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BRONZE AGE FORTIFIED SETTLEMENT ON ZYNDRAM'S HILL AT MASZKOWICE (POLISH CARPATHIANS)

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Abstrakt *Wśród wielu prehistorycznych osiedli wyżynnych położonych w Karpatach Zachodnich stanowisko w Maszkowicach wykazuje unikatowe cechy. Osada zajmuje szczytowe wypłaszczenie (około 0,5 ha) niewielkiego cypla nazywanego Górą Zyndrama, która dominuje nad doliną Dunajca. Prowadzone na dużą skalę prace wykopaliskowe z lat 1959-1975 doprowadziły do odsłonięcia pozostałości zabudowy z końca epoki brązu i z wczesnej epoki żelaza. Dopiero jednak nowe badania, realizowane od 2010 roku, pozwoliły na dokładniejsze zadokumentowanie pozostałości osiedla z wczesnej epoki brązu, w tym monumentalnych kamiennych fortyfikacji, które otaczały osadę począwszy od jej pierwszej fazy. Mur z Góry Zyndrama jest datowany na XVIII w. p.n.e. i stanowi jeden z najstarszych przykładów kamiennej architektury obronnej w Europie poza strefą śródziemnomorską. Dzieje osadnictwa z wczesnej epoki brązu mogą być podzielone na trzy fazy budowlane. Podczas drugiej i trzeciej z nich konstrukcja kamienna pełniła funkcję muru oporowego podtrzymującego taras budowlany. Pozostałości kilku domów z tych faz były przedmiotem badań prowadzonych w latach 2010-2017.*

Słowa kluczowe *wczesna i środkowa epoka brązu, archeologia Karpat, wczesna architektura kamienna*
Keywords *Early and Middle Bronze Age, archaeology of the Carpathians, early stone architecture*

Introduction: geographical context of the site

The aim of our paper is a short presentation of main features of the fortified settlement located at the very edge of the OFCC area, in Maszkowice village (southern Poland). We shall focus consecutively on geographical and settlement context, range of the site, current state of research, methodology of excavations and material analysis, chronological framework of the site and finally detailed description of the OFCC settlement and its subsequent building phases.

Geographical location is a one of reasons for which the Maszkowice site is particularly interesting from the archaeological point of view. The settlement lies in the Western Carpathians at the junction of an important communication routes leading through the mountains (Fig. 1). At the same time, however, its immediate vicinity is confined to a narrow intermountain valley, which makes it a kind of an isolated small-world – ideal object for palaeoecological studies. The site is located in microregion called the Łącko Basin (Kondracki 2002).

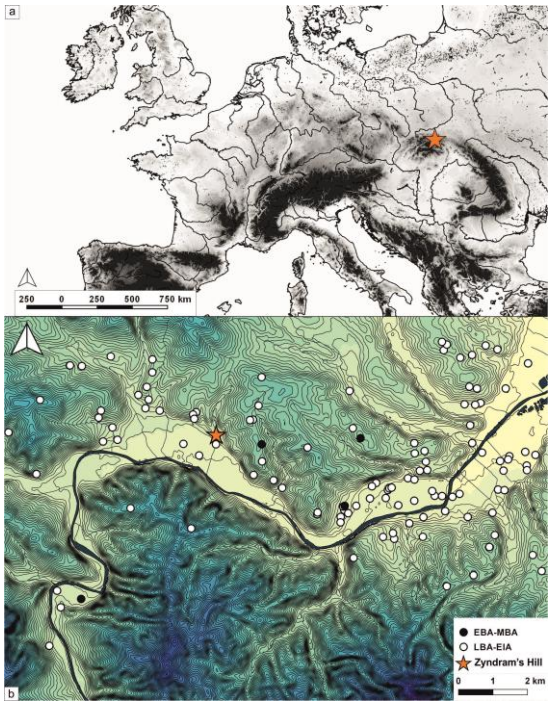

Fig. 1. Localization of the hillfort on Zyndram's Hill in Maszkowice against the Bronze and Early Iron Age settlement network within upper Dunajec valley

This 7.5 km^2 area has been formed during the Quaternary in a result of Dunajec river activity and fluvial erosion (Zuchiewicz 1999). Southern border of the Łącko Basin was created due to the indentation of the river in the steep slopes of the Beskid Sądecki. In contrast, the northern part of the region is more accessible and consist of gently waved promontories extended on the foreground of the Beskid Wyspowy.

The Bronze and Early Iron Age settlements were established at the tip of one of them, called Zyndram's Hill, which is rising about 410 meters above the sea level and 50 meters directly above the Dunajec river terrace (Fig. 2).

Figure 2. View on the Łącko Basin (from the East)

Detailed description of the archaeological site localisation and its economical and social consequences was already published elsewhere (Przybyła et al. 2012; Kienlin et al. 2014; Korczyńska et al. 2015), but one have to mention that elevated position of the hilltop plateau allows to observe and visually control the whole widening of the river valley and adjacent area. Today this hilly region is densely covered by the forest but it can be assumed that the settlement was also very good visible from the distance. Moreover, the localisation at the "edge zone" between Beskid Wyspowy Mts. and Dunajec valley offered possibility of economic exploitation of both upland areas, where husbandry can be practised, and lowland agricultural area. A high valley terrace of the Pleistocene age spreading at the foot of Zyndram's Hill (Zuchiewicz 1992) is featured by the occurrence of Fluvisols, which are alluvial soils formed from light and medium dusty clay, very fertile and at the same time easy to cultivate (Mapa..., 15-16). Another kind of a natural resources which might have been exploited by the inhabitants of discussed site, are brine springs (Cabalska 1971: 433). With respect to microclimatic conditions, Zyndram's Hill is also characterised by attractive feature such as almost flat surface, which can better accumulate the sun warmth what results a relatively long frostless period (Hess 1969, 28). Majority of slopes in the surroundings are also exposed to the south, having a richer plant cover, which additionally indicates their usefulness for husbandry (Tunia 1989: 132). Finally, location about 50 m above the river valley bottom makes the site out of the thermal inversion reach, what allows to avoid some unfavourable phenomena such as fog or relatively large diurnal temperature range (Hess et al. 1976: 57).

According to palynological investigations in the area, there is a long gap in the settlement

history of the Łącko Basin between the Early Neolithic and the Bronze Age (Korzeń 2017). This is also clearly visible in results of surveys conducted in the region since the end of the 20th century (Przybyła & Jędrysik 2017: 103). Furthermore except four single findings dated generally to the 3rd and 2nd millennia BC there is no trace of other human activity in the region during the Early-Middle Bronze Age, what stays in contrast to the situation certified for the later chronological periods. That research show that the population which settled on Zyndram's Hill in the Early Bronze Age colonized and existed within scarcely inhabited area. The closest securely-dated site of a similar chronological classification is the hilltop settlement at Marcinkowice, ca. 25 km from Maszkowice, which provided materials of both epi-corded ware (Mierzanowice culture) and classic OFCC (Kadrow & Machnik 1997: 121, 130; Przybyła 2009: 230–232).

History and scope of archaeological activity

Settlement of the OFCC at Zyndram's Hill rises directly above Maszkowice village and occupies tip of the promontory which is about 50 meters wide, 110 meters long and has area of about 0.5 ha (Fig. 3). Longest axis of the site is running in the NNW-SSE direction but the area has a roundabout exposure with an artificial plateau in the NE part and gently sloping W and S parts. Hillfort was discovered in 1906 by Włodzimierz Demetrykiewicz and excavated by Maria Cabalska from 1959 to 1975 who opened in total area of 24 ares located mostly in central and northern zones of the site. Studies conducted on the archaeological material obtained during the old excavations are currently in progress but state of documentation often does not allow for reliable analysis. So far seasons 1960, 1961, 1971 and 1972 were elaborated including both artefacts from cultural layers and features therein large Early Bronze Age storage pit published by Cabalska (1974) directly after excavations.

A special database was created to examine, describe and connect materials from the old excavations to stratigraphical units but the possibility of observation was limited only to the general chronological overview. For this reason in 2010 we started new excavations which are focused in the northeast edge zone of the enclosed part of the site, where until 2018 we have uncovered surface of 862.5 square meters. Two trenches (52 square meters) were also opened in the western part of Zyndram's Hill, one trench (25 square meters) below the eastern terrace and another test trench (25 square meters) more than 100 meters toward the north from the hillfort. Furthermore our standard procedure of the stone fortifications recognition is the electrical resistivity which was undertaken before excavations for the whole circuit of the site. The method was verify by the set of drillings which were located not only in the enclosed space of settlement but also in the open zone to check results of geomagnetic survey. This research embraced part of the eastern terrace of Zyndram's Hill and as we already mentioned also at nearby area of a high plain. Mountainous zone with its unfriendly soil conditions occurring also in Maszkowice makes the method unhelpful, however boreholes obtained in the base area of the promontory brought a discovery of dark cultural layer covered by a 40 cm deep modern erosion level. In a result we opened a test trench located about 120 meters from the enclosed space into the high plain which proved that the archaeological site itself was bigger. Eroded cultural layer is probably connected with Late Bronze and Iron Age occupational period but ongoing works on material showed also a presence of small collection of Early Bronze Age shards.

