
Golden Horde Sites Research: A Regional Experiment

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Abstract:

The article gives the overview of the most massive material description methods from the excavations of the Golden Horde sites, namely ceramics. Various scientific approaches to the study of ceramics, the history of their formation, and also the basic methods for ceramic material study (technical and technological, reference-experimental, typological, petrographic and chemical analyzes of ceramics) are examined consecutively.

The authors only touched upon the main points within each of these issues. It was revealed that over many years of archeological science development the approaches to the study of ceramics and the methods of its analysis changed.

The views of researchers on the source-research possibilities of this archaeological source remained unchanged either. In all historical cultures, the fragments of ceramic material are the mass finds, this led to the conclusion that ceramics and ceramic craft played a large role in the life of society.

A detailed study of special methods for the study of ceramics will make it possible to approach closely to the issue solution concerning the origin and the effect of pottery from adjacent territories on it, and also help to develop a scheme to classify ceramic material for fortifications in which it does not exist.

However, now for various reasons, researchers use certain methods of ceramics study more and more rarely, which in its turn leads to an unsystematic nature of the obtained results.

Keywords: *Ceramics, ceramics description methods, Lower Volga Region, ancient pottery, classification scheme.*

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1. Introduction

Archaeological studies give grounds to say that the Golden Horde cities of the Lower Volga region were the large centers of handicraft production. Entire quarters of cities were occupied by craftsmen who specialized in a certain branch: metallurgical, ceramic, jewelry, bone-cutting. The evidence is the traces of bone-cutting workshops and forges intended for baking bricks and for burning ceramics found in the course of archaeological research (Gordeev, 2002).

Ceramics makes a special difference for the Golden Horde cities of the Lower Volga region. The fragments of ceramic vessels are the most common finds during the excavation of the Golden Horde fortifications. During the study of such a massive material, researchers faced certain difficulties. Thus, the archeologists focused on the issue of ceramic products and pottery study improvement. It should be noted that in the process of improvement, a certain role was played by the synthesis of archeology with other sciences (chemistry, physics). Without this synthesis, it would be impossible to identify certain methods.

The development of the methods for ceramics study and its analysis, as well as the study of ceramics as a whole and pottery production was carried out by Bobrinsky (1978, 1999), Fedorov-Davydov (1984, 2001), Volkov (1992), Kurochkina (2006). The issue of ceramic production organization, the technology of ceramic product manufacture, as well as the study of various methodological approaches to the research of ceramics, have been and still are of great scientific interest, which makes this study relevant.

The study of ceramics and the methods can allow us to consider the issues that relate to trade and production, as well as the problems related to the ethnic composition of the Golden Horde cities population and its spiritual culture. This is contributed primarily by a rich ornamentation, many ways of vessel decoration, signs and stamps.

Purpose: to identify the main areas of research and study methods for the ceramic material of the Golden Horde cities in the Lower Volga region.

To achieve this goal, it is necessary to solve the following problems: to consider sources and literature by the methods of ceramics study; To reveal the methodical approaches to the study of ceramics, which will create an idea of the Golden Horde ceramics production originality.

Considering this topic, it is necessary to stop on the basic methods of ceramic material study, as well as on various scientific approaches to the study of ceramics, the history of their development and their content. But our consideration of approaches and methods will be brief and will only touch upon the main points within each of these issues.

2. Methods

During the research they used the necessary set of general scientific methods, including description, comparison and analysis of results.

The basis of this study was the historical-comparative method, which relies on the identification of similarities and differences concerning the methods and approaches in the study of ceramics. When a comparison is carried out, an assessment of the prospects concerning certain methods of ceramics study is performed.

The application of source complex study methods, which made it possible to reveal general and specific features in the study of the historiography of ceramic complexes of the Golden Horde cities of the Lower Volga region, is important. The used methods reflect various aspects of tradition development for the manufacture of ceramic products. And they also allowed to study the posed tasks most objectively.

3. Results

The study of ceramic material requires the use of special methods. The development of methods for the study of ceramics is carried out in three directions: the shape of the vessels; ornamentation; the technology of their manufacture.

Let us consider in detail several methods of ceramics study, which attract the attention of archaeologists - both theorists and practitioners - more and more.

Chemical analysis makes it possible to determine the chemical and approximate mineralogical composition of clay masses, to specify the percentage of silica, alumina, coloring oxides and other constituents. The results of chemical analysis are important in the study of engobes, glazes and paints. They help to reveal the features of ancient production technology, the nature and the direction of cultural and economic ties. Thus, chemical analysis was widely used in the study of the composition, the color of a crock surface and the regimes of ceramics firing (Tsetlin, 1991).

