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ANOTHER PIECE OF THE PUZZLE – BARROW III OF THE CORDED WARE CULTURE AT SITE NO. 3 IN ULÓW, IN MIDDLE ROZTOCZE

ABSTRACT

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One of the most distinct settlement phases in the Ulów microregion in Middle Roztocze in southeast Poland, is related to the Corded Ware culture. At present, ten archaeological sites are dated to this period. At Site 3, a barrow cemetery of this culture, consisting of three mounds, has been recorded. All of them have been subjected to excavations. The paper presents the results of investigations of Barrow III with an almost indistinct mound. In the centre of it was a burial pit, with another grave of this culture cut into its upper fill. A hearth with a stone paving of the Wielbark culture was also dug into the mound. The text also discusses the cemetery at Site 3 in the context of other barrow cemeteries in the Ulów microregion.

Keywords: Middle Roztocze, Late Neolithic, Corded Ware culture, barrow, Roman period, Wielbark culture
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INTRODUCTION

Ulów is a small village in Tomaszów Lubelski commune (Tomaszów Lubelski district, Lublin province). It is situated in Middle Roztocze (Roztocze Środkowe according to Solon *et al.* 2018), sometimes also referred to as Tomaszów Roztocze (Roztocze Tomaszowskie), at the foot of its highest elevation – Wapielnia (385 m above sea level) (Fig. 1).

The complex of archaeological sites in woodland near Ulów was found by prospectors with metal detectors, who were searching for military items from the Second World War. Since then, long-term interdisciplinary research conducted in the Ulów settlement microregion has yielded 30 archaeological sites; 16 of them have been excavated to varying degrees, four have been subjected to geological and geomorphological investigations as well as surface surveys, with 10 having undergone only surface investigations (Fig. 2). At 10 sites (nos. 3, 4, 5, 19, 20, 21, 22, 25, 26 and probably 23), cemeteries or single barrows of the Corded Ware culture (hereafter CWC) have been discovered (Fig. 2). The cemetery at Site no. 3, which consists of three barrows, has been excavated entirely, and the results of exploration of two of them have already been published (Niezabitowska-Wiśniewska and Wiśniewski 2011). This paper pertains to the third barrow.

Barrow I is located in the eastern outskirts of the cemetery and was explored in 2005; Barrow II located near the central part of the site in 2006 and Barrow III located in the western outskirts of the cemetery were examined in 2009 and 2010 (Niezabitowska-Wiśniewska and Wiśniewski 2011). Measured in a straight line from the centres of the mounds, Barrow III lies about 67.5 metres from Barrow II and about 144 metres from Barrow I (Fig. 3: A).

At Site 3, except the cemetery of the CWC, evidence of much older and younger settlement were found. This is associated with the Late Paleolithic, the Mesolithic, the Neolithic (the Lublin-Volhynia and Funnel Beaker cultures), the Bronze Age and the early Iron Age (the Trzciniec and Lusatian cultures), the Roman and Migration periods (the Wielbark culture and traces of the late, not specified, Germanic settlement), the Middle Ages, as well as the Modern period (*e.g.*, Wiśniewski 2007; 2017; Niezabitowska-Wiśniewska 2008, 81-85, figs 7-10; 2017).

Before the time of the discovery of the CWC barrows in Ulów, from the area of Middle Roztocze apart from stray finds of CWC materials (*cf.* Balcer *et al.* 2002, 98, 99, 102-105, 122, tab. 23, 130, 143-145, 151; Koman 2005, 48, 49, photo 2, 3, map 1), only two or three excavated barrows of this culture were known (nos. IX and XIV in Guciów according to Rogozińska 1963, 89, 90, fig. 3, 4; nos. I and IX according to Górski and Tyniec 2018, 53, 54, 57-59; Jarosz 2018, 67-71).

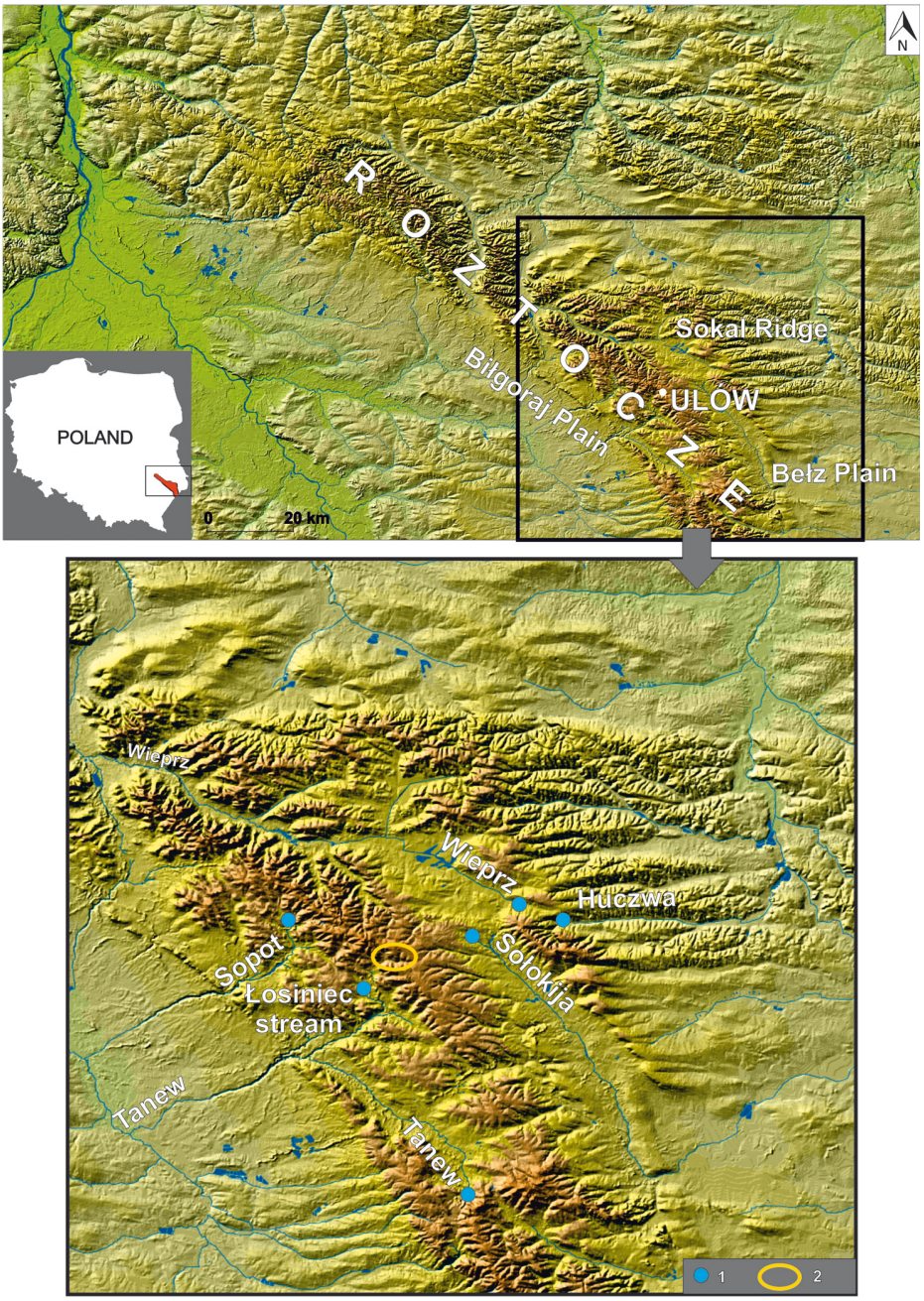


Fig. 1. Location of Ulów village on the background of the map of Roztocze (Gawrysiak 2004). 1 – the springs of the region main rivers. 2 – the range of the Ulów microregion (Compiled by B. Niezabitowska-Wiśniewska)

