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UTILITY STRUCTURES OF THE TRIPOLYE CULTURE

ABSTRACT

Chernovol D. 2021. Utility structures of the Tripolye culture. *Sprawozdania Archeologiczne* 73/2, 47-66.

Over a hundred years of exploration of Tripolye Culture sites have resulted in the excavation of hundreds of buildings. This paper discusses the identification of the Tripolian utility structures, their construction details, interior features, and function. The differences between utility structures and houses are also addressed. The results of the presented analysis make possible the distinguishing of three variations of utility structures. Each of these is exemplified by the cases from sites of different chronology.

Keywords: Tripolye, building, utility structure, house, building, interior

Received: 16.02.2021; Revised: 18.10.2021; Accepted: 03.11.2021

INTRODUCTION

Over a hundred years of exploration of Tripolye Culture sites have resulted in the excavation of hundreds of buildings. Most frequently those were interpreted as the remains of houses. However, the question of the existence of utility structures in Tripolye Culture settlements has also been raised. Different characteristics enabling the identification of such buildings have been suggested, but the issues of their function and reasons for construc-

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Fig. 1. Location of sites analyzed in this study:

1 – Kamenets-Podolskiy, 2 – Bernashevka, 3 – Ozhevo-Ostrov, 4 – Voloshkovo 6 (Gorby), 5 – Belikovtsy, 6 – Klischev, 7 – Talianki, 8 – Veselyi Kut

tion remain open. This paper discusses the identification of utility structures, their construction details, interior features, and function. The article also addresses the differences between utility structures and houses.

In the following, it should be noted that in studies of the Tripolye Culture, house remains are labelled “ploschadki”, while what is interpreted as the collapsed fired clay floor of an upper storey of buildings is called a “platform” (*e.g.* Kruts 2003).

Let us briefly analyse the interpretations of buildings as utility structures. Vladimir Kruts (1989) considered the buildings without interior details as such structures. This conclusion was based on the excavations of the Tomashovskaya group settlements, where the buildings without interior features are quite rare. However, more recent studies have shown that such constructions are in fact found at the Tripolye sites more frequently. It is not excluded that the “lack” of interior features was in fact caused by the high degree of collapse of a building. Another reason may be the low temperatures reached during the burning of buildings that preserved the excavated remains. Interior details did not become heated enough to be preserved as fired clay. Later on V. Kruts abandoned his assumption because assemblages of finds of different categories in buildings without interior features correspond to the assemblages coming from houses. Other researchers continued the identification of utility structures based on the size of buildings (*e.g.* Shumova and Ryzhov 2005). In this respect, it has to be admitted that a number of houses also have a small size.

Utility structures: Characteristics and variability

Let us now consider the characteristics of the excavated utility structures enabling their identification. These are the size of a building, its interior details and assemblage of finds. Figure 1 represents the location of sites with utility structures analysed in this study.

CRITERIA FOR IDENTIFICATION

The correlation between the building size, elements of interior and assemblages of finds referred to different categories has made possible the distinguishing of a type of utility structures in Tomashovskaya group settlements (Chernovol 2012). Analysis of all excavated houses of this group from seven sites has shown that a number of buildings of this type can be identified.

In the case of the excavations at Talianki (see Kruts 1990), only a single building from belongs to this type (Chernovol 2012; Kruts 1990). The analysed building had a size of 4×4.5 m; interior elements were not found on the upper storey, while the lower storey included a trough of a size of 2×2 m. Six grinding stones were located around it. This building was located near House 19 of a size of 4×11.2 m. The utility structure did not obtain a field number during excavation and was interpreted as a part of House 19.

The remains of buildings similar to the Talianki case are also known at other Tripolye sites. These are the building in Veselyi Kut settlement dated to phase Tripolye BI-II (Tsvek 1984) and two buildings in Klischev dated to the same period (Zaets and Ryzhov 1992). These constructions had nearly equal size. Ploschadka 18 in Veselyi Kut located near House 18 had a size of 14×5.5 m. One building in Klischev was located near House 10, which had a size of 14.9×7 m. One more building from this site did not receive a field number during excavation. Its size was 3.5×2.5 m. The utility structure was located near the House 11 of a size of 12×5 m (Fig. 2).

Each utility structure was aligned parallel to the long wall of a house at a distance of 1-1.5 m from it. Installations were recorded on the ground floor of these structures. The building from Veselyi Kut additionally included six grinding stones. According to the author of the excavations (Zaets and Ryzhov 1992, 32, 33). Construction 9 from Klischev had a single storey, while the daub indicates the remains of walls and ceiling. A cluster of animal bones, 26 miniature vessels (pots, bowls and leads) and eight stone tools were found inside the utility structure. We should admit that the finds do not necessarily represent the function in this case, and may relate to the ritual of house abandonment (Kruts 2003). According to the typology of Tripolye buildings suggested by Passek (1940), buildings of this kind correspond to small houses.