Excavation process is carried out in two ways. Archaeological structures such as cultural layers, houses or other features are carefully exploring by 10 cm deep mechanical levels using small tools while the stone fortification zone we are uncovering by a plastic method. Spatial distribution of every kind of artefact is measured using total station so their position is strictly documented and can be precisely ascribed to the stratigraphical units. Every exploration level is cleaned after excavation and documented by drawing and photography or by a photogrammetry in the case of stone fortifications so interpretation process is carried out both in the field and in the office conditions. In order to detail identification of cultural layers character we use chemical methods of organic and mineral phosphorous investigation and micromophological studies of thin sections. Pottery fragments are analyzed regarding features connected with production and post-depositional conditions and drawn after this stage, then the stylistic and formal criteria can be describe. The lithic material is also analyzed by a specialist, likewise the faunal and botanical remains. In further process we are able to defined

Figure 3. Site plan with localization of trenches and boreholes

and describe full assemblages connected to the occupational periods and structures named out on the basis of field observations.Spatial analysis referring to both the field and material situations and the geomorphology of the object and the region (for instance Viewshed or Slope analysis) are carried out using Quantum GIS programme with exploitation of data produced during excavations, geodetic plans and Digital Elevation Model.

The situation which we are dealing with when uncovering the stone wall is slightly complicated so finally the fortifications method of exploration and documentation should be explained in detail. Relicts of structure more or less *in situ* are covered in some (northern gate complex, see further) by two or in other places by four layers of stone rubble arisen in the destruction and erosion process and lying on steep slopes directly outside fortifications line. We have adopted for this reason a methodology which relies on a plastic exploration of subsequent stone levels with a photogrammetry of each. It consists of choosing precisely which stone should be removed after documentation because it is not lying in its original position, and then exploring eroded remains of cultural layers which are covering next level of stones. The documentation of stone rubble, displaced slabs and finally blocks constituting inner face, inside o the wall and outer face is redrawn: each level of stones in the same way then are combined in a drawing of an architectural structure.

Basic characteristics of the settlement

The site can be divided into two zones. Excavations in the central and northern part of the hilltop plateau led to discovery – directly below the modern topsoil – of more than one hundred storage/refuse pits, dated back to the Late Bronze and Early Iron Age. They are mainly shallow (between 50 and 100 cm) and semi-oval in cross-sections (Przybyła & Jędrysik 2017: 97–99). On contrary, along the edges of the northern and eastern terraces, in the highest part of plateau, lies the zone of the composite package of cultural layers, which in some places is up to 2 m thick. Because boundaries between subsequent layers are usually clear, the stratigraphical sequence of this "tell-like" part of the site provides main framework for the internal chronology of the prehistoric settlement. Currently it can be divided into two main occupational periods (Early Bronze Age and Late Bronze-Iron Age) separated by a half thousand years long gap, and eight building phases. The should be "last" (!) ones are understood as the shortest horizons of settlement development (Fig. 4).

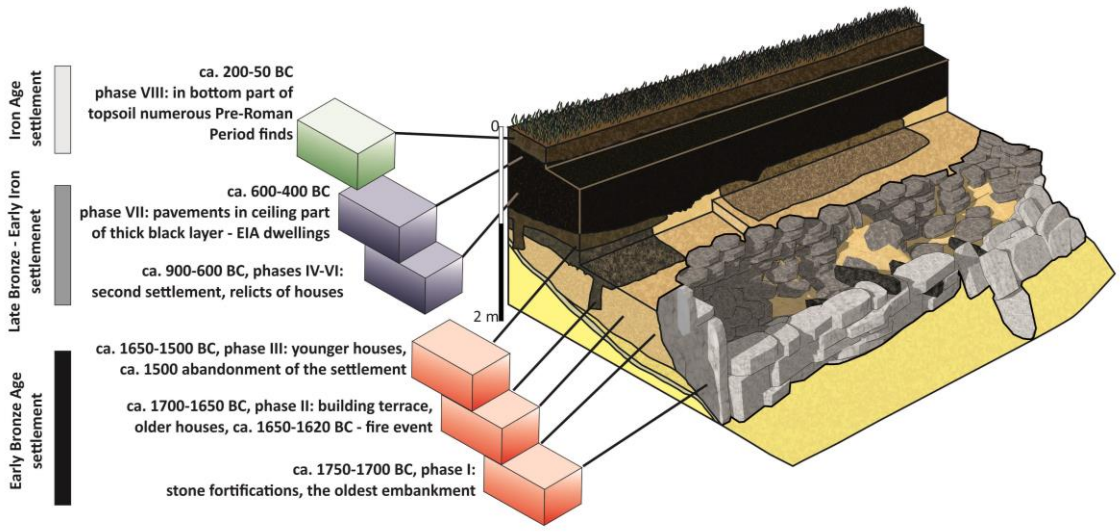

Figure 4. Simplified startigraphy of the eastern zone of the site

In the edge zone of the site the younger occupational period is represented by a black cultural layer, from 50 to 80 cm thick and approximately 10 m wide. The upper layer of the site seems to be more or less homogenous, but clues such as the stratigraphic order of artefacts, different depths of postholes and regularities in their arrangement, as well as the presence of stone pavements, allowed us to distinguish five stages of building activity within the Late Bronze and Iron Age occupational period.

The youngest artefacts, retrieved from the surface of the layer immediately beneath the topsoil, derive from the Pre-Roman Iron Age (ca. 200-50 BC, Phase Maszkowice VIII). In the central part of the site they were found within fills of some structures (pits, remains of a dwelling), while in the cultural layer they are mainly scattered on top of or around the pavements made of pebbles (Przybyła & Jędrysik 2017: 97–100), which already belong to the previous building phase (Maszkowice VII) dated to the Early Iron Age (Hallstatt D, ca. 600-400 BC).

Two further strata (Phases Maszkowice V and VI) were identified below the level of the pavements, in the middle part of the upper cultural layer. With regard to the technological and stylistic features of pottery, both phases seem to be quite homogenous, and may be ascribed to the transition from the Bronze to the Iron Age (ca. 800-600 BC). Finally, the lowest stratum of the upper black layer (Phase Maszkowice IV), partially covered by thin lenses of clay, contains mixed material of the Early and Late Bronze Age and may be regarded as an original utilization level at the time when the younger settlement was established.

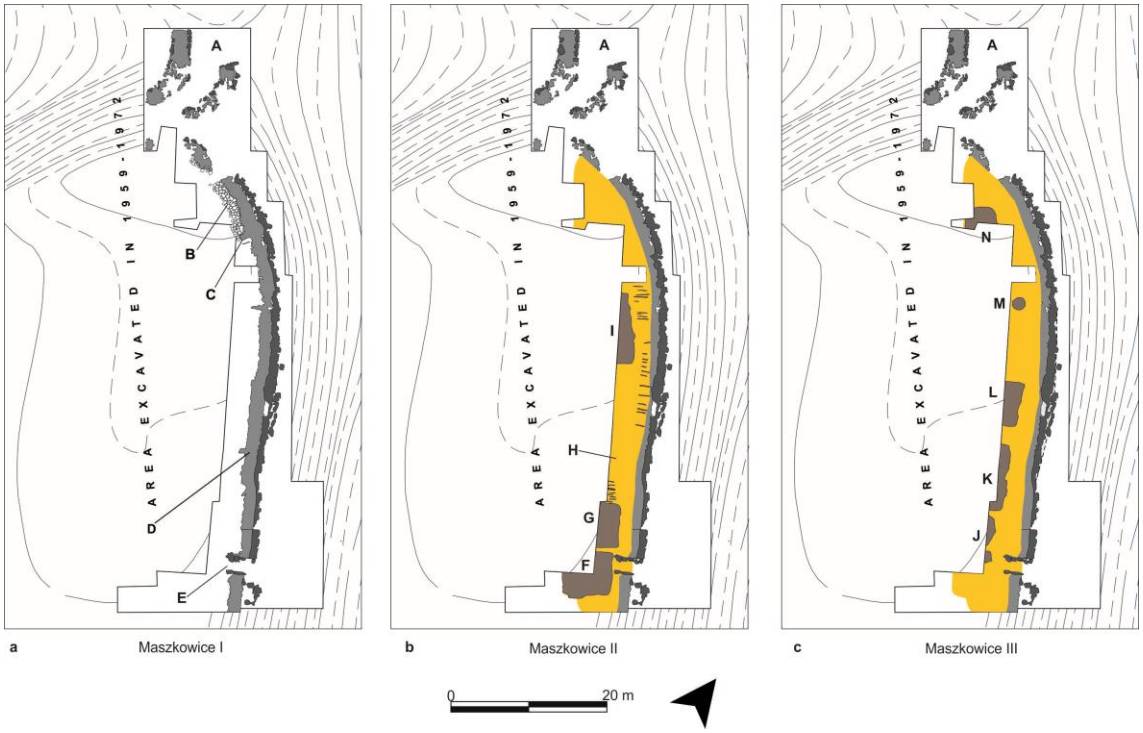

Figure 5. Generalized plan of the settlement in phases Maszkowice I-III: A – northern gate, B – pathway, C – short cross-wall, D –excavated segment of wall (state after excavations in 2018), E – eastern (postern) gate, F – house I, G – house II, H – clay embankment, I – house V, J – upper part of the fill of large storage pit, K – house III, L – house IV, M – storage pit, N – house VII

The Early Bronze Age occupational period will be closely describe in next chapter. Basically it can be divided into three building phases. The first of them (Maszkowice I) may be defined as a time when the stone fortifications were erected. We did not discovered any traces of houses connected to this phase. Probably they were located on the original top of the hill which was completely leveled later on, at the beginning of the phase Maszkowice II. At this time the massive clay terrace was erected at the eastern edge of the hilltop plateau, on which a single row of houses

was build. After a significant fire event it was displaced by a set of younger houses, representing the phase Maszkowice III – a final stage of the OFCC settlement (Fig. 5).