Using petrographic analysis, it is possible to determine the mineralogical composition of clays and impurities entering into the molding masses. In practice, at first the ceramic collection is studied by ordinary visual means - with a naked eye or with the use of the simplest technique (magnifiers, binoculars). To do this, a very thin cut is made on a crock of a dish and it is attached to a glass plate, a thin section is obtained. The section is studied under a polarizing microscope at a very high magnification: 200-1000 times. Petrographic microscopy serves as the key, which provides access to information almost throughout the entirety of the pottery cycle operations.

The typological method used during the study of ceramics encompasses the series of operations to break down a set of vessels into types, i.e. the groups of vessels, similar to each other and different from others. The basis of their separation are certain

features, for example, the proportions of the vessels, the outlines of a corolla or a body, an ornament. The types of vessels obtained in such a way are arranged in typological series and their direction is established in a chronological order: which vessels are older and vice versa. The vessels of one archaeological culture are compared with similar ones from another archaeological culture in order to determine their relationship to each other (Gorodtsov, 1922).

The reference-experimental method is used to study ancient pottery. The experimental method is represented by several forms. In archeology, the most applicable form of experiment is the model experiment, presented in the form of physical modeling. In the field of ancient technology study, modeling is usually used in combination with trace study and binocular microscopy. The study, based on binocular microscopy, trace study and physical modeling, refers to the identification ones, because its specific features are the comparison and the presence of two objects (Bobrinsky, 1999).

During the examination of potter fingerprints on ceramics from the Selitrenny settlement Kurochkina (2006) studied the trace study tracks left on the vessels by potters' tools. 26 handles of vessels were taken for the study made from the materials of pottery workshop No. 9. The comparison and the coincidence of traces in potter finger imprints and the traces of processing with pottery tools on the comparable exhibits allowed Kurochkina to attribute a number of products to the same master. Kurochkina (2006) noted that 7 of 26 samples had well left fingerprints, and 15 had only the marks of tools. Comparing the alignment of traces in the marks of exhibit surface treatment by a pottery tool, she came to the conclusion that there are the traces of at least four different tools.

In order to study the technological issues (technical and technological method), two approaches can be distinguished: formal classification, where the main task is to classify and systematize the ceramic material on the basis of formal morphological and physical-technical parameters obtained using natural science methods, and the historical-cultural one, where the reconstruction of pottery production is carried out and the ways of their formation, development, and changes are studied. Here the technological traces on vessels are studied (Vasilyeva, 1993).

These methods were not used until the second half of the XXth century during the study of ceramics by archeologists.

In the domestic archeological science, the historical-cultural approach was developed by the end of the 1970-ies. This approach was developed due to the research by Alexander Afanasievich Bobrinsky in such works as "Pottery of Eastern Europe: Sources and methods of study" (1978) and "Pottery technology as an object of historical and cultural study" (1999). Three groups of data form the basis of the approach: the results of archaeological ceramics study; the data on the ethnography of pottery; the results obtained during the scientific experiments in the field of pottery.

Bobrinsky proposed to consider the "skills of work" as the main elements of the cultural tradition of potters. These skills were used by potters in the process of a vessel creation during the performance of technological tasks. First of all, Bobrinsky formulated the concept of the technological process natural structure (Tsetlin, 1991). The structure includes 11 obligatory and 2 optional tasks. Each of the technological tasks could be implemented using different or identical skills of work, which means that the same or different cultural traditions can be used. The most important source in this approach is the data on ethnography. According to these data, the main "units" studied in ceramics are distinguished, then it is established that they behave differently in different cultural and historical situations.

Also Bobrinsky developed the technique of technical and technological analysis. He distinguishes several features on which the classification is based: RFK (the development of potter's wheel functions). Seven stages (RFK 1-7) are distinguished in the development of potter's skills for a potter's wheel use; the composition of the molding material (this is a plastic material of a certain viscosity, directly used in the manufacture of ceramics); A kind of beginning (the beginning is the first stage of the direct construction of ceramics, the work on which is carried out as a continuous technological creation act of one or another part of a future vessel); the program and the method of a hollow body construction (a hollow body is a figure formed after the completion of the bottom and walls construction of a future vessel); Additional surface treatment (Kurochkina, 2006).

Bobrinsky gives the idea of technical and technological analysis system in the monograph "Pottery of Eastern Europe: Sources and methods of study". On the materials of Eastern European pottery, the author tried to show the real possibilities of technical and technological method use for the reconstruction of the technological process.