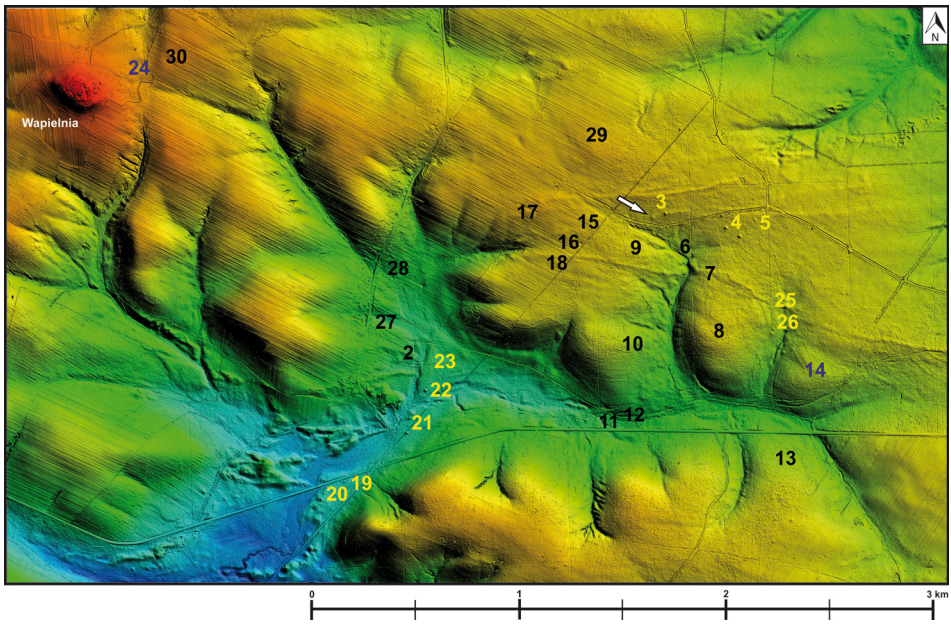


Fig. 2. The Ulów microregion with marked location of archaeological sites; yellow numbers – barrow cemeteries of the Corded Ware culture; blue numbers – sites with prehistoric mounds of unknown chronology, perhaps belonging to the Corded Ware culture; white arrow – location of Barrow III at Site 3 (Compiled by B. Niezabitowska-Wiśniewska)

BARROW III

History of research

Before the excavation started, the mound of Barrow III had been completely imperceptible. The barrow was discovered by accident in 2009 during research in the western part of Site 3. In one of the trenches (no. 70) which was 2 × 19 metres, in the humus layer and just under it (at the depth of 26-35 cm from the surface of the ground) a deposit of fragments of pottery of CWC was found (at a stretch of 13-13.5 m). It was decided to broaden the area of excavation. In order to do that, two trenches, numbers 71 and 72, were marked, each one was 4.5 × 3 metres. They fitted to the E and W edges of Trench 70 (on a stretch of 10-14.5 m). At first, two baulks, each 0.5 m long, were left between the trenches. They were taken away after the humus layer in Trenches 71 and 72 was removed. As a result, a fragment of the E and W profile of Trench 70 was documented over the length 10-14.5 m. The ground elevation in place of the levelled barrow was visible in places and the difference between the surrounding areas was 5-15 cm.