Since at the present stage of research the OFCC pottery seems to be rather homogenous, when comparing collections from various structures (see further), chronology of subsequent building phases of the Early Bronze Age settlement was established mainly by means of radiocarbon dating. Currently we have at our disposal 19 datings, next eight is in preparation. Majority of them constitute precise AMS datings of annual plants remains such as cereal grains. They point at about two hundred fifty years long timespan between 1776 and 1509 BC (1 σ) as a total time of the Early Bronze Age settlement horizon (compare Fig. 13, 15–20). According to two datings obtained from utilization levels within the eastern gate of fortification (see further) the oldest building phase (Maszkowice I) lasted approximately between 1750 and 1700 BC (1 σ). Common range of datings produced by floor layers of older houses (phase Maszkowice II) equals 1700 and 1620 BC (1 σ) while samples from ceiling levels of clay embankment and contemporary dwellings belonging to the phase Maszkowice III allow to determine its chronology on 1650-1500 BC (1 σ).

Development of the OFCC village

Phase Maszkowice I

First building phase of the OFCC village is represented mainly by the stone fortifications which were erected directly on the original usable level (kind of buried soil) and now are partly covered by younger strata. Single line of dray stone wall, which encircled the main part of the EBA settlement from north and east, was approximately 200 meters long and build of local sandstone in cyclopean system (large boulders in façade, smaller in the inner part of construction) (Fig. 6). Currently it is rather impossible to establish from where precisely the building material was obtained. Layers of sandstone are accessible just below the western and southern edge of plateau (at the depth of ca. 0.5–2 m), as well as at the foot of the eastern slope of Zyndram's Hill. In both areas we can trace numerous smaller or larger depressions, however at least some of them are connected with medieval and modern stone exploitation, which according to oral tradition was carried out until the early second half of the 20th century. Taking into account that to some extent slopes of Zyndram's Hill were transformed due to natural processes (e.g. one can notice traces of landslides of the western slope) nowadays it is impossible to distinguish quarries of different age, nevertheless it is highly probable that some of them were in use both in the Bronze Age and in Modern Times. It seems that the amount of stone necessary to build the wall had to be immense (more than 1000 tones—see below) therefore it is possible, that sandstone exploitation was carried out in opportunistic way. What means that the material was probably taken from shallow layers of bedrock located in different places close to the currently build segment of fortifications.

The stone construction consists of three main elements. First of them is a line of outer face. It is build of large, evenly matched boulders. Better preserved of them seem to follow some regularities as regard shape and size—they are usually ca. 1.1 m wide and 0.5–0.8 m long, about 20 cm thick and weight between 250 and 350 kg, although among them occur also narrow and long stones which probably were expected to join better the façade and interior of the wall (Fig. 7). The later mentioned is about 1.3 m wide and was constructed of randomly selected stones. Finally one row of regularly set sandstone blocks constitutes the inner face. Stones revealed within both filling and inner line are significantly smaller than those constituting façade, and weight no more than ca. 50 kg. In total the wall is usually 2 m wide and seems to be erected of rather straight sections with clearly visible offsets on their joints.

The state of preservation of the stone wall in Maszkowice is various. In general the further north the level of destruction is more severe. In the southernmost trenches, approximately in the middle of the eastern terrace about 2-3 courses of stones of outer face have survived untouched, whilst inner part of the wall is preserved up to 1 m high.

Figure 6. Inner part of the wall during excavations in 2018

Figure 7. Segment of the outer face of wall revealed during excavations in 2018

At the same time in the north-eastern segment of construction its height amounts at present no more than about 0.5 m. Moreover various parts of the wall suffered significantly due to a modern exploitation of worked stone as a building material. During excavations in 2017 we have revealed a few irregular trenches, filled with dark earth, fine-grained stone rubble and the Early Modern Period pottery. They turned out to cut the wall precisely to the level of the lowermost courses of stones and sometimes did not leave any traces of original construction. This observation stays in agreement with oral tradition and historical records about ruins of a castle in Maszkowice, which were assumed to be of medieval origin and were completely dismantled in the late 18th century AD for building purposes (Orłowicz 1919; Duda 2016).

Despite the fact that we are uncovering the dilapidation we may attempt to estimate the wall's original height. The method usually applied in this respect consists in assessing the size of rubble lying below the survived relicts of stone construction (e.g. Karoušková-Soper 1983: 176-178; Shennan 1995: 74). Although one have to keep in mind that magnitude obtained in this way is always slightly underestimated since certain share of stones might slipped far away downhill (outside excavated area) or be removed during later phases of settlement occupation.

Trenches of 2015 and 2018 which "descended" down to the base of the eastern terrace allowed to document some levels of rubble, probably connected with different stages of a long process of wall's deterioration. Its lowest and oldest layer is represented mainly by large boulders of outer face, which probably collapsed already during the time when the OFCC settlement existed, while layers of smaller stones, originating from the inner part o wall, are stratigraphically younger and probably have been formed until historical times. Amount of larger stone blocks (significantly heavier than 50 kg) which have to originate from the outer face, allow us to estimate its original height of about from 2.5 to 3 m. Because during the second phase of the EBA site occupation the stone construction started to serve as a retaining wall (see below) its inner part is expected to match the maximal height of adjacent clay embankment, that is about 2 m.

During the excavations in 2015-2017 we have revealed two entrances leading through fortifications—a small postern gate within the eastern segment of the wall, approximately in the middle part of it, and remains of a large gate complex, located about 50 meters further north. The postern gate was discovered in 2015 and carefully restored in summer 2018 (Fig. 8–9). The entrance is located in an offset of fortification line (the part of outer face of wall south to the gate is drawn about one meter back) and survived until our times in a very good state. Its passage was about 3 m long and 1.5 m wide with a bottom hardened by a pavement made of pebbles. Both sides of the gate corridor were decorated by sandstone slabs, arranged symmetrically: three slabs flanking the passage from north were leaned against a short cross-wall so they faced the southern row of three others. Only two slabs survived in their original height, and measure accordingly 1.57 and 1.9 m, others are severely eroded. However the size and shape of them allow us to suppose, that what we deal with in this case may be considered as stelae, perhaps of an anthropomorphic character.

On contrary to the eastern gate, remains of northern one discovered in 2017 are badly preserved. In some parts only one layer of stones remained *in situ*, in others due to modern sandstone exploitation relicts of the Bronze Age construction did not survived at all. Nevertheless, due to the careful methodology, we are able to propose reliable reconstruction of an original layout of the lowermost parts of the northern gate (Fig. 10). Taking into account such factors as terrain relief, size of the stones and character of the accompanying sediments, we distinguished stone blocks which remained still in their original position from surrounding rubble. It seems so that the northern gate consisted of two massive, transversal and slightly curved walls, with about 2 m wide passage between them, which had to run probably somewhere north from the excavated area.

As a whole this large (encompassing an area of more than 120 m^2) defensive complex might resemble what in the history of ancient and medieval architecture is called a chamber gate.

A pathway made of stone slabs which may be considered as an architectural element, is unambiguously connected with the northern gate complex. It has led originally from the gate entrance (this part did not survived) directly along the inner face of wall. In the best preserved parts it is about 1.5 m wide, and consists of one layer of evenly matched flat stones placed on a thin layer

Figure 8. Inner entrance to the eastern gate: first stage of exploration in 2014 (upper-left), various levels of exploration in 2015 (upper-right and lower-left) and after partial restoration in 2018 (Photo A. Maślak, M.S. Przybyła, J. Jędrysik)