The analysis of buildings belonging to the Tomashovskaya and other groups indicates that houses for living necessarily include an entrance and living room, while the living

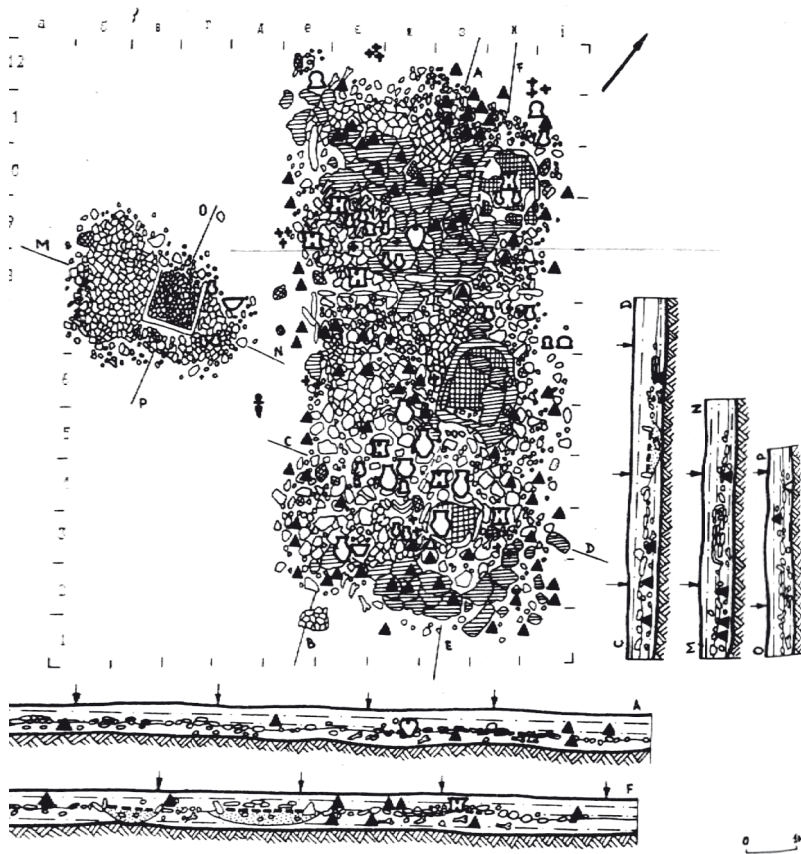


Fig. 2. Klischev. Ploschadka 11 and utility structure near it (after Zaets and Ryzhov 1992)

room should include objects used in daily life, such as an oven. Besides this, the minimal area of a room required for the placement of its inhabitants was estimated at 6 m^2 (Dyachenko and Chernovol 2009). Let us consider this value. The minimal length of the Tomashovskaya group house reaches 7 m. However, a number of buildings included altars, which required an additional 2 m in the length of the building. Buildings belonging to the other local cultural units do not necessarily have an altar, so their minimal length reaches 5 m. Therefore, buildings, the length of which does not exceed 5 m, cannot be considered as houses due to their small area. If the factor of preservation does not impact the size of the ploschadka, such buildings are considered as utility structures.

The function of a building may be also approached through the analysis of the interior details. Buildings referred to the Tomashovskaya group include troughs with a grinding stone attached to them and interpreted as working places associated with food preparation (for instance, the remains of seeds were found during the flotation of soil from the pit

placed next to the trough on the lower storey of Ploschadka 6 in Ozhevo-Ostrov (Pashkevich and Chernovol 2015). This feature was placed in a living room, to the right from the entrance. The size of the trough is equal to or greater than 0.5×0.5 m, so that only a single grinding stone may be attached to it. Troughs in utility structures are significantly larger, and they may be associated with a number of grinding stones around such an interior element. This makes possible the assumption that such buildings represent the communal processing of food. Since such activities could be linked to rituals, ceremonies *etc.*, the analysed buildings might have incorporated utility and cult functions.

It should be noted that the so-called “grinding stones” or querns could have been used in activities of other kinds instead of for food preparation. According to the studies of Galina Poplowko, stones resembling grinding stones in shape were used in the production of ceramics. Dry clay further added to ceramic clay, was processed on such stones (Poplowko 2017). Hence, we cannot exclude the possibility that a number of utility structures were associated with ceramic production. Furthermore, grinding stones could also have been used secondarily as building material when they were too heavily abraded.

