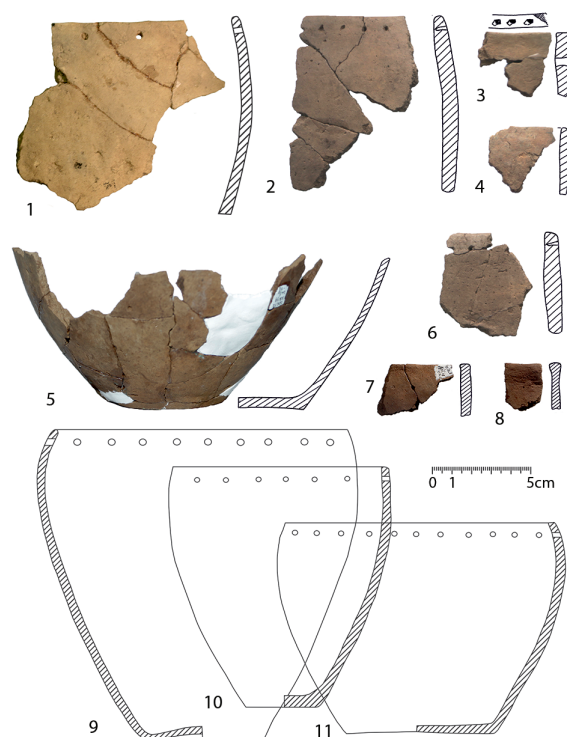
**Fig. 1.** The map of sites of the Volga-Don basin. 1 Dubovskaya III, VIII, Otarskaya VI, Sutirskaya V, Sokol'ny VII, XII sites (forest zone of the Middle Povolzhye); 2 Chekalino IV, Nizhnaya Orljanka II, Ilinka, Kalmikovka I, Lebjazhinka IV sites; 3 Elshanka XI site; 4 Vjunovo Ozero II site; 5 Oziminki II site (Elshanskaya culture); 6 Vasilievskii Kordon 3, 5, 7, Dobroe 4, 7, 8, Karamishevo 5, 9, 19 sites (Karamishevskaya culture); 7 Universitetskaya I, III, Yamnoe, Ivnitsa sites (Srednedonskaya culture); 8 Varfolomeevka, Algay, Oroshae-moe sites (Orlovskaya culture); 9 Raku-shechny Yar site.



is which of the groups of Neolithic pottery in this region is most ancient.

There are various points of view on the first question. The first is the Don variant, with historiographic tradition having an effect on this perspective. For example, Alfred K. Khalikov (1969) suggested that all innovations in the northern regions were connected with the southern ones, where more intense cultural development had been common. Here we can note that the southern Dnieper-Don region was better studied in comparison to the Lower Volga basin in the middle of 1990s, and a comparative analysis of ceramics from the sites of the forest zone of the Middle Volga and Middle Don regions was the basis of the Don hypotheses.

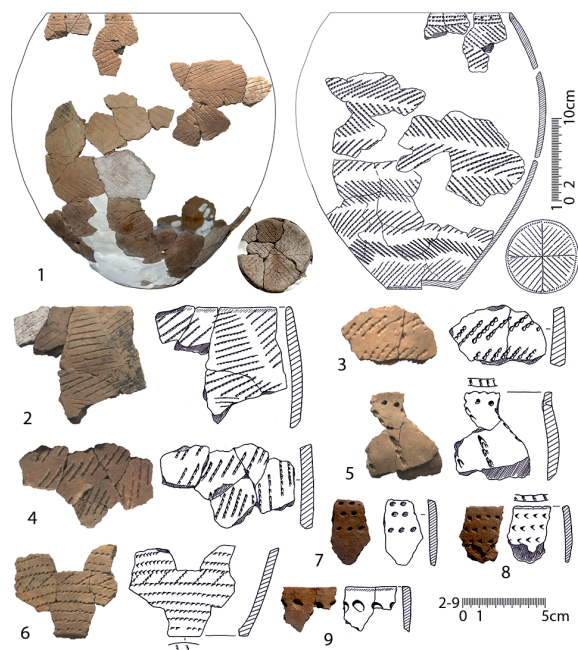
The early Neolithic pottery from the Middle Volga region is characterized by straight-walled vessels with flat bottoms. There are two groups of vessels. The first group consists of vessels with rare ornamental patterns, horizontal pit rows under the corolla, while on the inner sides of the wall, there are bulges (Fig. 2). The second group of pottery is characterized by having ornamentation only on the upper and bottom parts of the vessels. This decoration was done using the technique of a retreating stick in