Figure 9. Reconstructed eastern gate – excavations in 2018

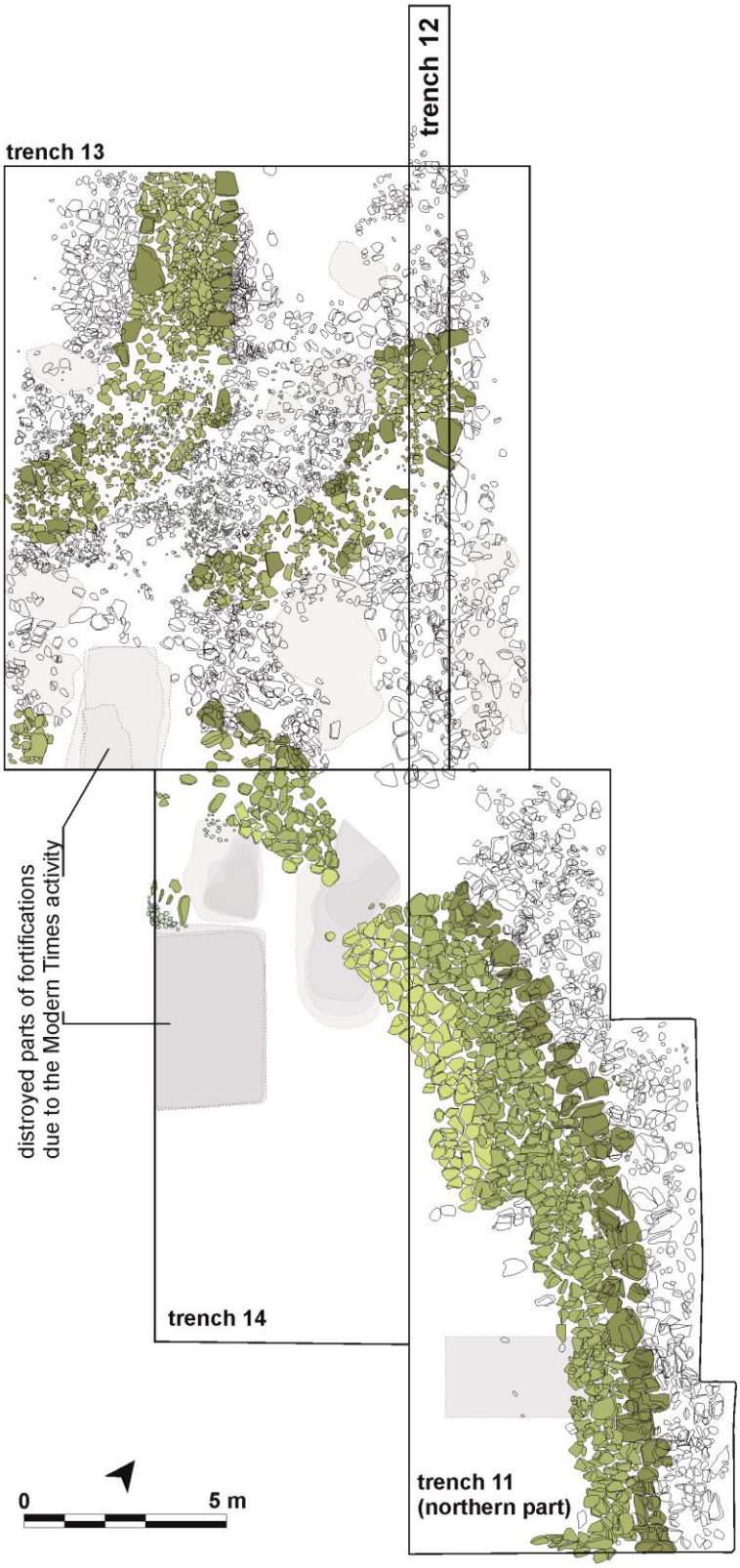

Figure 10. Remains of the northern gate complex and neighboring parts of wall (excavations in 2017)

of clay, or directly on the original ground surface. Careful examination made in 2018 allows us to assume that the pathway was build before the inner part of wall was erected, what means that the former one was a part of a "blueprint", and not the later addition. In some places we have documented rather short (between ca. 1 and 1.5 m long) cross-walls, directed toward the center of settlement. One of them limited southern extremity of pathway. Within this structure fragments of large stone block survived which bears traces of working (Fig. 11).

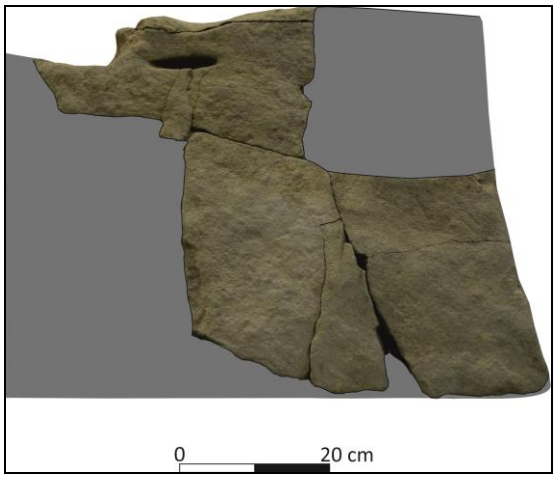

Figure 11. Fragments of worked stone discovered within the northern gate complex. Probably an element of combined stone-wood construction

The stone in question has two narrow dowel holes on both flat sides and partially preserved socket. It is worth to notice that another socket stone was also found in that area, while second stone with a dowel hole originates from another cross-wall (Fig. 12). One may quote as possible analogies similar worked stones from Mediterranean architecture. Those are assumed to be elements of entrances or more generally parts of combined stone-wooden-clay constructions (e.g. Küpper 1996: 69-94).

There are not any traces of house floors or posthole structures connected to the phase Maszkowice I. Probably the oldest households were located on the original top of the hill, which was completely leveled at the beginning of the Maszkowice II phase, when the massive clay embankment was build along the eastern segment of fortifications. Since the border between the area where embankment was raised and from where soil and clay was taken is determined by western range of the layer of buried soil (preserved only under the embankment and stone construction) we are able to estimate that the minimal distance between houses of the Maszkowice I phase and the inner face of wall was about six meters. Pieces of daub originally plastering the buildings of the first phase were found redeposited within a fill of the eastern gate, what allow us to assume that the phase in question was finished by a fire event.

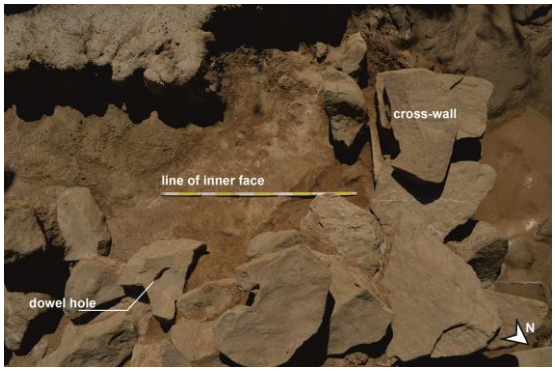

Figure 12. Cross-wall discovered in 2018 in the central part of fortifications, with a context of worked stone

Artefacts occurring within the buried soil are rare and usually undiagnostic such as shards found within the clay embankment (probably redeposited from surface of the original hilltop). The only structures apart from stone constructions which can be undoubtedly connected with the Maszkowice I phase are two subsequent strata deposited within the inner entrance to the passage of the eastern gate, as well as thin layer spreading on the original surface inside the pasage, probably a trace of pathway leading down the eastern slop of Zyndram's Hill. They produce significant number of shards, among them decorated pottery belonging to the classic phase of OFCC (Fig. 13: a,c,i-j,n). Fragment of a bowl bearing spiral ornamentation may serve as a significant example. It was found within above mentioned layer of pathway under a thick stratum of clay and stone and in the area where there was not any traces of later structures, so we can exclude contamination of younger material.

Phase Maszkowice II

The second phase of OFCC settlement is started by a significant change in the settlement layout. The function of stone fortifications was also altered—

build as a free standing construction they started to serve as a retaining wall for a massive clay embankment. The later one was at least 10 meters wide and up to 2 meters thick. Its length is difficult to estimate, since we do not have any clue how far it spreads southward, but in combination with leveling of the original hilltop its erection produced large and completely flat area which is visible also nowadays. Within embankment we have came across a few concentrations of wooden planks. Although their function is not clear they probably were expected to straighten the terrace. There is also a number of large stones in the lower strata of the terrace, what suggest that the highest layers of inner face of wall started to crumble already before the embankment was erected and that surface of the later one might be of similar height as this of wall.

In the north-eastern part of site the clay terrace covered completely the stone pathway of the first phase (Fig. 14). Also the passage of the eastern gate was filled with almost one meter thick layer of clay mixed with debris of burned constructions and rubbish. Moreover, at the same time the largest stela within the gate was broken and probably its surface was devastated. The stratigraphical relation between the building terrace and the most elaborated elements of original fortifications – stone pathway and eastern entrance – is interesting twofold. It gives us hint that the project of wall made and existing in the earliest phase of the OFCC settlement, was to some extend abandoned already in the second building phase (former postern gate used as a trash deposit, retaining function of wall and its partial deterioration). It shows us also that the time, when the stone fortifications were used accordingly to the "blueprint", had to be rather short. Pottery provided by the gate corridor layers and stratigraphically younger houses which were erected on surface of the embankment represents the same phase of relative chronology. Moreover two radiocarbon dates obtained from occupational levels of the postern gate (see Fig. 13) partly overlapped these from the neighbouring house (House I—see Fig. 15). Thus it seems that the stone fortifications were erected in the late 18th century BC, but already in the early 17th century BC were radically fitted to new needs.

There are at least three houses which represent the second building phase (house I, II, V), probably relics of two others were found during the excavations in 1961 and 1967 by the northern line of the fortifications. Dwellings formed only one row running on the surface of the clay terrace about 1-2 meters from the inner face of wall. Although we were able only to documented their eastern parts (rest of them was explored, without documentation during the old excavations) one can estimate that they were about 35-50 square meters large and rectangular in shape. All houses are manifested as about 10–20 cm thick dark layers, which at first glance seem to be rather homogenous. However micromorphological investigations, as well as observations of a well preserved part of layer of the house II made in 2018 prove that in fact they consists of several thin strata of floor plastering, which are mineral in the lower part of sequence, and covered by organic material in the upper one.