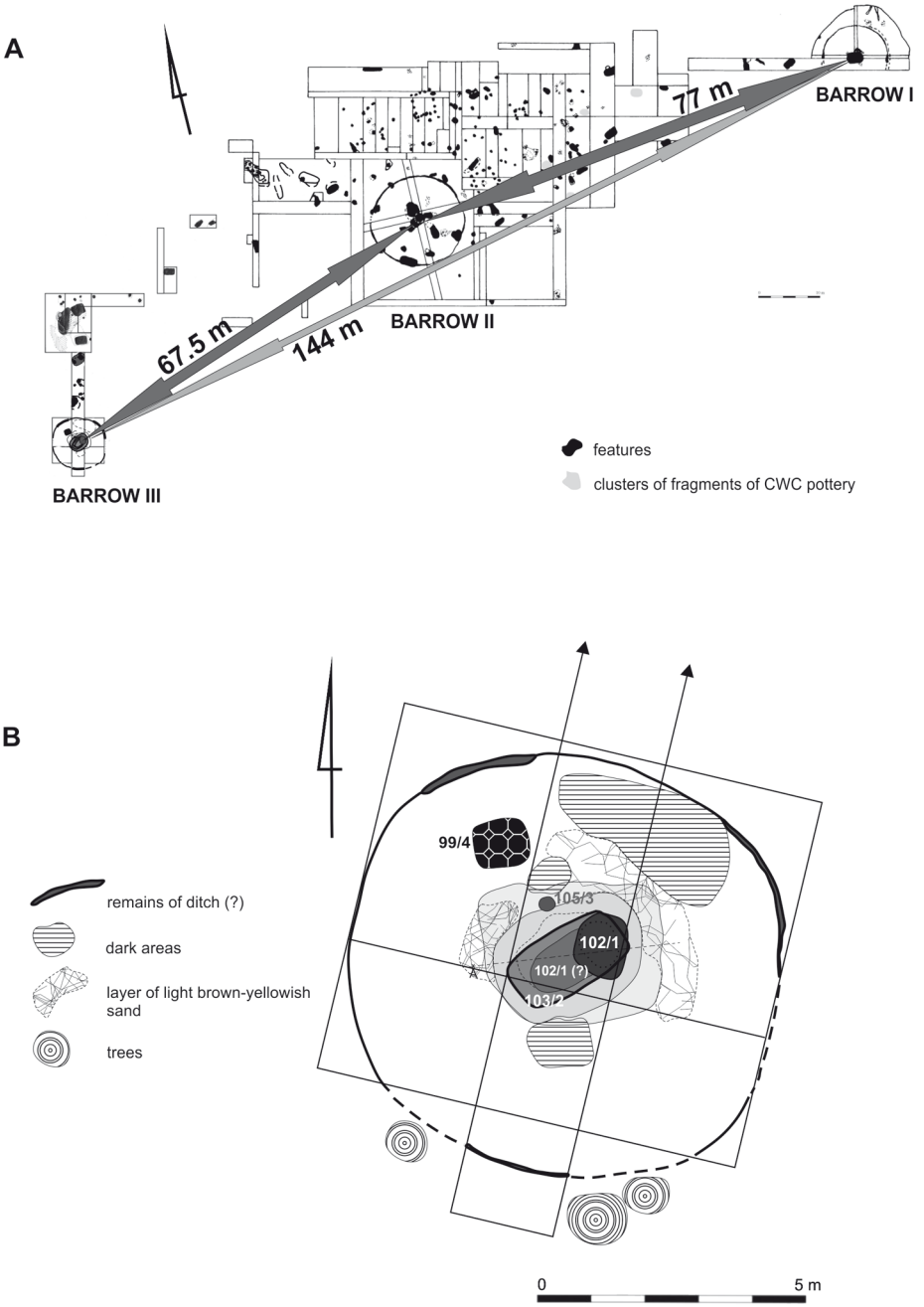


Fig. 3. Ulów, site 3. A – plan of the examined part of the site, including the barrow cemetery of the Corded Ware culture. B – plan of Barrow III (Drawn by B. Niezabitowska-Wiśniewska)

In the trenches, the northern part of very low barrow mound and upper fills of three features were found. The first was the central pit under the barrow (Feature 103/2; 103 – number of feature with respect to the continuous numbering of the features at Site 3; 2 – number of feature within Barrow III; analogously in the case of other features). Cut into its upper fill was a feature, probably a grave (Feature 102/1). The third was a hearth that was cut into the mound of the barrow (Feature 99/4). It soon turned out that the fragments of pottery of CWC which had been found earlier in the humus layer, were a part of vessels found in Feature 102/1 (Fig. 3: B).

In 2009, due to the end of excavation works, only the northern part of the central pit under the barrow and Feature 102/1 were explored. A single layer in the southern part of these features was removed (33/36-48.5/49 cm) in order to extract fragments of pottery from the southern part of Feature 102/1. The remaining part of the grave was planked over and the trench was covered with earth.

In August 2010, the southern part of the central grave pit (Feature 103/2), the base of the southern part of the feature dug in the pit (Feature 102/1) and the southern part of the mound of the barrow were explored. Two new trenches were marked, 73 and 74, each 3 × 2.5 metres. Unfortunately, the south-east and south-west edge of the levelled mound could not be excavated because of the densely grown roots of nearby beech trees (Fig. 3).

Description of the barrow

The outline of the central pit under the barrow (Feature 103/2), with Feature 102/1 dug into its upper fill, was visible just after removing the humus layer. The features were surrounded by a layer of light brown-yellowish sand visible especially in the north and east edges. The layer contrasted with a dark brown-grey-light grey strongly spotted layer with ferruginous concentrations which stretched along the edge of the mound of the barrow and was best visible in its north-east part. The width of light brown-yellowish material was between 95 and 130 cm and its thickness was about 20-25 cm. After the disappearance of this layer during excavation, the dominant layer in the mound was a light brown-light grey layer with numerous ferruginous concentrations and small charcoal clusters.

Unfortunately, because of the considerable damage to the barrow, it was not possible to discern visible traces of a ditch. Only at the north edge of the mound a homogenous layer of light brown, light beige in places, soil was visible. It was from 5 to 25 cm wide and its thickness was about 20 to 35 cm. It had an oval profile. Thus, it may be regarded as the remains of a ditch. Similar, yet less visible, brownish structures were found in the E and W profiles along a stretch of 16-19 metres of Trench 70, that is in the southern part of the mound of the barrow (Fig. 3: B). The original diameter of the mound was thus probably about 8-8.5 m.

In Barrow III, four features were found: a central grave numbered 103/2, a feature (probably a grave) dug into the upper part of the central pit under the barrow, numbered

102/1, a posthole number 105/3 – all connected with the CWC; and a hearth, 99/4, from the Late Roman Period, cut into the mound of the barrow. In addition, three dark areas, the function of which was hard to determine, were found by the northern and southern edges of Feature 103/2 and by the north-east edge of the mound (Fig. 3: B).

Description of the features

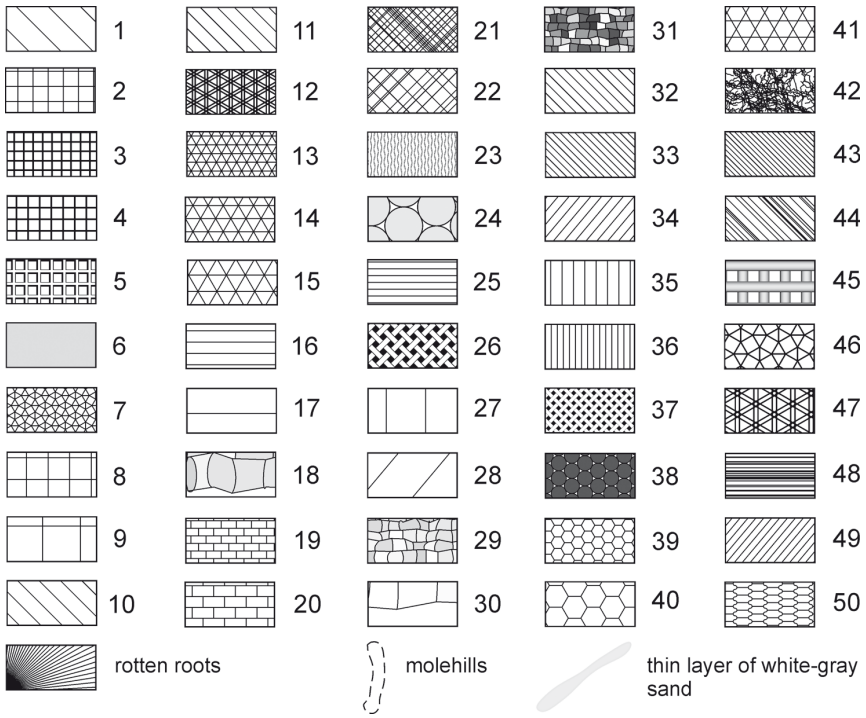
Feature 102/1 – a pit grave (?) cut into the upper fill of the central grave pit (Feature 103/2).

The partial outline of the feature was captured after removing the humus layer at the depth of 26 cm. At the depth of 33 cm, the feature had an oval shape and was about 100 × 135 cm big. It was made of a light brown-beige, homogenous layer (Fig. 4: A). At the depth of 26 cm in the north part of the feature, single fragments of pottery were found. At 34/35 cm the outlines of two vessels – an amphora and a small beaker – were uncovered (Fig. 4: B). The next vessel – amphora no. 2 – was found in the southern part of the feature and its outline was visible only at a depth of 40 cm (Fig. 6: B/3). During the exploration by the horizontal planum method, the feature was becoming smaller and more oval (Fig. 4: B).