**Fig. 2. The forest zone of the Middle Povolzhye. The rare ornamented pottery. 1 Otarskoe VI site; 2-6 Sokol'ny XII site; 7-8 Sokol'ny VII sites; 9-11 Dubovskoe III site.**

a triangular or oval shape, with the impressions which were done by pin action. The compositions are quite simple, with inclined rows and zigzags (Fig. 3). It needs to be noted that Nikitin did not allocate the first ceramic group to a specific type, and saw both groups as part of the same cultural and chronological complex. There are some common features of this ceramic group with pottery from the Middle Don region (Sinjuk 2004). This is the vessels with straight walls, the line of pits under the corolla and the impression technique used for the ornamentation. However, there are also some differences. Vessels from the Middle Don region do not have flat bottoms, nor any group of vessels with rare ornamental patterns. The inner surfaces of the ceramics show traces of crosshatching made using a toothed instrument. The ornamentation covers the whole surface of the vessels. One of the main ornamental characteristics is impressions in the form of the brackets and twin brackets, as well as in a triangle shape. The ornamental compositions are represented by geometric schemes (Fig. 4). Overall, the differences in the pottery typologies of these ceramic groups are greater than the similarities. The issue of the development of animal domestication at this time period remains very controversial. With regard to agriculture, it should be noted that its emergence in the Volga-Don basin has been registered as occurring no earlier than in the Early Iron Age. Sites with a single homogenous cultural layer from the Neolithic period have not yet been found to contain the bones of domesticated animals in this region. Moreover, the lack of radiocarbon dates on the sites of both regions has complicated the search for an answer to this question. On the other hand, no archaeological evidence has been found of people moving from south to north between the Middle Don basin and the Mariyskii Volga region in the Early Neolithic. All of this means we cannot yet consider the Neolithisation of the forest zone of the Middle Volga region in terms of the migration of separate social groups that possessed the skills of both pottery technology and a productive economy (animal domestication) from the territory of the Middle Don region.

Another region which could play a more important role in the Neolithisation of the northern areas is the forest-steppe Volga region. Around 30 years ago archaeologists found some technological similarities between artefacts from the Samara-Sok basin and the Mariyskii Volga region. On that basis, the specialists considered the Mariyskii region as a northern border of the Srednevolzhskaya cultural spread (Va-



**Fig. 3. The forest zone of the Middle Volga region. The pinned ornamented pottery. 1–6 Sokol'ny XII site; 7–9 Sokol'ny VII sites.**

*siliev, Vybornov 1988*). Moreover, scholars also suggested that animal domestication had been developed on the Neolithic sites of the forest-steppe of the Volga-Ural region (*Morgunova 1995*). However, all these results were based solely on the criteria of artefact typology, as in this period the technical-technological analysis of ceramics was not applied, and there were no radiocarbon dates for the Neolithic sites of these regions.

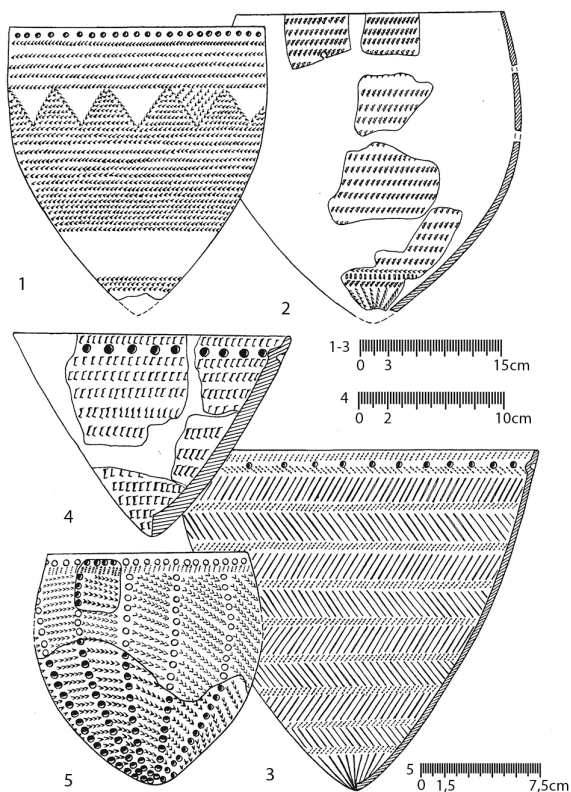
Later, more scientific data for Neolithic sites in the forest-steppe zone of the Volga region was obtained. Based on radiocarbon dates and the criteria of the typology of artefacts, the two stages of the Early Neolithic cultures were divided into the Elshanskaya and Srednevolzhskaya cultures, and a time frame was also set for these cultural traditions. Despite this, questions remained about the productive economy in these societies (*Vybornov 2008*).