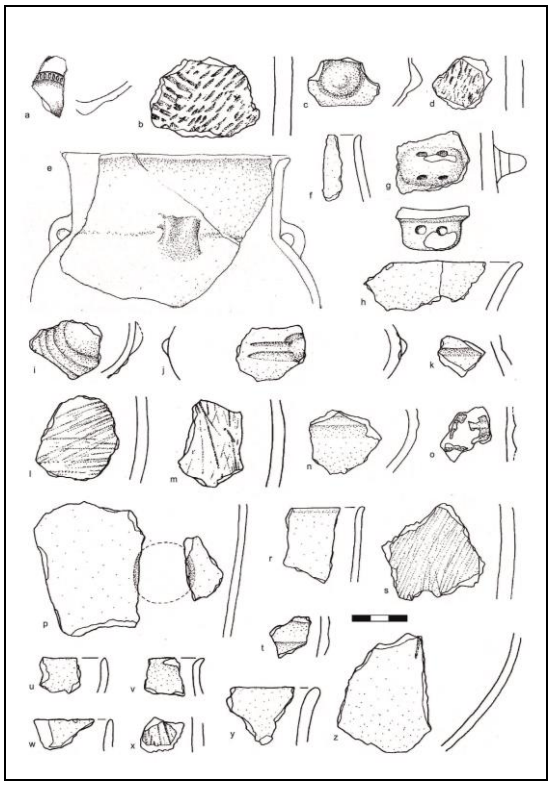

Figure 13. Selected material from the usable levels of the eastern gate. Radiocarbon dates: 3410±40, 1751-1644 BC 1σ (MKL-2439, charcoal); 3447±32, 1870-1846,1810-1804, 1776-1730, 1722-1692 BC 1σ (D-AMS14045, *Triticum* sp.)

Figure 14. Stratigraphical relations observed during the excavations in 2017. Stone pathway from the oldest phase of fortification is covered by clay embankment, which in turn is base for one of the houses of the second phase of the EBA settlement

Below floor layers traces of wooden planks occurred, while in one house (II) also relicts of massive beans were found which formed base for their eastern walls. Another kind of foundation, made of pebbles and small sandstones possessed also house V, the largest one among the dwellings of the second phase. Within layer of the same structure pieces of decorated adobe were found, which probably originate of a hearth. Similar function may be attributed to the concentrations of pebbles found in houses I and II. Finally numerous concentrations or even larger strata of daub (as in case of house V) and levels of ashes (house I) allow us not only to reconstruct the houses as build in the wattle-and-daub technique but also to assume that they were all destroyed by a significant fire event.

All houses produced large amount of various finds. Among them the most numerous are pottery shards. Their number varies and depends on how large was part of a given house that survived until our research. Amount of pottery fragments documented within the floor layers fluctuate between 150 and 600, however barely 10% represents formally or stylistically diagnostic material (Fig. 15–17). Few pieces originate from jars, among them specimens bearing fluted (both horizontal and turban-like) and spiral ornamentation. There are also some fragments decorated with semicircular grooves surrounding knobs or groups of thin, vertical lines.

Pieces of animal bones constitute another numerous group of finds. They tend to concentrate only in some parts of house floors, and moreover there are differences in a spatial distribution of various parts of animal body.

Similar tendency can be trace also in the case of a botanical remains. Archaeobotanical investigations prove that while in some zones of dwellings charred remains are rare or restricted only to wild plant or chaff, connected to consumption or food processing, in others we can distinguish places of crop storaging.

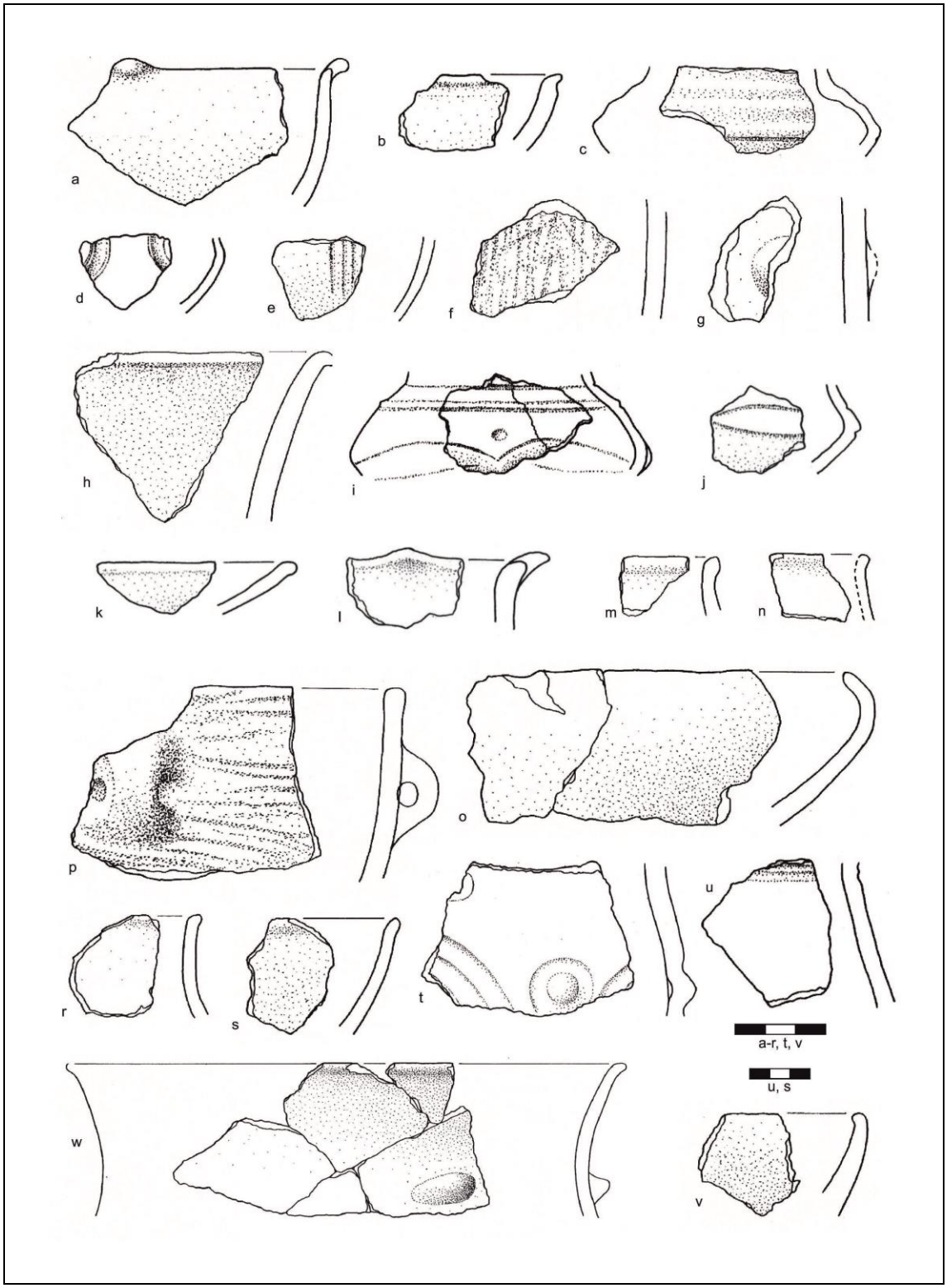

Figure 15. Selected material from the floor layers of the house I and its radiocarbon dating: 3330±70, 1690-1520 BC 1σ (MKL-1324, charcoal); 3447±22, 1772-1736, 1716-1695 BC 1σ; (D-AMS10625, *Prunus spinosa*)