WORKSHOPS

Other economic activities reflected by small buildings were also noted. For example, a complex probably associated with the processing of leather was investigated at the settlement of Ozhevo-Ostrov. A kiln used for the firing of limestone was placed in the centre of this complex. Narrow ditches linked this kiln to some pits that were located on the lower storey of the houses placed nearby. The width of the ditches reached 0.4 m, while their depth reached 0.3 m. Clay was attached to the walls and bottoms of these ditches. Later on this clay was fired, probably, as a result of burning the wood inside them in order to obtain ash. The mix composed of calx and ash was moved to the pits and then they were filled with water. The mix was used for keeping the leather in it for easier removing of pelage (Fig. 3).

Fragments of ‘platforms’ (see above) identified above such kilns may be interpreted as roofs over kilns. The remains of this type of construction were found between Ploschadka 1 and 2. The fragments of ‘platforms’ there are represented by the large blocks of burnt daub that had imprints of boards. Unfortunately, the poor preservation of the structure does not make possible the estimation of its size.

It should be noted that the function of small buildings sometimes remains unclear. For instance, a building of a size of 2.6×4.6 m was investigated in Belikovtsy dated to Tripolye phase BI-II (Gusev 1995, 64). A room sunken into the ground to the depth of 0.8 m was found below a ploschadka (Fig. 4). The installation discovered at the bottom of this room was interpreted as an oven by S. Gusev. The size of this building corresponds to the dimensions of the utility structures described above. However, this assumption is not supported by any other arguments yet.



Fig. 3. Ozhevo-Ostrov. Kiln and system of ditches between Houses 1 and 2. Illustrated by D. Chernovol

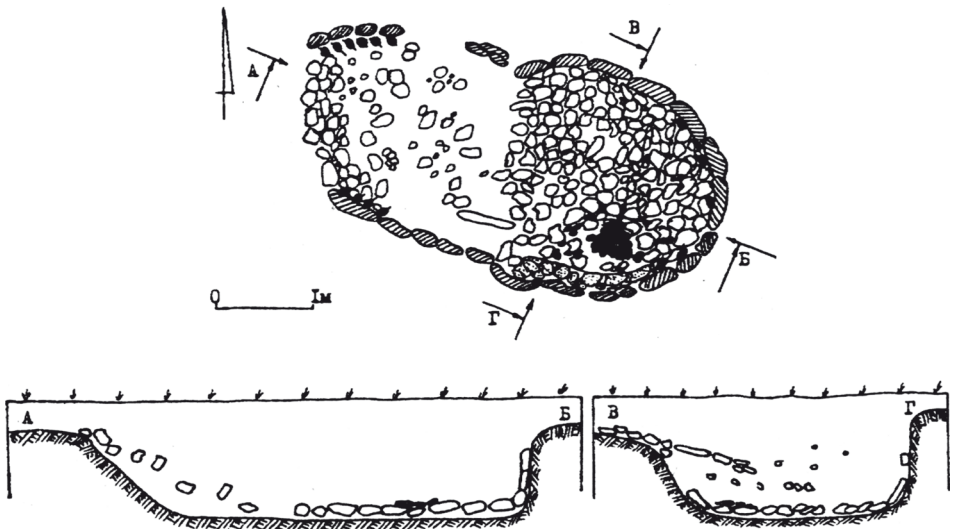


Fig. 4. Belikovtsy. The plan of ploshchadka (after Gusev 1995). Illustrated by D. Chernovol

Summarizing, we may distinguish a variation of ploschadki, the length of which does not exceed 5 m. Such buildings most likely were not used for living but may be associated with different economic activities which required a construction similar to a house.

STORAGE FACILITIES

The other variant of utility structures is represented by storage facilities. These buildings may be exemplified by Ploschadka 8 at the settlement of Bernashevka II dated to phase Tripolye CI. This building had a rectangular shape of a size of 5.5×7.5 m (Figs 5a