### New materials and methods, results and discussion

In 2011, the technological and technical analysis of Neolithic ceramics from the sites of the focal region began to be applied (*Vybornov, Vasilieva 2013*). This analysis gave the possibility to determine some technological characteristics of Neolithic pottery for different regions. Numerous radiocarbon dates were obtained for archaeological sites of the Lower and Middle Volga and the Don River basins (*Vybornov et*

*al. 2013*). These dates were obtained on different types of organic materials, such as charcoal, bones and charred food crusts on ceramics by means of both the traditional and AMS methods (*Vybornov et al. 2017*). In some cases when the organic material was absent the radiocarbon dates were obtained on the organics from pottery, and details of this technique were published elsewhere (*Kulkova 2014*). It should be noted that the dates from charcoal and bones coincide well with those from the organics from the ceramics of the Neolithic cultures of the Volga-Kama region (*Vybornov et al. 2018a*).

Over the last ten years, the database on the Neolithic sites of the Middle and Upper Don region has expanded (*Smolyaninov 2020*). However, the characteristics of the archaeological complexes did not change significantly. Some complexes of pottery with rare ornamental patterns and flat bottoms were categorized (Fig. 6), but no evidence about the spread of these complexes in the northern area on the border of the forest zone in the Middle Volga region was obtained. There are some differences in ceramic technology between the sites of the Middle and Upper Don and the Mariyskii Volga regions (*Vasilieva 2017*), although no traces of animal domestication at these sites have been found.



**Fig. 4. The Srednedonskaya culture: 1, 2, 5 Universitetskaya III site; 3 Dronikha site; 4 Monastirskaya site I.**

In the light of recent investigations the idea proposed by Nikitin has been slightly changed. The southern vector of the Neolithisation remains, but it shifts from the Don River basin to the Low Volga region (Nikitin 2011). This can be explained by the results of investigations on the Early Neolithic sites where the flat bottom vessels decorated using a pin action technique was found. The characteristics of the artefacts from the Lower Volga region were developed on the materials from the Varfolomeevskaya site (Yudin 2004), and the bones of domesticated animals were also found at this site (Yudin 2004). Archaeologists have identified the Orlovskaya culture as a particular culture, noting that the cultural impulse from the Low Volga impacted the formation of the Neolithic cultures of the northern regions, including the Mariyskii Volga region (Yudin 2004). The comparison of the pottery of the Orlovskaya culture with that found on the sites of the forest zone of the Middle Volga region should be carried out from the point of view of their technological characteristics. The ceramic paste of wares from the Varfolomeevskaya site of the Lower Volga region consists of silt or poor sandy, silty clay, with an admixture of shells of freshwater molluscs and lake plants (Vasilieva, Vybornov 2016).

At this time some authors proposed that Early Neolithic pottery emerged in the forest zone of the Volga region as a result of cultural migration from the Lower Don region, and the Rakushechny Yar culture in particular (Viskalin 2015; Stavitsky 2015). The Neolithic pottery from the Lower Don region, unlike the pottery of the forest zone, is represented by large vessels. The vessels are characterized by profile shapes and thick walls and bottoms. The corolla has a flat cut. The inner and external surfaces are ornamented by hatching with a the tool like a comb. However, there are no ceramics with rare ornamental patterns.

The vessels ornamented by triangular impressions have horizontal rows of pit depressions under the corolla. But the patterns of decoration and the related compositions are different from that seen on the pottery from the Srednevolzhskaya culture in the forest zone of the Volga region (Fig. 7) (Mazurkevich et al. 2015), and there are also technological differences. According to Irina N. Vasilieva (2018a), the Rakushechny Yar pottery was made without the shells of freshwater molluscs and had special firing conditions. The issue of domesticated animals in the Early Neolithic society of the Lower Don region remains open and under discussion (Gorelik 2019).