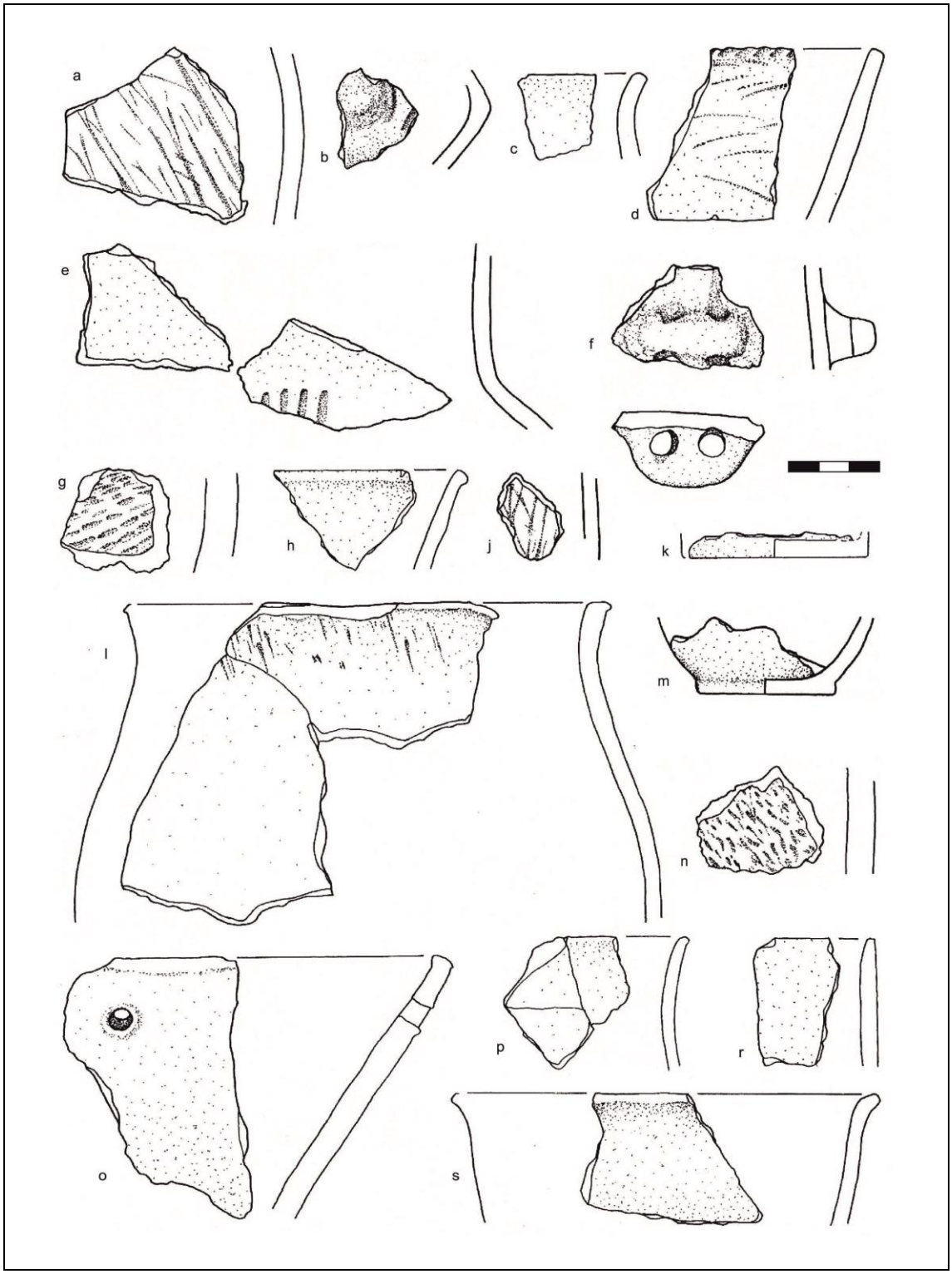

Figure 16. Selected material from the floor layers of the house II and its radiocarbon dating: 3510±90, 1950-1737 BC 1σ (MKL-2539, charcoal)

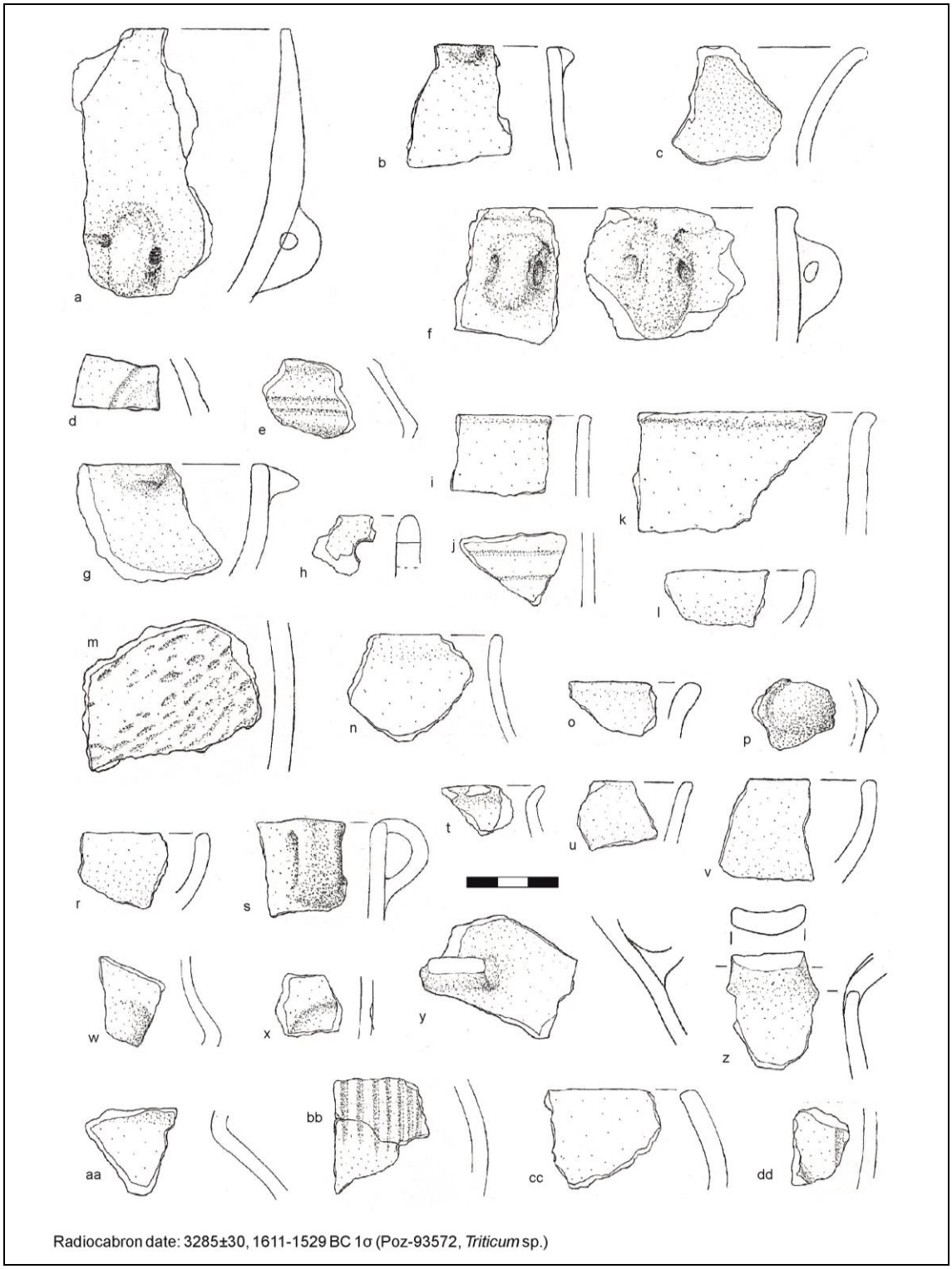

Figure 17. Selected material from the floor layers of the house V and its radiocarbon dating (range of the highest probability italic): 3375±35, 1732-1720,1693-1627 BC 1σ (Poz-94539, *Hordeum vulgare*), 3355±30, 1740-1713, *1697-1602*, 1589-1544, 1539-1535 BC 1σ (Poz-104840, grain of *Cerealia*)

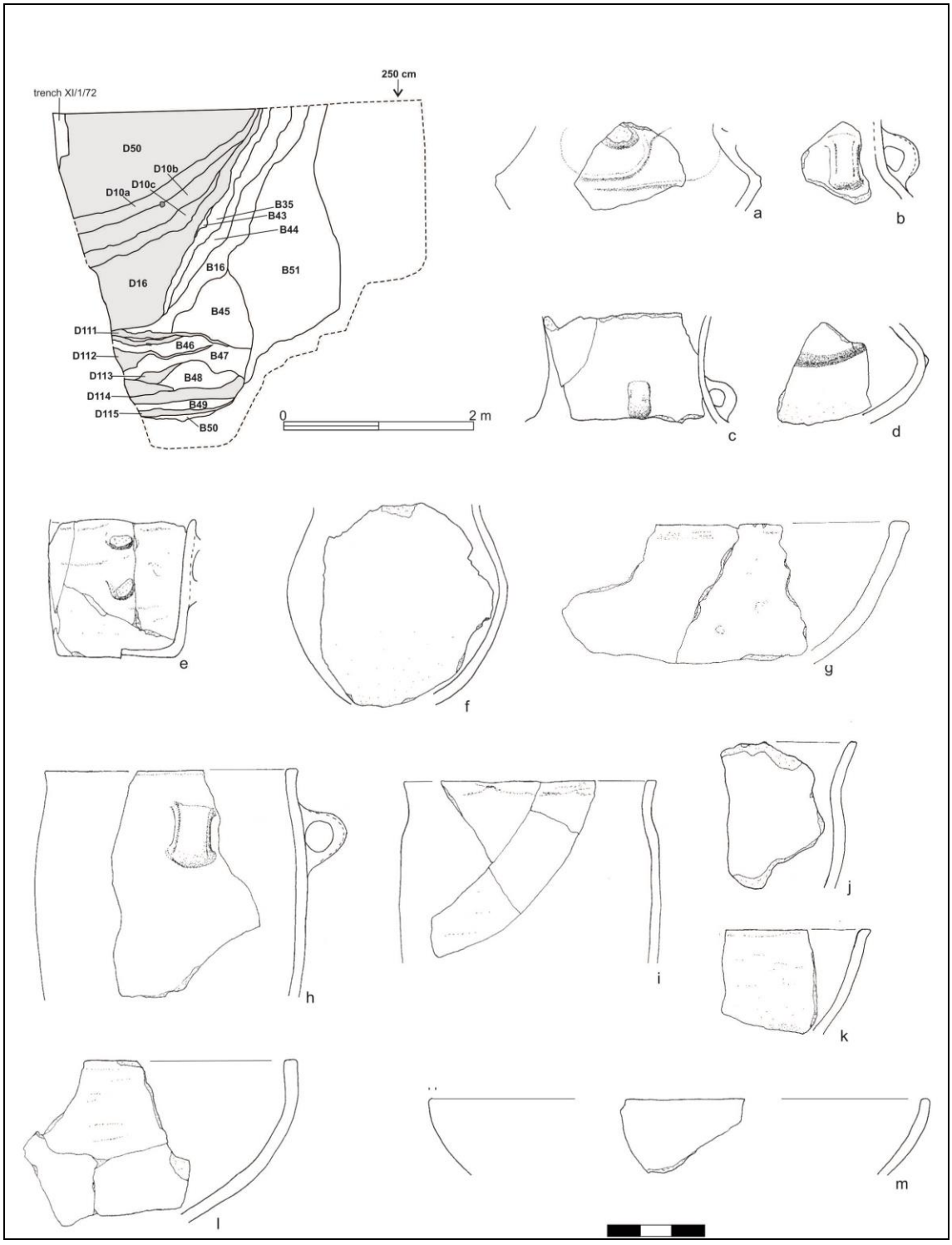

Figure 18. Documented in 2018 cross-section of the large pit excavated in 1971-1972 and selected material from its upper levels: mechanic layers 350-500 cm, corresponding with the strata D16 (redeposited floor of the house II), D111-D115. Radiocarbon date of layers D111 or 112: 3395±28, 1740-1712, 1698-1658 1σ BC (D-AMS10627, *Hordeum vulgare*). Stratum B51 is connected with the older feature.