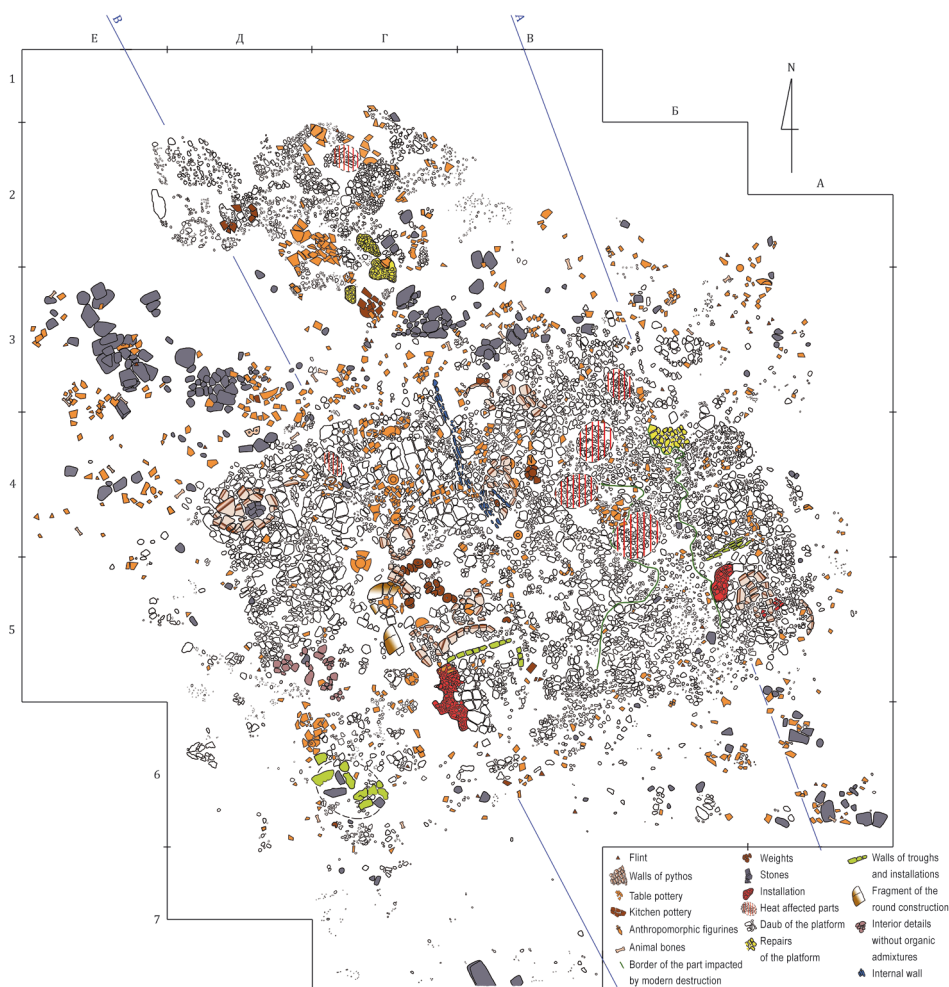


Fig. 5a. Bernashevka II. Ploschadka 8, upper storey. Illustrated by D. Chernovol

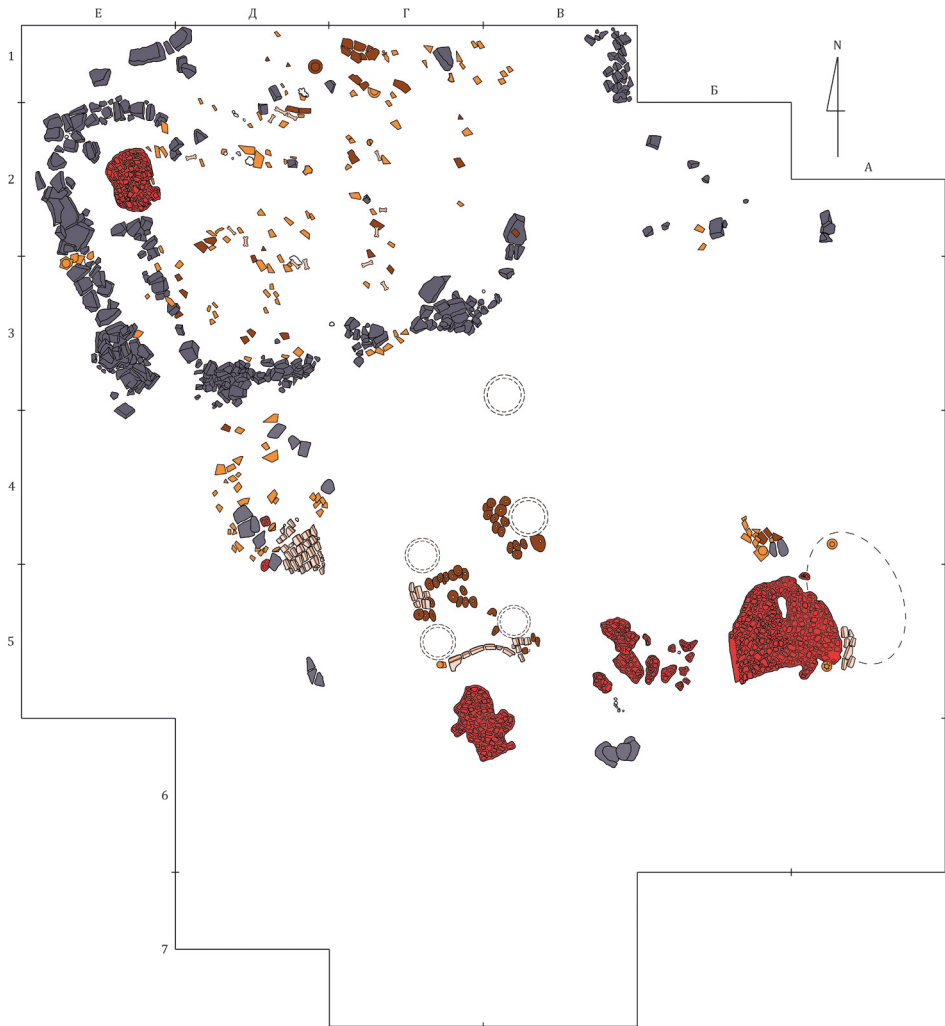


Fig. 5b. Bernashevka II. Plushchadka 8, lower storey. Illustrated by D. Chernovol

and 5b; Chernovol 2013). This building had two storeys. The upper storey was subdivided into two rooms of nearly equal size, 3.5×5.5 m. The entrance did not include any interior details. However, fragments of a trough and a grinding stone were found in the left corner of another room. Besides the trough, fragments of a round interior structure of diameter of c. 0.5 m morphologically resembling an altar was found in the centre of this room. Unlike other altars, this feature was made of clay with organic admixtures, which raises doubts considering its ritual character. Numerous vessels were placed to the right from the entrance, mainly along the internal wall, where ovens are usually located in houses.

Interior structures, *i.e.* three installations preserved fragmentarily, on the lower storey of this building were mainly located along the left long wall. One installation had walls. The one near the wall opposite the entrance was linked to a pit, partly located inside the building and partly outside it. This raises questions about the construction of the wall and its existence at all. A helmet-shaped lid covering some ochre and fragments of a container vessel were found in this pit (Fig. 6).

Numerous fragments of table pottery were found below the collapsed fragments of the 'platform' in the central part of the building. These sherds represent bowls, helmet-shaped lids and pear-shaped vessels. A cluster of loom weights was also found in this part of the building, probably indicating the location of a loom.

In general, fragments of seven container vessels were found in the lower storey of this building. Fragments of their walls were mainly found together with fragments of burnt daub, but the bases were located *in situ* on the ground floor. This was the first find of container vessels at the settlements of the Petrenskaya group. Previously, such vessels were associated only with Tomashovskaya group houses (*e.g.* Kruts 2003). Unlike the Tomashovskaya group, container vessels of a pear shape, these finds had a mortar shape.

The location and density of the interior structures in this building and the high number of container vessels inside it allow the interpretation of this building as a storage facility. It is not excluded that, besides storing food, this building was used for other activities associated with the grinding stone, loom and installations.