To the west side of the feature was a long structure which at first was dark brown and homogenous and its edges were barely visible (Fig. 4: B). At a depth of 48/49 cm, the prevailing layer was light brown-light grey and was significantly spotted. It was surrounded by a thin layer of white-grey sand that was no more than 10 cm thick. This thin layer was the most clear at the southern border of the structure described here, where it had already appeared a little higher. As a result, the structure contrasted with the much darker fill of the central pit under the barrow. At this moment, it is hard to tell if the structure can be connected with Feature 102/1. If this was the case, the feature would have consisted of two connected parts which would make a long, oval structure oriented SW-NE along its axis, which was about 185/195 × 90/100 cm. Thus, the vessels would be in its eastern part (Fig. 4: B). The profile of such a feature would have been quite irregular with a "bath" shape. The depth of the eastern part of the feature was about 64.5 cm with the measurements taken from the ground level and 38.5 cm from the top of the feature. The depth of the central and western parts was respectively 50/52 cm and 24/26 cm (Fig. 6: B).

Undoubtedly, Feature 102/1 was cut into the upper fill of the central grave pit under the barrow. Its edges did not extend outside the border of the central grave pit. Both features had also the same orientation.

No human bones were found in the feature, yet it must be noted that in the sandy soil, which dominated at Site 3 in Ulów, no organic remains have been found. As a result it is hard to interpret the function of this feature. It could be an inhumation grave with pottery placed probably at the foot of a deceased. Yet it cannot be ruled out that the feature, especially considering as a feature only the structure with vessels, was a kind of grave deposit.



Legend (Figs. 4–6)

1 – brown-bronze, slightly spotted; 2 – brown, homogenous; 3 – light brown-beige, homogenous; 4 – brownish, homogenous; 5 – light brown-yellowish, slightly spotted; 6 – dark brown-bronze-gray, in some places with single ferruginous concentration; 7 – dark bronze; 8 – light brown-light grayish, spotted; 9 – light brown-whitish-grayish; 10 – brown-gray with single ferruginous concentration; 11 – light gray-light brown-beige, spotted with ferruginous concentration; 12 – dark bronze-dark brown-gray with single, small charcoal pieces; 13 – bronze-brown with single, small charcoal pieces; 14 – brown-gray-light brown in some places with single ferruginous concentration; 15 – light brown-beige-grayish, spotted; 16 – light brownish-beige, slightly spotted; 17 – beige-light gray, slightly spotted with single ferruginous concentration; 18 – dark brown-bronze; 19 – gray-brown-russet, slightly spotted; 20 – light brown-light bronze-grayish, slightly spotted; 21 – dark gray-brown-light brown with concentration of small pieces of charcoal; 22 – gray-brown-light brown with single, small charcoal pieces; 23 – most clearly visible ferruginous concentrations; 24 – gray-beige-brown; 25 – brown-gray, slightly spotted; 26 – brown-dark brown-gray, with single, small charcoal pieces; 27 – light beige-whitish; 28 – whitish-light beige with single ferruginous concentration; 29 – steel gray-brown, slightly loamy; 30 – gray-light brown; 31 – dark gray-dark brown; 32 – light brown-brown-gray-beige, heavily spotted with intense and horizontally arranged ferruginous concentrations; 33 – light brown-beige, slightly spotted; 34 – light yellow-light brown with single ferruginous concentration; 35 – light yellow; 36 – light brown-light beige; 37 – dark brown-gray with single charcoal pieces; 38 – concentration of charcoal pieces; 39 – light gray-light brown-brown, slightly spotted with single ferruginous concentration; 40 – light brown-light gray-beige, spotted with single charcoal pieces; 41 – light brown, in places intensive, bronze spots; 42 – light yellow-light gray-reddish with single ferruginous concentration; 43 – steel gray-brown-light brown, highly spotted with intensive ferruginous concentration; 44 – light brown-beige, highly spotted with numerous ferruginous concentration; 45 – beige-light bronze-yellowish with numerous ferruginous concentration; 46 – bronze-beige, highly spotted; 47 – light brown-light bronze; 48 – gray-brown with single, small charcoal pieces; 49 – yellow-light brown with single ferruginous concentration; 50 – light brown-beige-gray

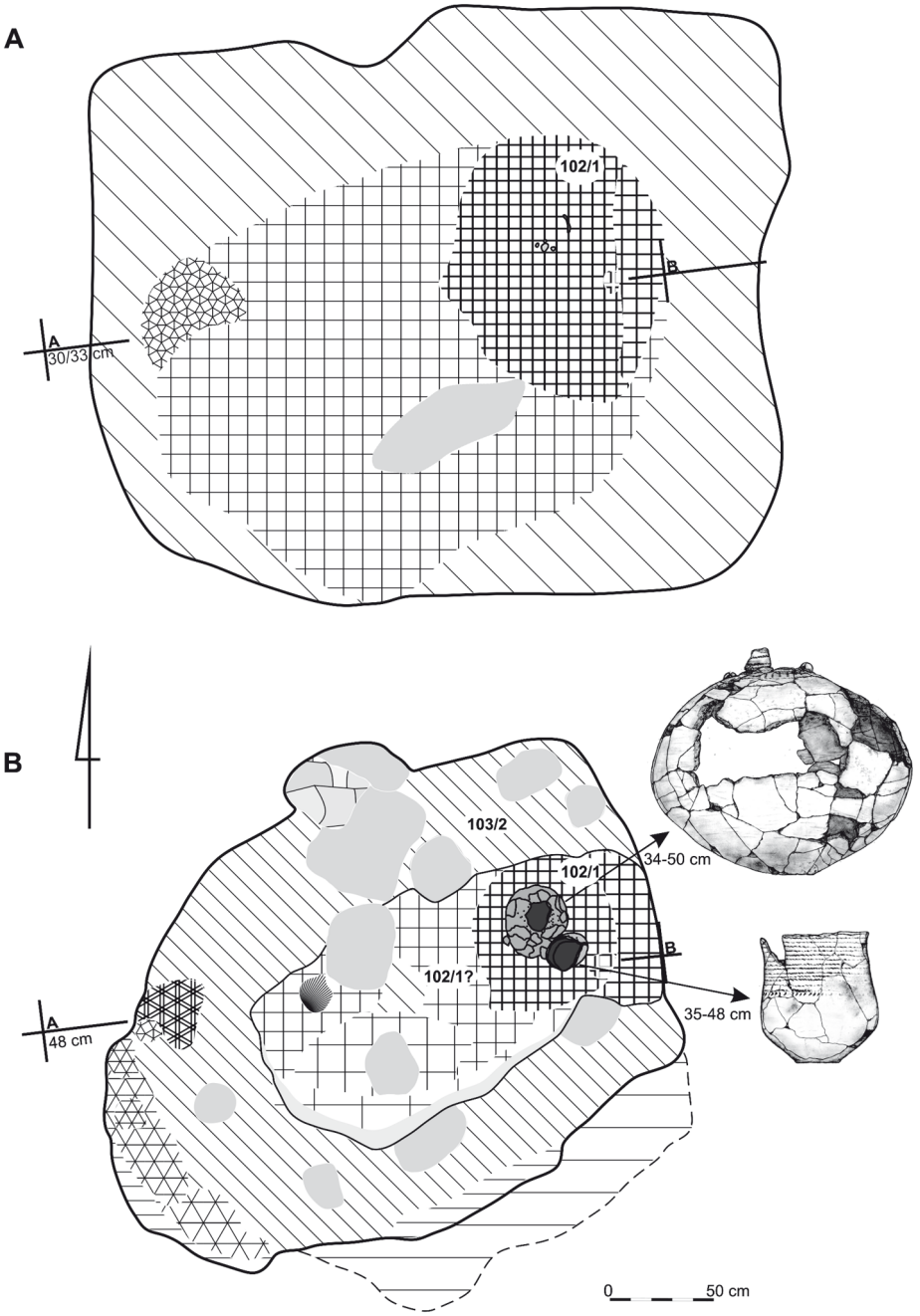


Fig. 4. Ulów, Site 3, Barrow III, plan of Feature 102/1 (grave?) and Feature 103/2 (central pit under the barrow). A – at the level 30/33 cm. B – at the level 48 cm (Drawn by B. Niezabitowska-Wiśniewska)