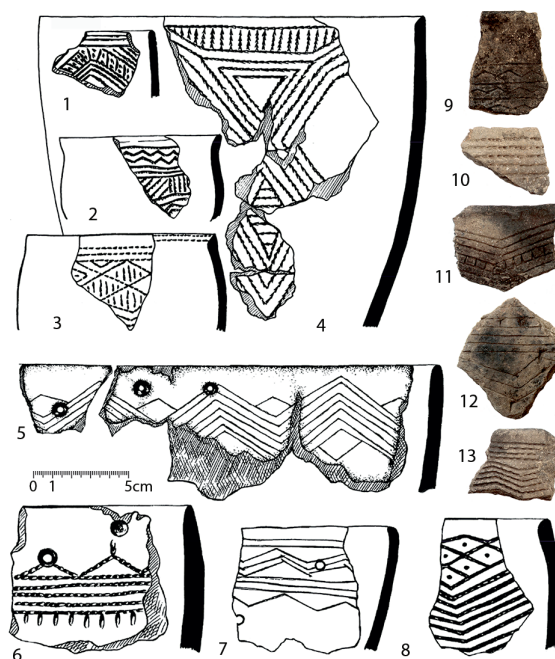
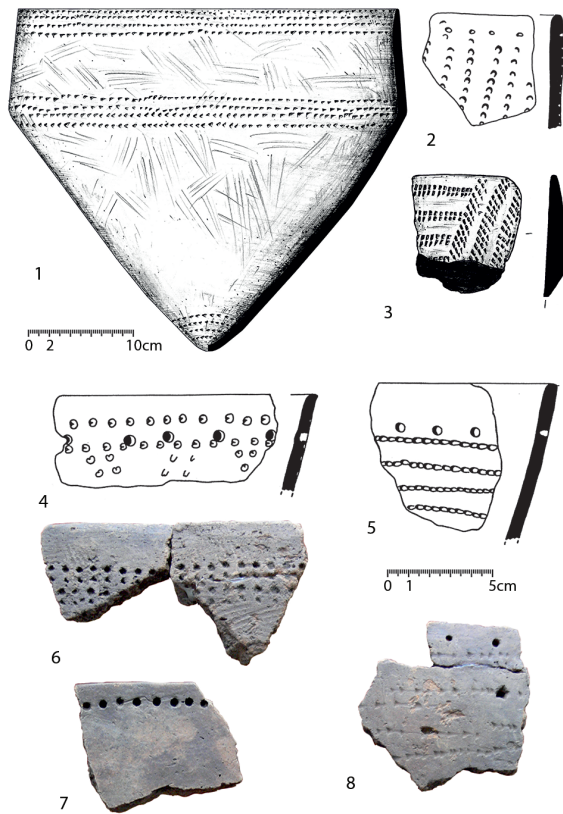


Fig. 5. The Orlovskaya culture. The Varfolomeevka site.

Therefore, the Lower Don region could not be a centre of the cultural impulse of the spread of ceramics to the forest zone of the Middle Volga region.

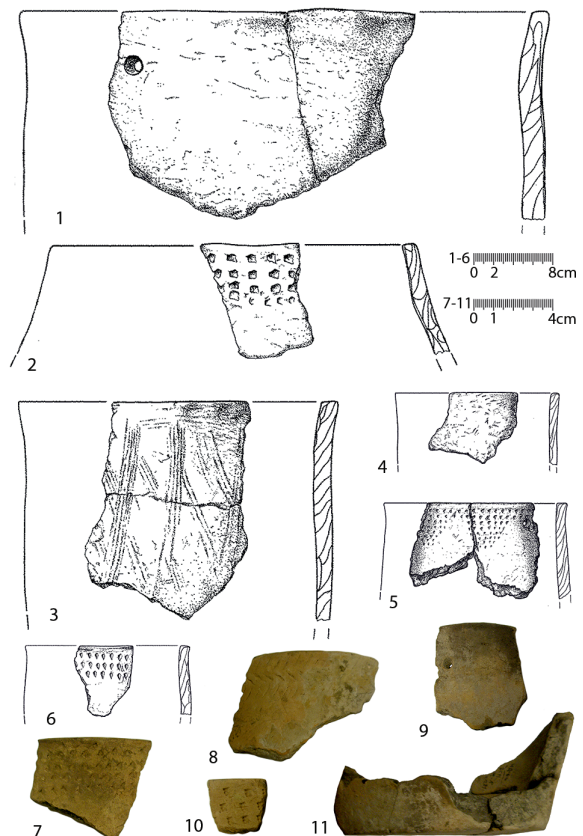
From 2014 to 2020, two new sites of the Orlovskaya culture were studied in the Volga steppe region: Algay and Oroshaemoe (Yudin et al. 2016; Vybornov et al. 2020). This raised the possibility of obtaining new information that has been supported by analytic results about the pottery technology of the Orlovskaya culture. The research confirmed earlier findings of the technological features of the Orlovskaya ceramics (Vasilieva 2018; Vybornov et al. 2018a). The same recipe of ceramic paste can be traced from the Lower Volga, but before the Samara river of the natural border of steppe and forest-steppe zones, to the sites to the north. Another recipe of ceramic paste for Neolithic pottery was determined in the forest zone of the Middle Volga region. Typically, the ceramics with rare ornamental patterns were made of silty clay without shell admixtures, but tempered by grog. The technology of pottery decorated by a pin action (impressions) did not differ from that seen with the pottery of the first technological group (Vasilieva, Vybornov 2015). In particular, given the fact that the technology of ancient ceramics is conservative, some principal differences between pottery technology from sites of the Lower Volga and the Middle Volga can be determined. Concrete examples of cardinal changes in pottery technology under the influence of migrated people from