Due to the application of certain methods in the study of ceramics, classification schemes have been created. There are classifications made only by taking into account the dough color and the morphology, that is, the forms of vessels, without resorting to technological analysis. Such classification schemes include the classification of the forms of non-pouring red clay ceramics proposed Fedorov-Davydov in 2001. In his work Fedorov-Davydov (2001) attracted large fragments, which were determined by the categories of vessels to which they belonged, for a full description. The author describes the ceramics of brown and yellow-red dough. All the vessels of this group have a dough of red and yellow color, well worn out with a mixture of sand, except for boilers that sometimes have the same dough, more often brown one, in this case their firing is worse (Fedorov-Davydov, 2001).

The version of a wheel form development stages by Bobrinsky (1978, 1999), about which we mentioned above, was generalized by Volkov (1992). They were given a detailed description of local ceramics for the following Golden Horde centers: Saray

al-Makhrusa, Azak, Madzhar. He proved the existence of two large groups of ceramics in the Golden Horde Azak.

The first group of workshops produced the products at a low technological level, using the sculptural molding RFK-3-4, rarely RFK-5-6), associated with Eastern European pre-Mongolian traditions. Poured ceramics was not produced. Stages RFK-3 and RFK-4 - they include the stucco ceramics, finished by a potter's wheel. The signs characteristic for the stages: machine smoothing of the surface on a potter's wheel of slow rotation; the sections of clay from an outer and an inner sides, as well as the diagonal flow of clay in a crack, which is the sign of molding by sculptural modeling.

The second group, distinguished by Volkov (1992), produced both poured and non-poured ceramics. This group produced the products at a higher technological level (by pulling them out with the wheel RFK-6-7). The characteristic features for the stages RFK-6 and RFK-7: the outer surface is smooth, the inner has wave grooves due to the pressure of the fingers when a hollow body is pulled. In a crack, you can determine the flow of clay along the walls. There may be the traces of element junction that can be mistaken for the signs of a diagonal flow of mass.

In Azak this production was introduced from the Golden Horde capitals. The products of each group have a large number of common features (Volkov, 1992). Two groups of workshops also worked in Madzhar. The first produced non-poured ceramics, and the second one produced both non-poured and poured ceramics. The second group does not have local pre-Mongolian roots and is the result of a mixture of local pre-Mongolian, Transcaucasian, Golden Horde capital and Black Sea-Crimean traditions (Volkov & Zilivinskaya, 1996). Each group is distinguished by its unity in assortment and technology.

Also Volkov (1992) was offered the classification scheme of ceramics in 1992. In the proposed classification scheme, the author identifies the following five levels: groups, departments, sub-departments, a type and a variant.

Volkov (1992) distinguished a large number of groups of ceramics, made a technological analysis, identified the localization of their production, but because of the relatively small amount of material used in the classification, a significant part of the ceramic complex was not reflected.

The development of the classification scheme for non-poured and poured red clay ceramics was continued by Kurochkina (2006). The classification of the Golden Horde town Saray al-Jedid is given, which was based on the scheme of ceramics classification developed by Volkov (1992) for the Azov of the XIV-XVIII centuries. During the development of the classification scheme, technical and technological and formal morphological approaches are used for the study of ceramics. Kurochkina (2006) notes the existence of two large groups of ceramics, which are associated with

the functioning of two groups of workshops in Saray al-Jedid. In the first and the second group of workshops, sub-departments were identified according to the methods of a product surface additional treatment for non-pouring ceramics and the method of an ornament application and the color of product covering for poured ceramics.

4. Discussion

The importance of the abovementioned methods is difficult to overestimate. At present, the methods in the study of ceramics are used to solve a wide range of problems. Chemical analysis makes it possible to determine the chemical composition of the molding masses. The knowledge of the chemical composition of the molding masses is an original source. Petrographic analysis provides information on the quantitative ratio of clay minerals. This method can provide researchers with objective results to characterize the qualitative and the quantitative data of any ceramic material. In general, the petrographic method entered quite firmly in the research procedures of archaeologists (Saiko, 1965).

When you use the typological method, the connections between different groups of ceramics is established as the result of ancient settlement excavations.

Some most common methods of pottery study among archeologists are the following ones: visually-diagnostic with the use of a binocular microscope, physical modeling techniques, experimentally standardized diagnostics and instrumental analysis using the methods of natural sciences (Chernykh & Zavianov, 2005).