Figure 19. Selected material from the floor layers of the house IV and its radiocarbon dating (ranges of the highest probability italic): 3285±30, 1611-1529 BC 1σ (Poz-93572, *Triticum* sp.), 3325±35, 1658-1651, *1645-1600*, *1586-1534* BC 1σ (Poz-104561, *Hordeum vulgare*), 3240±30, 1600-1586, *1539-1492*, *1484-1452* BC 1σ (Poz-104816, grain of *Cerealia*), 3305±35, 1622-1595, 1589-1531 BC 1σ (Poz-104560, *Hordeum vulgare*)

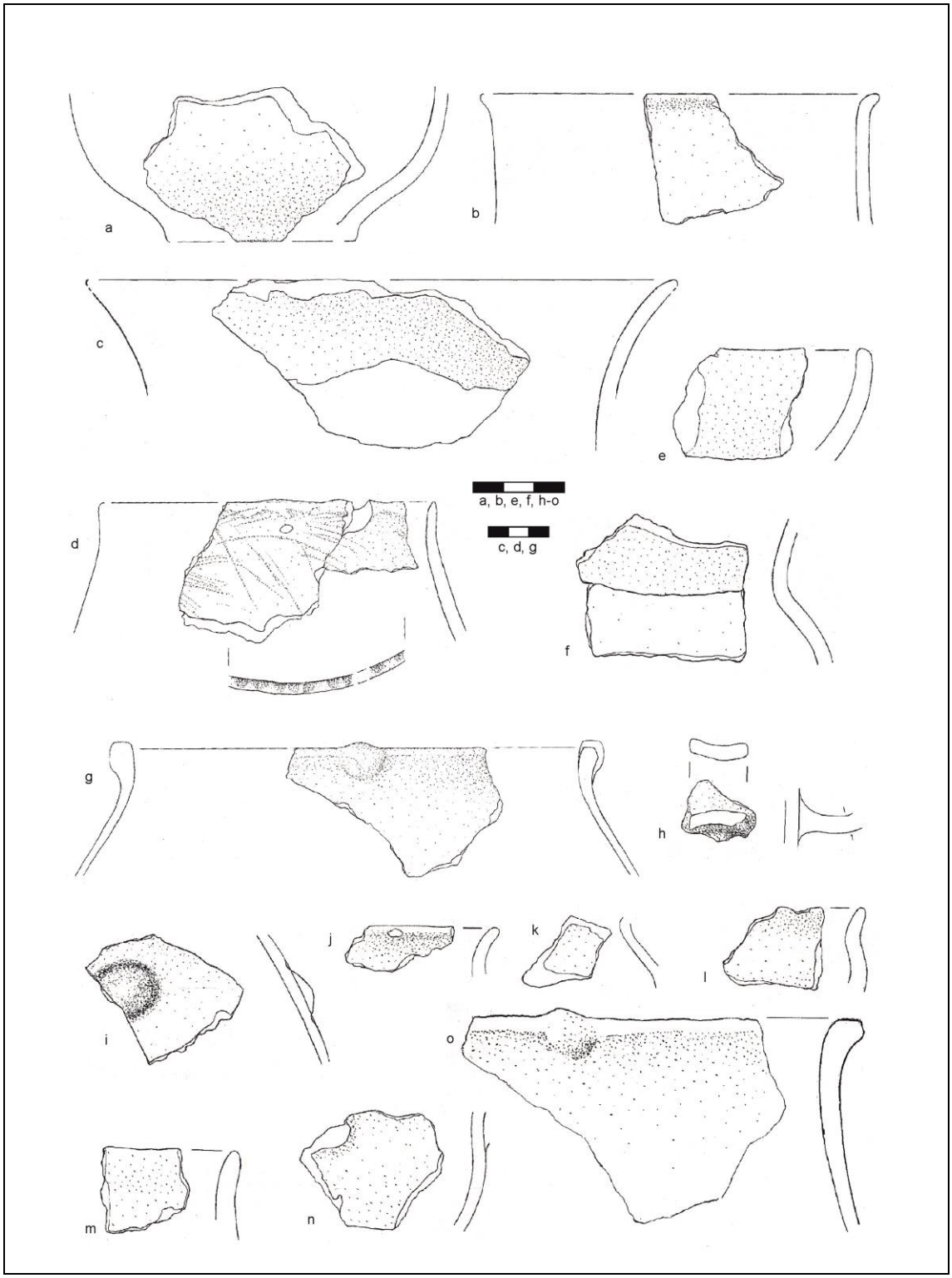

Figure 20. Selected material from the floor layers of the house III and its radiocarbon datings (range of the highest probability italic): 3328±36, 1661-1601, 1585-1535 BC 1σ (D-AMS14046, *Hordeum vulgare*), 3295±30 BP, 1613-1592, *1589-1532* BC 1σ (Poz-104815, *Triticum* sp.) probability are bolded)