**Fig. 6. The Karamishevskaya culture: 1, 2 Ivnitsa site; 3 Kurino 1 site; 4-5 Karamishevo 9 site; 6, 8 Karamishevo 5 site; 7 Vasilievskii Kordon 5.**

other regions in the Neolithic period are unknown, and this is contrary to suggestions about the Orlovskaya cultural basis and its part in the formation of ceramic traditions in the Volga forest region. There are also strong discrepancies in the ceramic typologies of these groups. In the pottery assemblage of the Orlovskaya culture, the group of vessels with rare ornamental patterns is missing. This ceramic group is typical of the forest zone. The flat bottom vessels are found in both cultures, but there are some differences in the corolla forms and their cuts. The decoration by a pin action is characteristic for pottery of both the Lower and Middle Volga regions. Pottery from the Lower Volga basin has different geometric compositions (Fig. 5), unlike pottery from the Middle Volga region. If we are considering the issue of migration it is difficult to suggest that this process is expressed just in one cultural component, like pottery. But it is also difficult to find any similarities in the stone tools. With regard to geometric microliths such types as segments and trapeziums are common for the Orlovskaya culture (Vybornov et al. 2020). The northern border for the spread of such artefacts is not far from the border of steppe and forest-steppe zones. Therefore, the comparative analysis of stone tools did not confirm the assump-

tion about the influence of the Lower Volga cultural impulse on the forest cultures. Moreover, the speculation about the appearance of animal domestication in the late stage of the Orlovskaya culture was not confirmed (Yudin 1995). There also are some chronological contradictions. The last stage of the Neolithic in the Lower Volga region is dated to 4500 cal BC, whereas the materials with bones of domesticated animals belonging to the earlier Neolithic stage in the forest zone have dates about 5700 cal BC. It was notable that the materials from the Vorfolomeevskaya site contained only sheep bones, whereas the bones of sheep as well as horses and cattle were found at the sites of the Mariyskii region (Nikitin 1996). As Nikitin suggested, the southern vector of domestication can be confirmed by the presence of oval drilled holes in the Neolithic vessels from the Northern Cis-Caspian and the Lower Volga regions, which can be evidence for the production of milk (Nikitin 2011). Later research on the Vorfolomeevskaya site concluded that the presence of sheep domestication remains an open question. Further rigorous investigations of a large collection of palaeozoological materials were carried out for the Algay and Oroshaemoe sites. It is important to note that these archaeological sites have sterile layers between Neolithic and Eneolithic horizons,