The historical and cultural approach considers all aspects of ceramics as naturally arising systemic formations, which is ensured by the systematic nature of the cultural traditions, the systematic nature of the work skills and all labor activity in general. When the formal classification approach is used, it is necessary to do a great job, a lot of computational procedures and only after the work done, to organize objects into relatively homogeneous groups in order to identify their significant features. As we can see, the main feature of the formal classification approach is the desire of researchers to detail and refine the initial information about ceramics; Their continued efforts for the application of new methods to obtain this information; The possibility to check the results (albeit a formal one) of the ceramic material classification.

Pottery is organized systematically. And once clay vessels are the result of the systematically organized potter's activity, they contain information about various activities that are associated with pottery. This allows us to consider ceramics not as a "set" of features, which is typical for the formal classification approach, but as the result of certain skills of labor used by the craftsman to make a vessel, which are fixed in cultural traditions.

It can be noted that in the study of ceramics the works are widely presented that are made from the standpoint of all two research approaches. Moreover, the most common one is the formal classification, while the historical-cultural approach is less common. There are the cases where, within the framework of a particular ceramic study, the elements of different approaches are combined together. Sometimes this is called an "integrated approach" to the study of ceramics.

However, more often, when ceramics is studied, the presented methods are used only for individual fragments of ceramic products, or are not used at all. In order to describe mass material, the main features are revealed by visual inspection and the evaluation of the characteristics under study, which entails many errors. Especially, at the large gold-horde centers where there was a ceramic production, their own schools or this production had some of its local features. According to Fedorov-Davydov's (1984) opinion, in order to identify local variations of non-poured and glazed pottery of the Golden Horde, it is necessary to take into account the composition of dough, equipment, etc. Therefore, it is necessary to apply the methods of ceramic product analysis for the study of mass material.

5. Conclusions

Ceramic production was especially developed in the Golden Horde cities of the Lower Volga region. Ceramics is a massive material in archaeological research.

The result of the difficulties in mass material study is the combination of archeology with natural sciences, which made it possible to reveal new methods in archeology. The synthesis of archeology with other sciences has also made a huge step forward in the restoration of the past.

From the mentioned above, we can draw a concise conclusion that the use of various methods in the study of ceramic products allows a researcher to expand the possibilities for material study, and to increase the level of objectivity concerning the positions put forward by historians.

The abovementioned methods are very promising and the interest in them has increased now. However, not every researcher can apply them during research. This is due to the lack of well-equipped laboratories, inadequate funding and a number of other problems. Despite the existing problems, many of the techniques have become popular ones.

6. Summary

The ceramic complex of the Golden Horde fortifications of the Lower Volga region is very diverse. A large number of household ceramics among the findings makes it possible to talk about its local production. It was not reasonable to bring ceramics from afar, since it was much more profitable to organize its production on the spot. If

the imported material met, it could get to the city in several ways. One such way is trade, another is the result of a certain group of population displacement. The study of ceramics in the Golden Horde cities of the Lower Volga region was carried out in the first half of the 20th century, but the researchers did not consider the issues connected with the methods of ceramics study. This aspect has been considered since the second half of the 20th century and continues to be considered now. Thus, the historical and cultural approach and the technique of technical and technological analysis were developed by Bobrinsky (1978) in the 1970-ies. Later Volkov (1992) generalized and supplemented the version of a wheel form development stages by Bobrinsky.

The application of various methodological approaches to the study of ceramics will make it possible to draw up classification schemes for ceramics in those Golden Horde cities of the Lower Volga region where it does not exist, and also to obtain information of this kind, such as:

1. the composition of the molding mass (and impurities entering into it);
2. the data on the ethnography of pottery;
3. the data of formally morphological and physico-technical parameters;
4. the possibility of firing temperature reconstruction;
5. the nature of used pottery materials;
6. the volume of this production;
7. the kind of assortment produced by workshops.

All this, of course, complements and expands our knowledge of ceramic production in the lower Volga cities of Ulus Juchi.

The application of methods and approaches to the study of ceramics is more and more popular in the study of ceramics among archeologists. However, shortcomings and difficulties are noted, among which the main one is the lack of access to the use of chemical and physical methods. The result of this is the randomness of obtained results in the study of ceramics, the inability to compare them. Another problem is that the researchers do not consider it is necessary to resort to the use of certain methods and such features as the composition of the molding mass (and the impurities entering into it), the type of the beginning, the program and the construction of a hollow body, the methods for additional surface treatment of an article are determined visually, which also makes the performed research not entirely reliable and leads to some errors. Undoubtedly, the use of the methods for the study of the ceramics from the Golden Horde cities of the Lower Volga region extends the possibilities of its study.

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