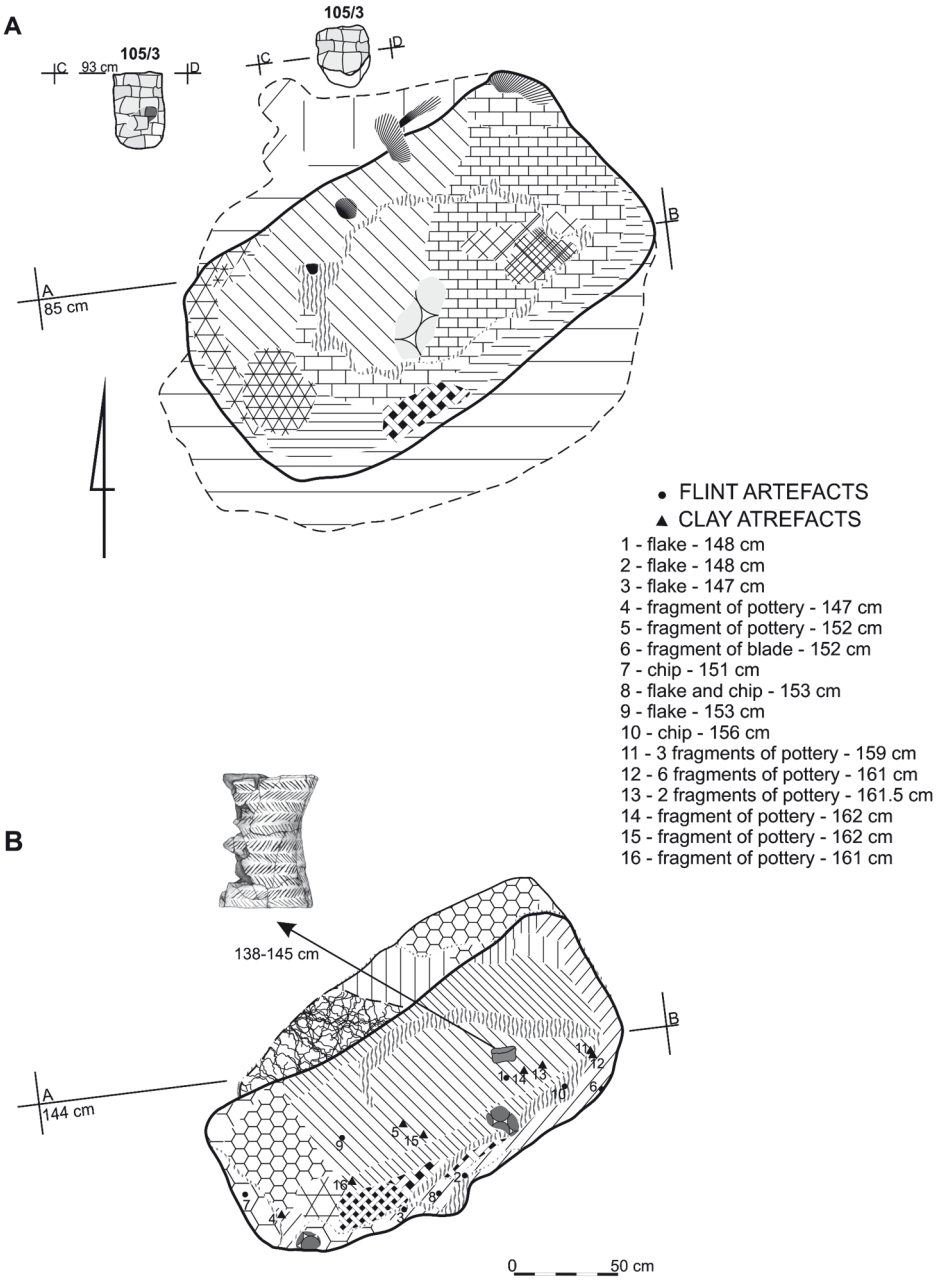


Fig. 5. Ulów, Site 3, Barrow III, plan of Feature 103/2 (central pit under the barrow) and plan and profile of Feature 105/3 (posthole). A – Features 103/2 and 105/3 at the level 85 cm. B – Feature 103/2 at the level 144 cm (Drawn by B. Niezabitowska-Wiśniewska)