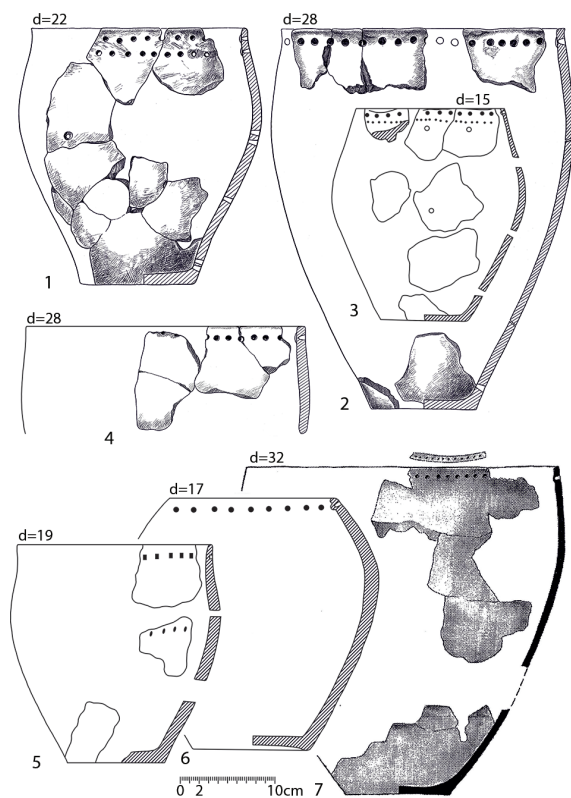
**Fig. 7. The Rakushechny Yar site.**

which prevented the mixing of artefacts and bones of different periods. The analysis of bones showed a lack of these from domesticated animals on these sites (Vybornov et al. 2015; 2016; 2019), and the oval drilled holes in the vessels are not evidence of their use for milk production (a strainer), as lipid analysis does not support the production of dairy products in this pottery (Vybornov et al. 2018b). Based on this, animal domestication could not spread to the neighbouring regions from sites of the Orlovskaya culture.

A new stage in research into this issue started with the renovation of field excavations of the Early Neolithic sites both in the forest-steppe and forest Volga regions (Vybornov et al. 2004; Andreev et al. 2020; 2020a). New data such as a series of radiocarbon dates for Neolithic sites of both regions was obtained (Vybornov et al. 2017; 2018; Andreev et al. 2020), and the technical and technological analysis of pottery of the Elshanskaya and the Srednevolzhskaya cultural traditions was carried out (Vasilieva, Vybornov 2016; 2016a). However, no evidence of animal domestication and agriculture was found. The pottery of the second stage of the Elshanskaya culture is characterized by straight walls or a turned down

corolla and flat bottoms. There is a row of horizontal pit depressions under the corolla from which the convexities on the external vessel surfaces were exposed. There are also vessels with rare ornamental patterns (Fig. 8). An analogy of this pottery was determined on the sites of the forest zone of the Middle Volga region (Fig. 2). Unlike the ceramic from sites of the Volga basin, the Mariyskii type of pottery has perforating holes under the corolla. The technical and technological analysis of the pottery of the second stage of the Elshanskaya culture shows that the paste was composed from silty and sandy clay without any admixture of shells of freshwater molluscs but with the use of organic solution and tiny grog inclusions that were applied for their manufacture (Vasilieva, Vybornov 2016a).

The pottery from the sites of the forest zone of the Middle Volga region was made of silty clay with sand inclusions (60%), as well as with an organic solution and some admixture of grog (Vasilieva, Vybornov 2015). In 2019, 13 sherds from pottery with rare ornamental patterns from the Sokol'naya site XII were analysed. The ceramic pastes consist of thin silty clay tempered by grog and fired clay and organic solution in 60% of the samples, while 40% of the samples were tempered by grog and organic solution. Therefore, not only the pottery typology but also the technological features of these ceramics are evidence of the significant proximity of vessels with rare ornamental patterns from sites of the forest-steppe and forest zones of the Middle Volga region. Between the sites of these regions there are connecting points like the Lugovoe III and Elshanskaya X sites in the Sviyaga river basin, where the same type of pottery was found. Using a series of radiocarbon dates, the chronology of this ceramic cultural tradition was determined in the range from 5800 to 5500 cal BC (Andreev et al. 2019). The most ancient archaeological complexes in the forest zone of the Middle Volga region have dates from 6000 to 5700 cal BC (Vybornov et al. 2018c). There is some likelihood that the dates in the range from 6000 and 5900 cal BC obtained on organics from pottery and charred food crusts could be the result of the reservoir effect. Therefore, the most valid dates are in the range from 5800 to 5700 cal BC. According to newly obtained dates, the upper chronological limit for this ceramic type is assessed before 5500 cal BC (Tab. 1). It needs to be noted that the pottery with rare ornamental patterns is dated to an earlier period in comparison with the ceramics ornamented using a pin action technique (Andreev et al. 2020). In fact, the age of this ceramic type on the sites of



**Fig. 8. The Elshanskaya culture (the second phase – the Lugovskoi type). 1 Bolshaya Rakovka II site; 2 Krasniy Gorodok site; 3 Lebjazhinka IV site; 4 Elshanka XI site; 5 Ilinka site; 6 Lugovoe III.**

the forest and forest-steppe zones is the same. In accordance with the conclusions of specialists and technologists (*Tsetlin 2007*), this ceramic type could not be developed without the direct transfer of the skills of pottery making. Therefore, we can suggest the infiltration of separate groups of people from the forest-steppe zone to the forest zone of the Middle Volga region that influenced the appearance of pottery making among the local people. This process cannot be explained by a sudden rise of the population on sites of the Later Elshanskaya culture due to the development of domestication. An assumption about the appearance of domestication among the Neolithic societies of the Volga-Ural interfluvial was based on the analysis of sites with archaeological complexes of different ages (*Morgunova 2004*). On the homogeneous sites of the same age only wild animal bones like tur, saiga, tarpan, elk, and red deer were identified (*Mamonov 2000*), without any evidence of agriculture. The moving of separate groups of Elshanian culture carriers connects with the mobile lifestyles of ancient hunters.