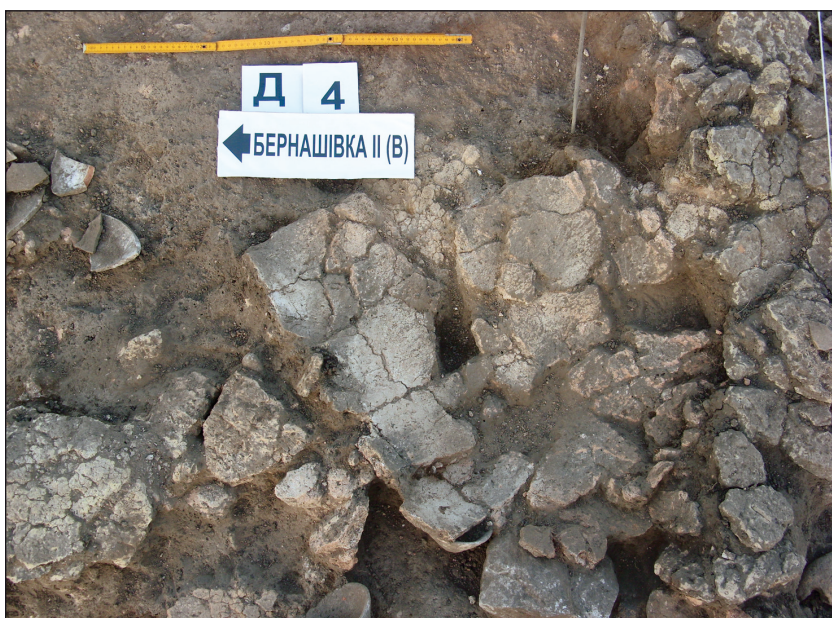


Fig. 6. Bernashevka II. Ploshchadka 8, container vessel. Photo by D. Chernovol

SINGLE STOREY CONSTRUCTIONS

The third variety of buildings is represented by single storey constructions, remains of which are represented by fragments of burnt daub formerly covering the walls. This variation is represented by the buildings in Kamenets-Podolskiy, Voloshkovo 6 and Dobrovody.

According to the finds, the utility structure in Kamenets-Podolskiy was associated with copper processing (Figs 7 and 8; Czernowol 2017). Daub fragments had only imprints of the thin sticks to which it was applied indicating their relation to the walls. Daub fragments were located in a line that was 2 m width. Therefore, we are dealing with the single storey building with a ground floor. This utility structure was only partly investigated, because of its location in the modern city of Kamenets-Podolskiy. The remains of this building are partly covered by the periphery of a house block. Therefore, it is not possible to reconstruct the size of this utility structure. However, the excavated part allows us to characterise the function of this building. This ploschadka belongs to the Petrenskaya group dated to the Tripolye CI phase. Considering other excavation-sites in this part of a city, the workshop was probably located in the internal part of the settlement structure.



Fig. 7. Kamenets-Podolskiy. The wall of the workshop. Photo by D. Chernovol



a



b

Fig. 8. Kamenets-Podolskiy. Profile of the pit in the workshop (a) and the fragments of smelting bowls (b)
Photo by D. Chernovol



Fig. 9. Voloshkovo 6 (Gorby). Ploshchadka 2. Photo by D. Chernovol



Fig. 10. Voloshkovo 6 (Gorby). Ploshchadka 2, the beam in installation 3. Photo by D. Chernovol

A pit of a size of 2.1×2.9 m and with a depth of 1.2 m was investigated below the remains of the wall (Fig. 8). Its filling included numerous remains related to copper casting. More specifically, 40 fragments of crucibles, including 18 fragments of rims with copper on them were found (Fig. 8). Such fragments were also found on the ground floor of the building. One fragment of a casting mould was also found below the remains of the wall (Fig. 7). The crucibles were made of clay with organic admixture. They were partly turned to a ceramic slag because of the affect of heating. Most probably, this pit belonged to the structure of a workshop. It had a flat bottom and a step on the wall (maybe a place where the craftsman was sitting). A shallow depression of a depth of 0.1 m was found near the opposite wall. The walls were quite steep. It should be noted that Tripolye Culture pits are mainly lens-shaped in section. They were initially used for the extraction of clay and then turned into garbage pits. The pit in the workshop also was turned to a garbage pit, but the change in its function corresponds to the time after destruction of the walls.

In this case, the unique character of the building is associated with the construction techniques. Single storey buildings are rather exceptional for Tripolye CI, being typical for the Tripolye CII/2 phase. The lack of a second storey was probably caused by the high temperatures generated on the first storey. The interpretation of the function of this utility structure is made possible by the character of the finds.

Similar buildings were excavated at the settlement of Voloshkovo 6 (Gorby) referred to the Brynzeni group of the transitional period from phases Tripolye CI to Tripolye CII. These buildings were located at a distance of 10 m from each other outside the settlement. Ploschadka 2 of a size of 9.5×6 m was aligned along a north-south axis, while Ploschadka 3 of a size of 4×5 was aligned along an east-west axis (Figs 9-12). Information on Ploschadka 2 is limited, due to its later destruction by Bronze Age pits.

Along the long walls of Ploschadka 2, large fragments of burnt daub with imprints of wattles of a diameter of 5 cm were found. The thickness of these fragments reached 10-15 cm. All the daub fragments are associated with walls. The back wall was highly affected by heat reaching a temperature of $1,000^{\circ}\text{C}$ (the latter is reflected by the vitrified daub). Probably this utility structure was subdivided into two rooms, *i.e.* an entrance room and the working space. This assumption is supported by the fragments of daub located in a line that is perpendicular to the long walls of the building. Besides this, the installation located nearby on the long axis of the building may indicate the entrance to the working space. If this assumption is true, then the size of the entrance room was 4×6 m, and the size of the working room was 5.5×6 m. Generally, such an organization of space is known for the lower storey of the buildings of type B (see below; Chernovol 2012; 2013). Interior details in such buildings were located closer to the back wall.