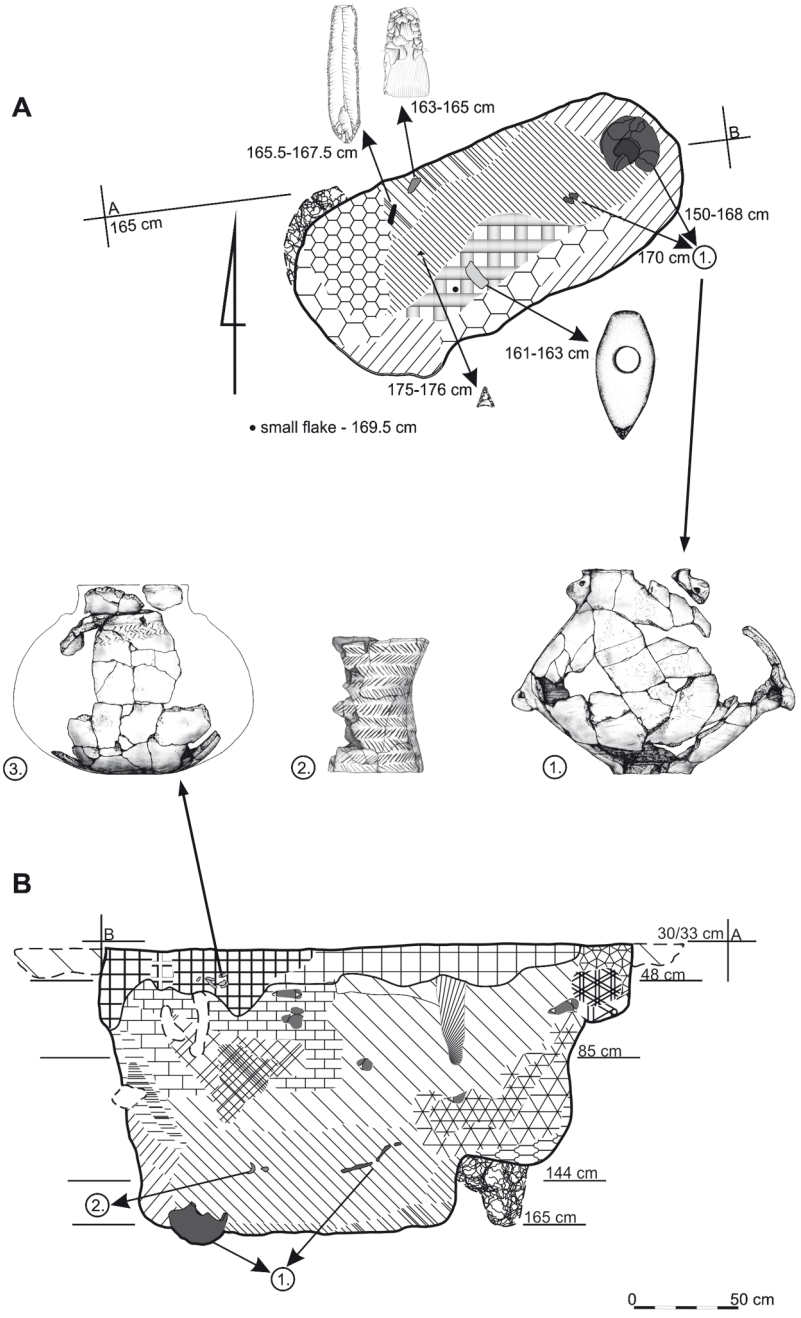


Fig. 6. Ulów, Site 3, Barrow III. A – plan of Feature 103/2 (central pit under the barrow) at the level 165 cm. B – profile S of Features 102/1 and 103/2 (Drawn by B. Niezabitowska-Wiśniewska)

Inventory

The finds inventory of the feature consisted of three vessels: two amphorae, a small beaker (Figs 7; 8), two small flint flakes and a small stone.

1) Amphora no. 1 (Fig. 7) – preserved in small fragments and partially re-deformed, slightly burnt and very fragile; similar to amphorae of type IIa according to J. Machnik (1966, 33, Pl. 48) and amphorae of type AIIBb1 according to P. Włodarczak (2006, 15, Pl. 14), with a globular belly with a shoulder at the half-height of vessel and a short funnel neck with three right angle shaped handles at the base of the neck; a small bottom, not separated, with small cavities arranged in a circle around 0.3-0.5 cm away from the edge; partially obliterated decoration on the neck and upper part of the belly, not reaching its shoulder in the form of four horizontal cord impressions, wherein the lower band extends between the holes in the lugs; below the base of the handles a band of ornament formed by symmetrically placed vertical rows of incisions / pseudo stamps, at the bottom limited by a horizontal cord impression; a light brown-beige surface, partially damaged, with wispy traces of smearing mainly on the shoulder and in the lower part of the vessel. Dimensions: height about – 29 cm; diameter of the rim – about 8 cm; the largest diameter of the belly – about 33-33.5 cm; diameter of the bottom – 5 cm.

2) Amphora no. 2 (Fig. 8: 1) – fragmentarily preserved, highly damaged; slightly similar to amphorae of type IIb according to J. Machnik (1966, 33, Pl. 48) and amphorae of type AIIBb2 according to P. Włodarczak (2006, 15), with a globular belly with a shoulder slightly below half the height of the vessel and with a short, slightly flared neck; in the upper part of the vessel, at the base of the neck, a horizontal plastic band vertically pierced in eight places (originally probably in nine); punctures arranged almost symmetrically; the plastic band in the places of punctures slightly thickened and forming small, crescent projections in a form like lugs; a small bottom, not separated, slightly concave; below the plastic band a belt of ornament in the form of poorly visible, horizontal and shallow incised herringbone motif (two bands?); an orange-brick red surface, partially damaged. Dimensions: height – about 18 cm; diameter of the rim – about 10-10.5 cm; the largest diameter of the belly – about 22.5 cm; diameter of the bottom – 4.5 cm.

3) Beaker (Fig. 8: 2) – preserved almost completely; slightly similar to beakers of type IVc according to J. Machnik (1966, 27, 28, Pl. 48) and beakers of type PIVBc5 according to P. Włodarczak (2006, 14, Pl. 3: 10-15), with a slightly flaring neck and with a shoulder below half the height of the vessel; bottom separated, slightly concave; partially obliterated ornament covering the neck and the upper part of the belly, reaching down to about half the height of the vessel; the ornament consists of 13 horizontal cord impressions; in a few places, just below the edge of the rim poorly visible an additional cord impression (14^{th}); corded ornament from the bottom limited by a row of incisions in the form of small bows; a light brown-beige surface, partially damaged, with poorly visible traces of wispy smearing mainly on the shoulder and in the lower part of the vessel. Dimensions: height – 16.6-17 cm; diameter of the rim – 13.8 cm; the largest diameter of the belly – 15 cm; diameter of the bottom – 5.4 cm.