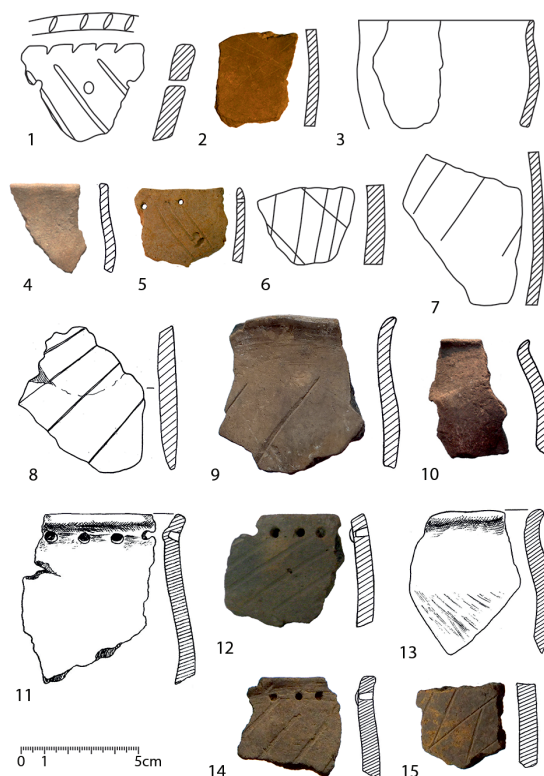
The investigations of the Neolithic sites in the forest zone of the Middle Volga region in 2018 to 2020 allowed us to obtain additional important results with regard to these issues. Several sherds which differed from vessels with rare ornamental patterns made using a pin action (impressions) were found on the Sutirskaya V site. One of the vessels has thin walls without ornamentation and a profiled shape. The second one has a horizontal in-depth groove under the corolla. Some other sherds were ornamented by dashes in the form of an oblique lattice (*Vybornov et al. 2004*) (Fig. 9). These features were discovered on the pottery from other sites of the Early Neolithic of the Mariyskii Volga region (*Nikitin 2011*, Figs. 24.1, 30.5, 62.2, 99.11, 129.10, 148.2, 157.1, 220.8). All these features are inherent in the pottery of the Elshanskaya culture (*Andreev, Vybornov 2017*). In the excavation of the Sokol'naya XII site in 2019, a thick-walled profiled vessel with a flat bottom was found. It was ornamented by dashes in form of an oblique lattice (Fig. 10). Typologically it is earlier than the group of pottery with rare ornamental patterns. This is evidence of the penetration of separate groups of people to the forest-steppe zone of the Mariyskii Volga region earlier than the time of the second stage of the Elshanskaya culture. These groups of people became the first propagators of the skills of ancient ceramic technologies among the local people. Unfor-

No.	Site	Index	Age (BP)	Calibrated age (2σ, calBC)	Material
1.	Dubovskaya	IIISPb_1290	7000±150	6113–5631	pottery
2.	Dubovskaya	IIISPb_2816	6930±120	6026–5626	pottery
3.	Dubovskaya	IIIUa-44724	6892±40	5890–5700	charred crust
4.	Otarskaya VI	Le-5998	6700±40	5628–5488	charcoal
5.	Sokol'naya XII	SPb_3189	6583±120	5720–5317	pottery
6.	Dubovskaya	IIISPb_2817	6467±110	5621–5225	pottery
7.	Dubovskaya	IIISPb_2818	6340±120	5526–5011	pottery

**Tab. 1. Radiocarbon dates from the Neolithic sites of the forest zone in the Middle Volga region: the pottery with rare ornamental patterns (1–5); the pottery decorated in pin acting technique (impressions) (6–7).**

tunately, the cultural layers of the Neolithic sites in the forest Middle Volga region lay in sandy deposits, and bones could not be preserved in these conditions. This is one of the causes of the lack of any burials for the Neolithic period, and thus there is no paleogenetic data. No burials from the Early Neolithic have been found in the neighbouring regions either.