Five clay installations were discovered on the ground floor. Two of them were located along the left long wall, one near the back wall, one to the right of the entrance, and the other one in the centre of the structure. Four of these installations were preserved in fragments, while installation 3 near the back wall had interesting construction details. It had



Fig. 11. Voloshkovo 6 (Gorby). Ploshchadka 3. Photo by D. Chernovol



Fig. 12. Voloshkovo 6 (Gorby). Ploshchadka 3, movable table. Photo by D. Chernovol

a rectangular shape of a size of 2×2 m. The installation was elevated above the ground floor by 7 cm. It was made of two layers, c. 3.5-4 cm thick. The upper layer was smoothed, preserving the imprints of the lower layer on its bottom side. The lower layer having a surface of a black colour was not fired well. The heating was directed from the top downwards. A round trough-shaped depression of a diameter of 0.7 m was made in its eastern part. The height of its walls reach 10 cm and their thickness reach 4 cm (Fig. 10). A 0.3 cm thick layer of burnt mollusc shells was found in this trough. By burning the shells of the mollusc *Unio*, one may obtain the components of paint or a component used in processing of leather. Broken kitchen pots were found near each installation. Some pots had crater shapes, some had spherical shapes. Probably, these pots were used as containers during production of white paint.

Ploschadka 3 was better preserved. Its walls had collapsed inside the building and visually resembled a 'platform' (Fig. 11). However, the clay elements of the building, due to the imprints of wood, are associated with walls. This questions the construction techniques of small-sized utility structures.

Usually researchers did not provide the readers with morphological description of the constructions of the analysed buildings, noting only the remains of 'platforms' (i.e. collapsed upper floors). In one case (Ploschadka 9 in Klischev) remains of walls were noted, but were not accompanied by detailed descriptions (Zaets and Ryzhov 1992, 32, 33). Our analysis suggests that the small-sized utility structures were single storey buildings. In cases of the inward collapse of the walls, the latter could be misunderstood as being 'platforms'. The detailed description of the walls of Tripolye houses was made possible by the excavations of House 4 in Dobrovody, where the preservation of construction details was excellent (Kruts *et al.* 2005). Later on, this allowed the identification of walls at other Tripolye settlements.

A number of installations with grinding stones were found on the ground floor of the Ploschadka 3. A movable rectangular table of a size of 0.7×1 m and 0.05 m height was found in the centre of this building (Fig. 12). It is notable that this table had a shape similar to a trough, because its central part had fallen down, while walls below it used as a support remind us of the walls of a trough. One of the long walls of this table had a 0.2 m length depression. The strength of this feature was increased by embedding wooden sticks in the construction. The function of the table is unclear. It rather reminds us of a ritual feature. A mix of calcite was found nearby, indicating the function of the utility structure. Therefore, similar to Ploschadka 2, Ploschadka 3 is associated with activities related to calcite processing.

A similar building was excavated at the Tomashovskaya group settlement of Dobrovody in 2016 and also interpreted as a utility structure (Korvin-Piotrovskiy *et al.* 2016). However, its size is different, while the interpretation of function requires further consideration.

Besides the analysed utility structures associated with buildings preserved as ploschadki, one should not exclude buildings that did not have walls covered by clay. Such features may be indicated by some installations located outside ploschadki. The use of

installations are outside buildings is known for the overall duration of the culture. Most frequently they are located near houses. Installations were made of clay without the organic admixtures typical for the bases of ovens in houses. These installations were composed of several layers of clay indicating the periodical repair and, therefore, a relatively long period of functioning. They were affected by heating from the top downwards. Generally, installations are similar to open fireplaces. However, this does not directly suggest an identical function.

An installation including a 0.2 m deep round depression of a diameter of 0.3 m covered with clay was found at the Early Tripolye settlement of Bernashevka (Chernovol 2016). Most probably, this depression was used for placing a pot there (Fig. 13). Numerous kitchen pottery sherds were found near this installation. This may indirectly indicate its use for cooking, maybe in summer time. A cluster of fire-affected stones was found between this feature and the nearest house. It is not excluded that these stones were heated on the installation and then used for heating water or for cooking. Five flat stones of a size of 0.2 × 0.3 m were located near the installation at a distance of 3 m from each other forming a “rectangular” perimeter to this feature. The stones could have supported pillars holding up a roof. It should be noted that the “rectangle” was aligned parallel to the ploschadka. The roof might have been used during the rains. If this is the correct interpretation, this feature represents one more variation of the utility structures.