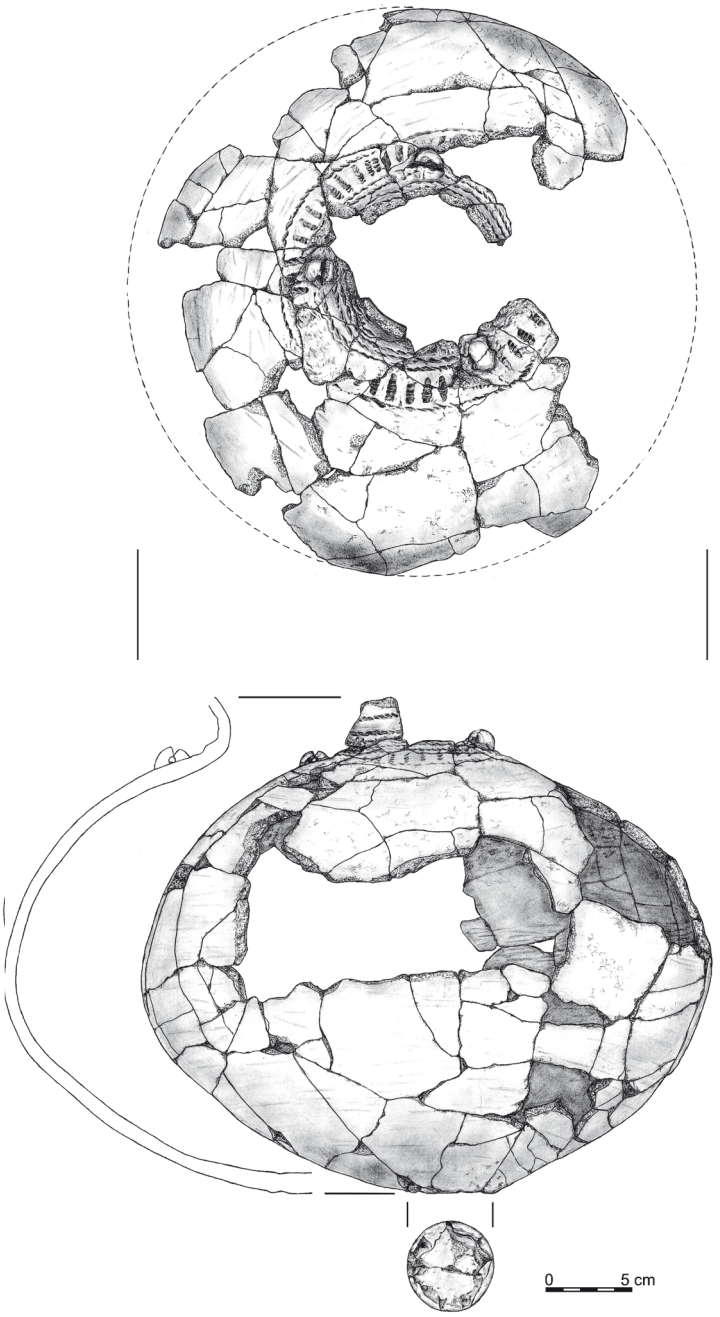


Fig. 7. Ulów, Site 3, Barrow III, Feature 102/1 (grave?) – amphora no. 1
(Drawn by B. Niezabitowska-Wiśniewska)

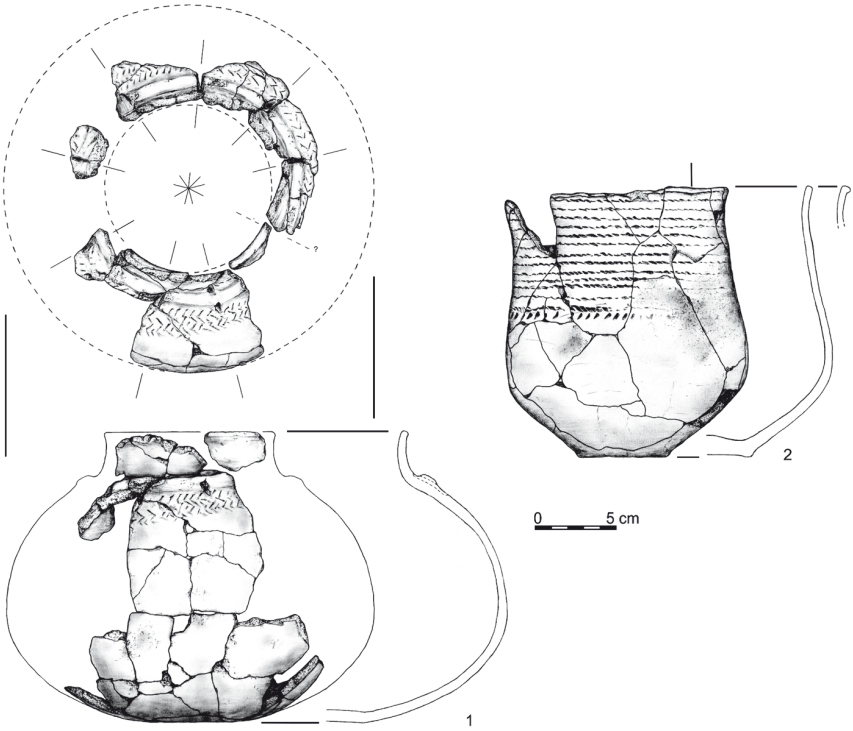


Fig. 8. Ulów, Site 3, Barrow III, Feature 102/1 (grave?). 1 – amphora no. 2. 2 – beaker (Drawn by B. Niezabitowska-Wiśniewska)

Feature 103/2 – the central pit under the barrow

In the upper fill (at a depth of 30/33 cm from the ground surface) of the central pit under the barrow, oval in shape and about 320 × 260/290 cm, its southern edge was barely visible. At this level it was oriented approximately on a W-E axis (Fig. 4: A). During excavation by the horizontal planum method, the size of the grave pit was becoming smaller and its shape was becoming more rectangular (respectively: at a depth of 43/44 cm – 320 × 200/220 cm; 48 cm – 310 × 190/220 cm – Fig. 4: B; 58/59 cm – 240 × 140 cm; 85/87 cm – 220×120/135 cm – Fig. 5: A; 123 cm – 210 × 120 cm; 143/144 cm – 200/210 × 115/120 cm – Fig. 5:B; 164/165 cm – 190/200 × 90/100 cm – Fig. 6: A). The orientation of the central pit under the barrow also changed. It was oriented SW-NE along its axis. The depth of the grave pit from the ground surface was about 165/170 cm and from the top of the pit about 135/140 cm (Fig. 6: B).

The extent and in places weak visibility of the pit in the upper part of the feature, as well as the fact that it was cut into Feature 102/1 meant that the line of the features section was not perpendicular to the edge of the pit.

Feature 102/1was visible very well in the upper fill of the grave pit, into which it was cut. In addition, the pit was surrounded by a layer of light-brown – yellowish sand especially visible by the northern and eastern edges of the pit. After Feature 102/1 was removed during the further excavation by the horizontal planum method, two layers dominated in the central pit: in the centre – a lightly spotted light grey-light brown-beige layer; on the edges, mainly by the east and west edge of the pit – a darker and spotted layer with brown-grey-light grey-beige colour. Ferruginous concentrations were visible in both layers, especially in the place where the two layers met. In places small pieces of charcoal were found. A regular and narrow layer, much lighter in colour than the fill of grave was adjacent to the north, east and southern edges of the pit. The layer was light brown-beige, in places even white. Its width was average from 5 to 18 cm. It was best visible at a depth of 144-158 cm at the north and southern edges of the pit. At the north edge its width was partly even 28 cm and colour was more yellow.

In the grave pit, mainly in its western part, oval, approximately dark brown-grey or dark brown-bronze structures with single and very small pieces of charcoal were visible. One of them became visible at a depth of 30 cm, the rest of the structures were best visible at a depth of 85-115/125 cm. The layers and structures mentioned above indicate that a wooden construction was located inside the grave pit.

The profile of the grave pit was irregular. The east wall was slightly slanting and directed at the inside of the grave. The west edge resembled steps. To a depth of about 65 cm it descended almost vertically and next it was narrowing towards the inside of the grave (for about 20 cm) creating the first step. Then, again it run almost vertically, next it was arched and finally it was horizontally narrowing towards the inside of the grave (for about 40 cm) at a depth of 135 cm creating another step. From there, it descended almost vertically to the floor of the grave (to a depth of 165/170 cm). The stepped shape of the western edge of the pit proves that a wooden construction was placed inside the grave pit. The bottom of the main part of the feature (in the place where a deceased was placed) was almost flat (Fig. 6: B).