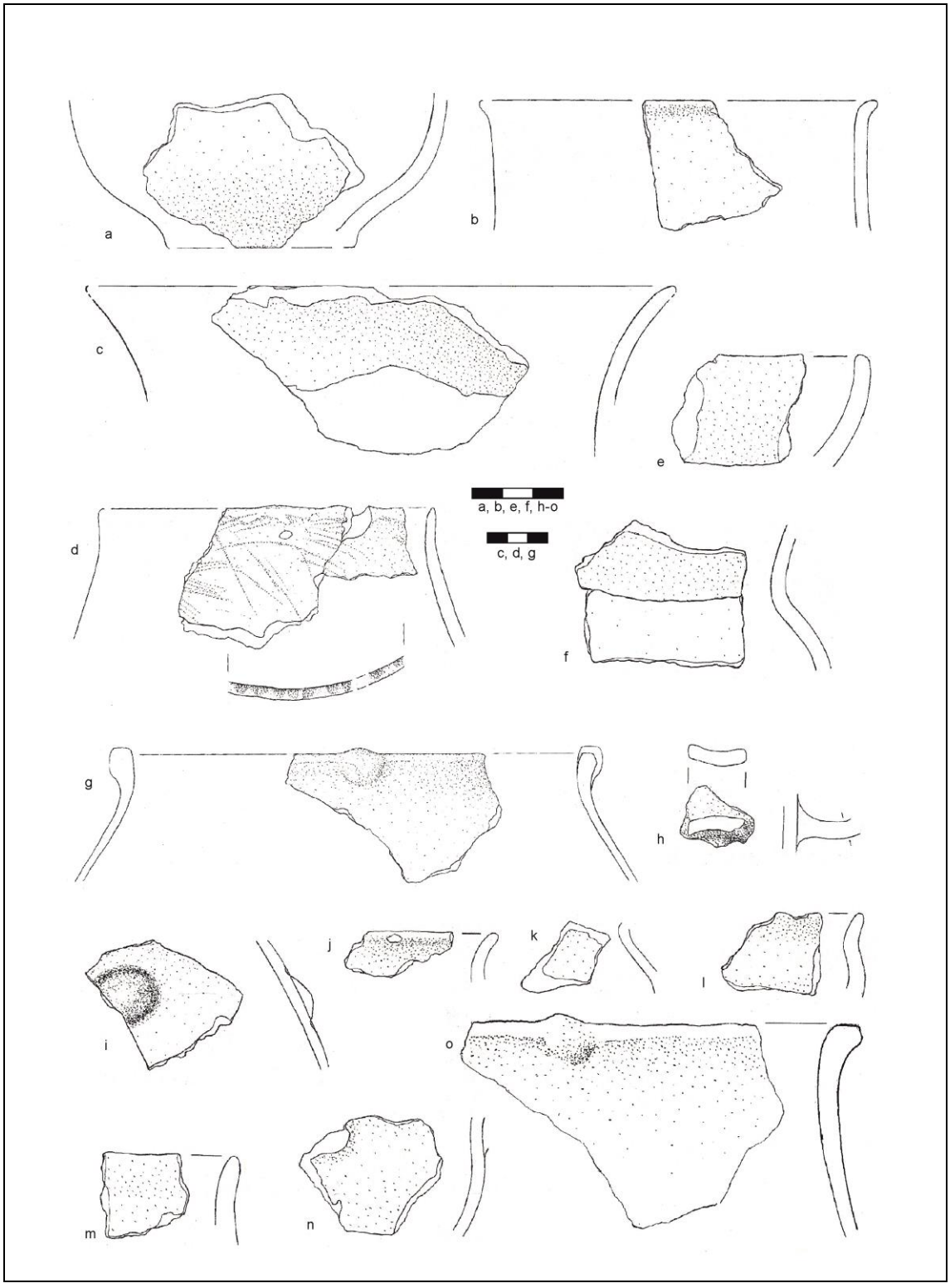

Figure 21. Selected material from the floor layers of the house III

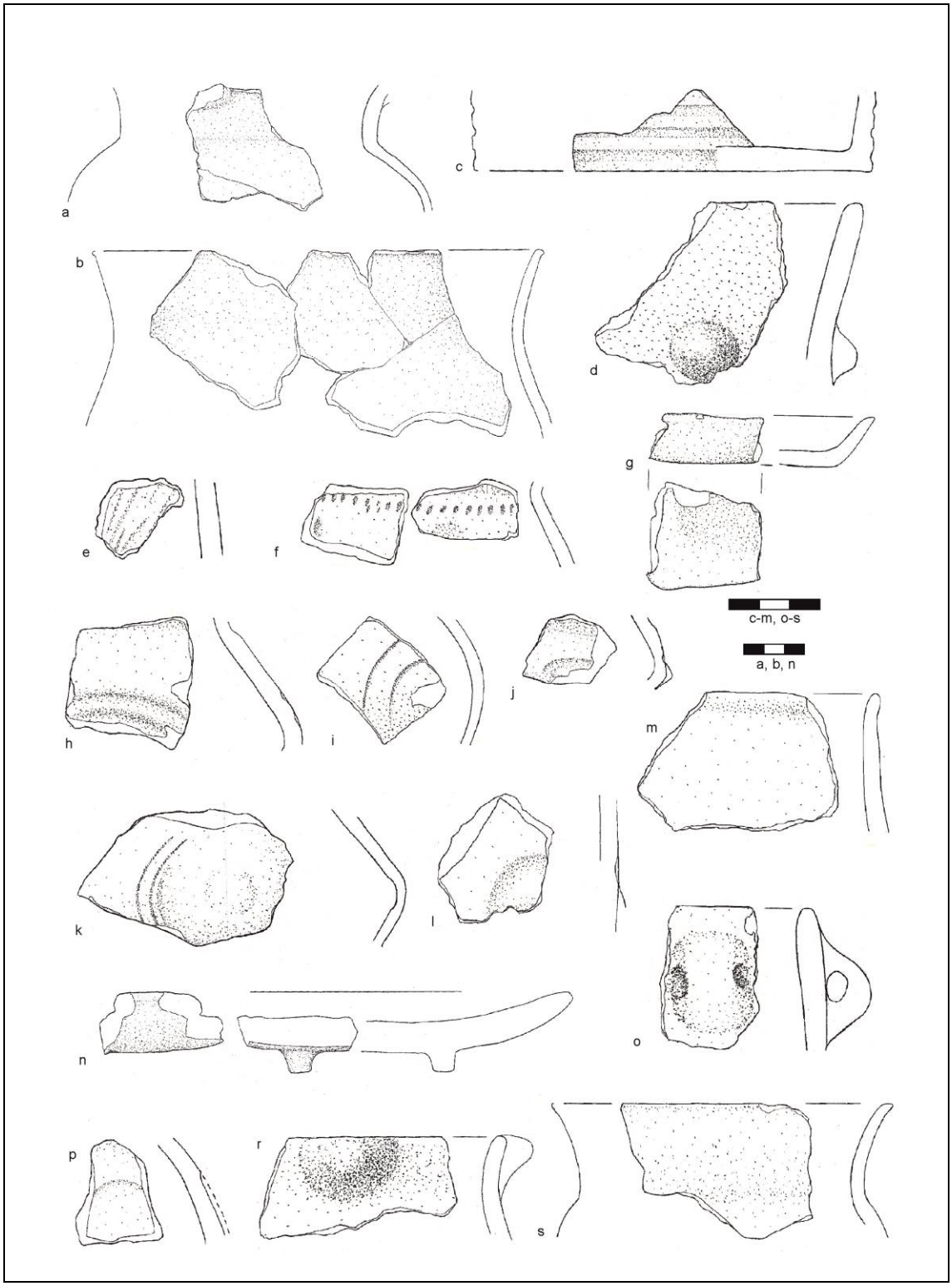

Figure 22. Selected material from the floor layers of the house V-2

The presence of grain deposits within the houses is a common trait among the Early Bronze Age sites of the OFCC in Carpathian Basin (e.g. Filatova et al. 2018) distinguishing them from these cultural areas where storaging of food in pits dominates. Therefore it need to be stressed that only one such feature may be connected to the phase Maszkowice II. The large pit was excavated in 1971–1972 and published later on by Maria Cabalska (see above—chapter 2). Although it was expected to be fully explored during the old excavations we have found its edge within our trench in 2014 and later on in 2018 we succeed to document its cross-section, preserved between two Cabalska's trenches. Currently we are able to reconstruct it as a two-phase structure. Firstly (just after erection of clay terrace) large, about 3.5 meters deep, T-shape feature was dug here. It was however quickly filled up—there is no usable stratum on its bottom. Later on, within the fill of T-shape feature, another pit was dug: pear-shaped with cylindrical upper part. Its entry had to be located on the floor level of the house II, in its south-western part; its bottom was 4.25 m deeper (more than 6 meters counting from present ground level). The thick lower strata of this huge structure suggest that the pit was in use for a significant amount of time. They contain among others large collection of charred remains of unmature spikelets of barley, which provide radiocarbon date pointing at the first half of 17th century BC (see Fig. 18). Probably close to this date walls of the pit collapsed, as it was the house II staying above. Within the upper part of the pit's fill complete and well preserved sequence of redeposited house floor was found.

The above mentioned house V, which seems to be the largest one within the second phase, provides a few finds of small smelted clumps of bronze, undoubtedly connected with metallurgical activity. Additionally bronze pin and a large amber bead originate from its floor layers. It is particularly interesting in the context of a complete lack of bronze objects within other houses (although within floor layer of the house I small piece of faience bead was found). There is however a limited collection of metal objects which undoubtedly are connected with the OFCC village but were discovered outside house remains. Among them three Sibin type earrings: two originate from the vicinity of stone fortifications and one was retrieved from the layer of younger occupational period. Two other bronze objects were found within the Early Bronze Age layer stretching on the slope, below the eastern gate. It is worth to mention, that accordingly to the analysis of copper impurities, all bronze artefacts from Zyndram's Hill seems to represent the type of metal, which is characteristical of the Carpathian Basin, and particularly of the assemblages of Hajdúsámson-Apa series (high impurity and AsNi group after Liversage 1994).

Phase Maszkowice III

The beginning of the last building phase of the OFCC village is marked by a fire event which destroyed all known houses of the phase II. New households appear to continue the same layout as the dwellings of the second phase – they form only one row, along the line of the old fortifications. We have some hints that deterioration of the wall was already advanced at this point. Radiocarbon date obtained for the sample taken from thin sediment, just under the large fallen boulder outside the fortifications points at 17th century BC (D-AMS14044, grain of *Triticum* sp., 3368 ± 38 BP, 1693–1621 BC 1 σ) as a time when the outer face started to crumble. The period is also represented by a traces of reparations: in some places surface of clay embankment was supplemented or strengthen by means of wooden constructions (they were C14 dated to 16th and early 15th century BC) while passage of the former eastern gate was completely sealed by using of recycled stones (some of them were regularly dressed and probably originate of the face of wall).

Probably due to problems with a clay embankment stability the dwellings of the third phase were located slightly further from retaining wall. Currently we were able to document partially three households of this stage (III, IV and VII) and one small storage pit, probably connected to the northernmost house VII. Because lack of a clear background during excavation (strata of the dwellings of the phase III lay sometimes directly on remains of older houses) it is difficult to trace any construction elements, as it was in the case of the phase Maszkowice II.

From houses of both second and third phase rich collection of objects (tools and dress elements) made of bone, antler, horn or tooth originates. Some types of them seem to be restricted to the specific contexts. For example so called spatulae were found mainly in the floor layers of the dwelling I. On the contrary almost all

axes made of antler occurred within remains of the houses IV, V and VII, located in the northern part of excavated zone. The observation may suggest a kind of craft specialisation within the population living on Zyndram's Hill.

There is almost not any change as regard the pottery stylistics when comparing houses' assemblages of the second (Fig. 15–18) and third (Fig. 19–22) phase. Few tendencies could be however noticed. Namely, there is a lack of fluted jars within the younger houses, although both spiral ornamentation and knobs surrounded by semicircular groves or flutes are still present. On contrary shards decorated by groups of vertical lines seem to occur more often within younger dwellings. Detailed investigation of OFCC pottery style and fabric development on the site is currently in progress.

Third phase of the OFCC settlement does not seem to be finished by a fire event, as it was in the case of phases Maszkowice I and II. There are also not traces of violence or warfare. One can rather suppose that around 1500 BC the village was abandoned. After that the site remained uninhabited for the next half thousand years.

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