Fig. 13. Bernashevka I. Installation outside dwellings. Photo by D. Chernovol

A number of pits investigated at Tripolye Culture settlements might have been covered with a roof. This assumption is based on the following excavation results. A flint processing workshop with specially prepared working areas was explored at the settlement of Pekari II dated to Tripolye CI (Ovchinnikov and Pichkur 2003). Permanent exploitation of such features might have required a roof. A similar workshop linked to the production of axes was also explored at the settlement of Lomachintsy (Balakin 1995). Despite there being no direct evidence confirming such roofs, the proposed assumption may be supported by noting the numerous cases of flint workshops located in the lower storey of houses. In the analysed case, such activities might have been relocated to specially prepared workshops.

CONCLUSION AND DISCUSSION

The number of utility structures known for Tripolye settlements at present is quite low. If the area of a Tripolye house is subdivided into spaces associated with activities of different kinds, then the average area used for the location of people and sleeping reaches c. 14-16% of the total size of a house. This may be illustrated by the sample obtained for the megasite of Talianki (Chernovol 2012). Other parts of a building were used in different daily activities. Buildings with altars also include a ritual area near the altar, which comprises some 1% of the total area of a house. Food processing was probably associated with working areas. Therefore, we can assume that the function of utility structures is related to activities of other kind.

The results of the analysis presented here make possible the distinguishing of at least three variations of utility structures. These are as follows:

Variation 1 includes buildings of a small size, 4×4 m on average, which does not make living in them possible. The activities in them were probably associated with communal work, maybe of a ritual character, and also the production of components used in ceramic production and leather processing. Such utility structures may be located near the houses, but sometimes they are spatially distinct in the settlement structure.

Variation 2 is represented by storage structures of a size corresponding to dimensions of houses. Interior details in storage buildings are arranged in a way that does not make living in them possible. Also such buildings lack ovens. Numerous containers and table vessels were placed on both storeys.

Variation 3 includes single storey workshops associated with copper working and other activities, such as calcite processing.

It should be noted that the analysis of the Tomashovskaya group houses allowed the drawing of conclusions on the location of different interior details, i.e. installations, troughs, ovens, benches, across almost the overall house space. The lower storey and the entrance room of the upper storey were used for different economic activities. Up to six working places were associated with houses of this local group. In structures with utility

additions to houses, the area used for sleeping reached only 5% of the total area of the structure (*e.g.* Kruts *et al.* 2008). Most of the Tomashovskaya group houses relate to variation A structures (buildings without interior details on the lower storey). Buildings belonging to the variation B (those that include interior elements on the lower storey) dominate in other local cultural units. The increase in a size of a house generally means the increase of the number of working places. This pattern questions the necessity for utility structures, especially considering the fact that we know of bone and flint processing, and even leather processing (Ozhevo-Ostrov) inside the houses.

Most probably, the utility structures were built for different reasons. First of all, some activities needed to be moved away from living spaces. For example, installations outside the houses used as fireplaces in summer time meant that the house's oven was not used for heating and thus the process did not cause an increase in temperature inside a house. It is interesting that the so-called "summer kitchens" still exist in Ukrainian villages and were used for this reason. Of course, copper casting needed to be moved away from the place where people lived.

Social and sacred reasons for the construction of specific utility structures also should not be excluded. These factors might have led to the construction of small buildings with elevations and troughs. If such buildings were used for communal cooking, then this activity could have had a ritual character. If such buildings were associated with the processing of components used as admixtures to ceramic clay, then different potters might have commonly used those buildings. Storage facilities may have been associated with population groups that were units of the structure of the settlement's population. Since the storage facilities are represented by a single case, of course, this assumption needs further confirmation.

On another hand, the small number of utility structures might be the result of their differential preservation. Ploschadki were formed as a result of the ritual burning of houses. So, it is not excluded that it was mainly houses that were burnt, while the utility structures might have remained unburnt and therefore not so easy to detect in excavations and the preservation of described buildings described here was partly caused by occasional fires.

The analysed cases also allow the drawing of several conclusions considering the location of the utility structures at the settlements of the Tripolye Culture. In the Petrenskaya group settlement of Kamenets-Podolskiy, such a feature was located in the internal part of the settlement, while in the Brinzeni group site of Volshkove 6 (Gorby) the utility buildings were located outside of the area where houses were located. The location of a copper casting workshop in the centre of the settlement might have been caused by the value of the tools produced there. Calcite processing was probably associated with communal activities and moved away from the living space of the settlement. Leather processing in Ozhevo-Ostrov required an access to water, which dictated the choice of location of this complex in the settlement structure. Other features analysed in this paper were linked to houses and used for the daily needs of their inhabitants.

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