The question about the presence of domesticated animal bones on the three sites of the earlier Neolithic



**Fig. 9. The pottery of the forest Povolzhye (1–7) and the steppe-forest Povolzhye (8–15). 1–3 Sutirskaya V site; 4 Sokol'ny XII site; 5 Dubovskoe VIII site; 6 Otarskoe VI site; 7 Dubovskoe III site; 8 Chekalino IV site; 9 Nizhnaya Orlyanka II site; 10 Kalmikovka I site; 11 Vjunovo Ozero II site; 12 Ilinka site; 13–15 Lebjazhinka IV site.**

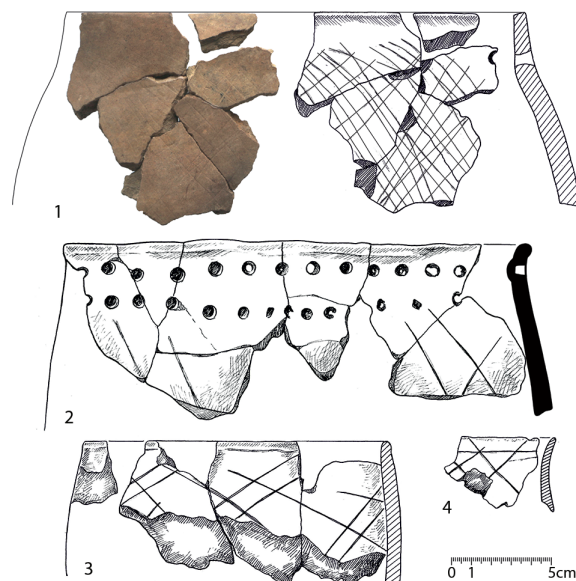


period in the forest zone of the Middle Volga region needs to be solved. The data presented in this article does not support the presence of domesticated animals on the sites of the steppe and forest-steppe zones in the Volga and Don regions. The forest zone of the Middle Volga region is outside the common context of the Early Neolithic communities. Moreover, in this region the bones of domesticated animals have not been found on the Later Neolithic sites or in the layers of transition to the Eneolithic period. based on the palaeozoological evidence, making clear diagnostic distinctions between the bones of wild and domesticated animals for the period of 5800–5500 cal BC is almost impossible. In some cases, the bones of cattle can be identified as those of aurochs, while those of a domesticated horse can be identified as those of a tarpan, and those of sheep as a saiga, so it is possible some mistakes are made. For these bones AMS dating should be done to check if their age is about 5800–5500 cal BC, or they are more ancient.

The lack of animal domestication in the Early Neolithic of the Mariyskii Volga region, as well as in the forest-steppe zone of the Volga region, was no impediment to the development of pottery technology. Moreover, similarities can be noted in complexes of the earlier stage of the Upper Volga culture (*Dolbunova et al. 2017*) and Kargapolsky ceramic type (*Kashina 2020*).

## Conclusion

Based on the evidence set out above, the appearance of ancient ceramics in the forest zone of the Middle Volga region was not connected with the cultural traditions of the Lower Volga region, or those of the Lower, Middle, and Upper Don basin. The most likely region from where ceramics appeared is the forest-steppe Middle Volga region. In the period of 5900–5700 cal BC sites of second stage of the Elshanskaya culture were spread in this region. According to the typological, technical and technological characteristics of the pottery, these ceramics have analogies to the ancient pottery from the Mariyskii Volga region and are characterized by the same age. The archaeological sites with the same pottery type were found on the transitional territory between forest-steppe and forest zones. These finds support the suggestion about the trajectory of people moving from the forest-steppe toward the north. The infiltration of separate groups of people of the Elshanskaya culture into the forest zone of the Middle Volga region is not related to an increase in population. There is



**Fig. 10.** The pottery ornamented by dashed lines (grid motive). 1 Sokol'ny XII site; 2 Nizhnyia Orlyanka II site; 3 Ilinka site; 4 Ozimenki site.

a lack of evidence of animal domestication in the forest-steppe zone as well as in the forest zone of the Middle Volga region. As such, the pottery making in the northern regions appeared not as an autochthonous process, but as a result of migrations. It can be considered not a southern impulse (from South-Western Asia), but as evidence of an eastern (Central Asian) trend in the development of pottery technology. This was connected not with the development of animal domestication, but with the mobile lifestyle of Early Neolithic hunters.

The question about the further Neolithisation of these regions, the distribution and proportion of vessels with rare ornamental patterns and vessels decorated using the technique of a pin action (impressions), the appearance of a polishing technique and double-sided retouched arrowheads with a triangular shape on the sites, remain of interest for future investigations.

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