In the fill of the grave pit, mainly by its southern edge, 36 fragments of pottery were found. The first of them were found at a depth of 85-86 cm, the next ones at 122-123, 138-143, 147 (Fig. 5: B/4) and 152 cm (Fig. 5: B/5). The biggest number of fragments was found at a depth of 159-162 cm (Fig. 5: B/11-16). In addition, three flint chips (less than 1 cm), six small flint flakes (greater than 1 cm) and two small flint blades were found in the fill. Similarly to the fragments of pottery, they were mainly found by the southern edge of the pit. Most of them were found at a depth of 147-156 cm (Fig. 5: B/1-3,6-10), except one artefact which was found at 123 cm and one found at 169.5 cm (Fig. 6: A).

Within the grave pit, on the level of the original deposition of the skeleton discovered artefacts such as (in accordance with the depth of the deposition): 138-145 cm – a significantly damaged clay beaker (Figs 5: B; 6: B/2); 155-170/175 cm – a highly damaged clay amphora (Fig. 6: A-B/1); 161-163 cm – a stone battle-axe; 163-165 cm an axe made of

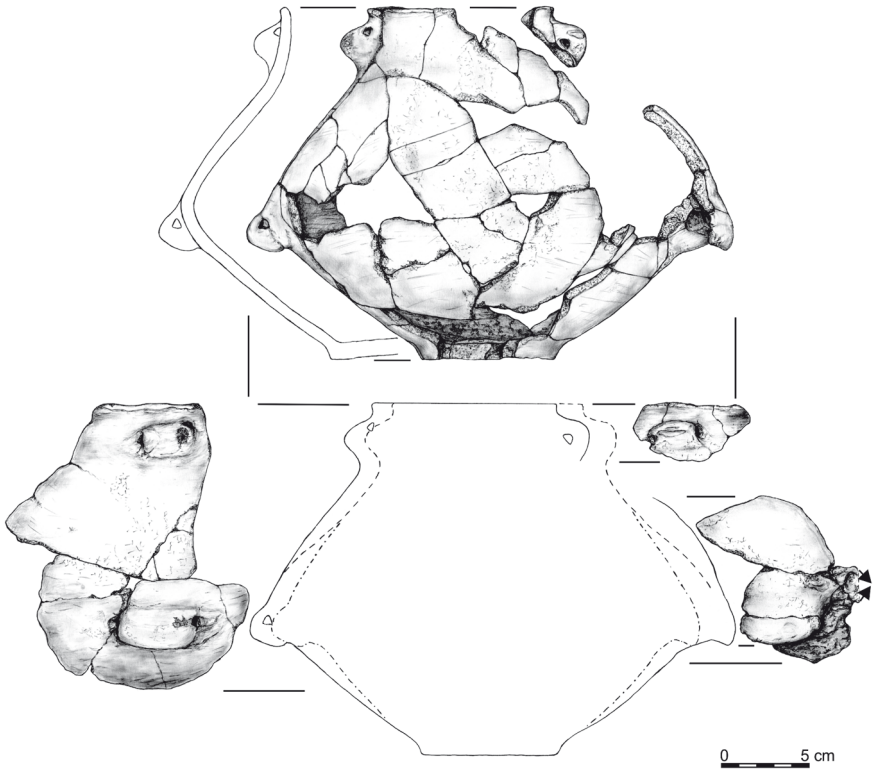


Fig. 9. Ulów, Site 3, Barrow III, Feature 103/2 (central pit under the barrow) – amphora (Drawn by B. Niezabitowska-Wiśniewska)

Cretaceous "Volhynian" type of flint; 165.5-167.5 cm – a retouched blade; 175-176 cm – a strongly burned flint arrowhead (Fig. 6: A). Because of sandy soil, no human bones were preserved.

It is worth noting that fragments of the upper part of the amphora, including its rim, were found much higher (at a depth of 126-140 cm) than the rest of the fragments of this vessel (a belly and a bottom). In addition they were found 55-85 cm west from the main parts of the amphora (Fig. 6: B/1).

Inventory

1) Amphora (Fig. 9) – fragmentarily preserved, heavily damaged and secondarily deformed, slightly burnt and very fragile; only slightly similar to amphorae of type Ic according to J. Machnik (1966, 32, 33, Pl. 48) and amphorae of type AIB according to P. Włodarczak (2006, 15, Pl. 12: 2); closest to amphorae of the Czech type A25e (mainly due to the proportions and shape of the vessel) according to M. Buchvaldek (1967, 31, fig. 3); with a biconical belly with a shoulder slightly below half the height of the vessel; a neck gently

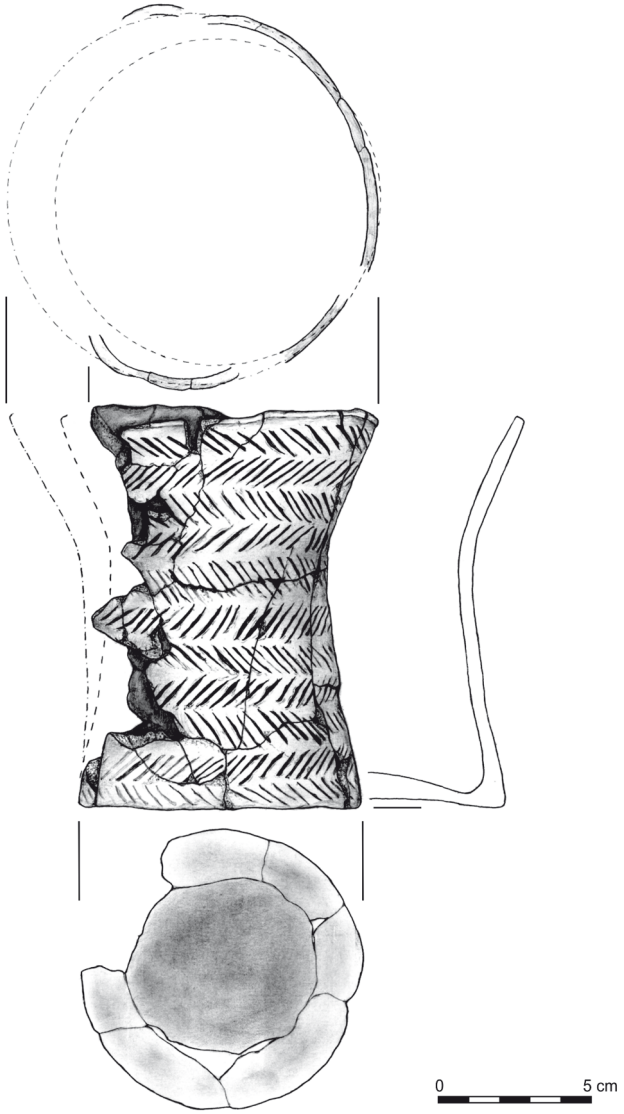


Fig. 10. Ulów, Site 3, Barrow III, Feature 103/2 (central pit under the barrow) – beaker (Drawn by B. Niezabitowska-Wiśniewska)

separate and slightly funnel flaring; two approximately right angle shaped lugs, symmetrically arranged at the base of the neck; the next two, sleeve – shaped, on the shoulder; upper lugs placed approximately on one axis of the lower lugs; bottom formed as a low foot, slightly concave; the amphora undecorated; light brown surface, partially strongly damaged with the traces of wispy smearing, mainly on the shoulder and in the lower part of the

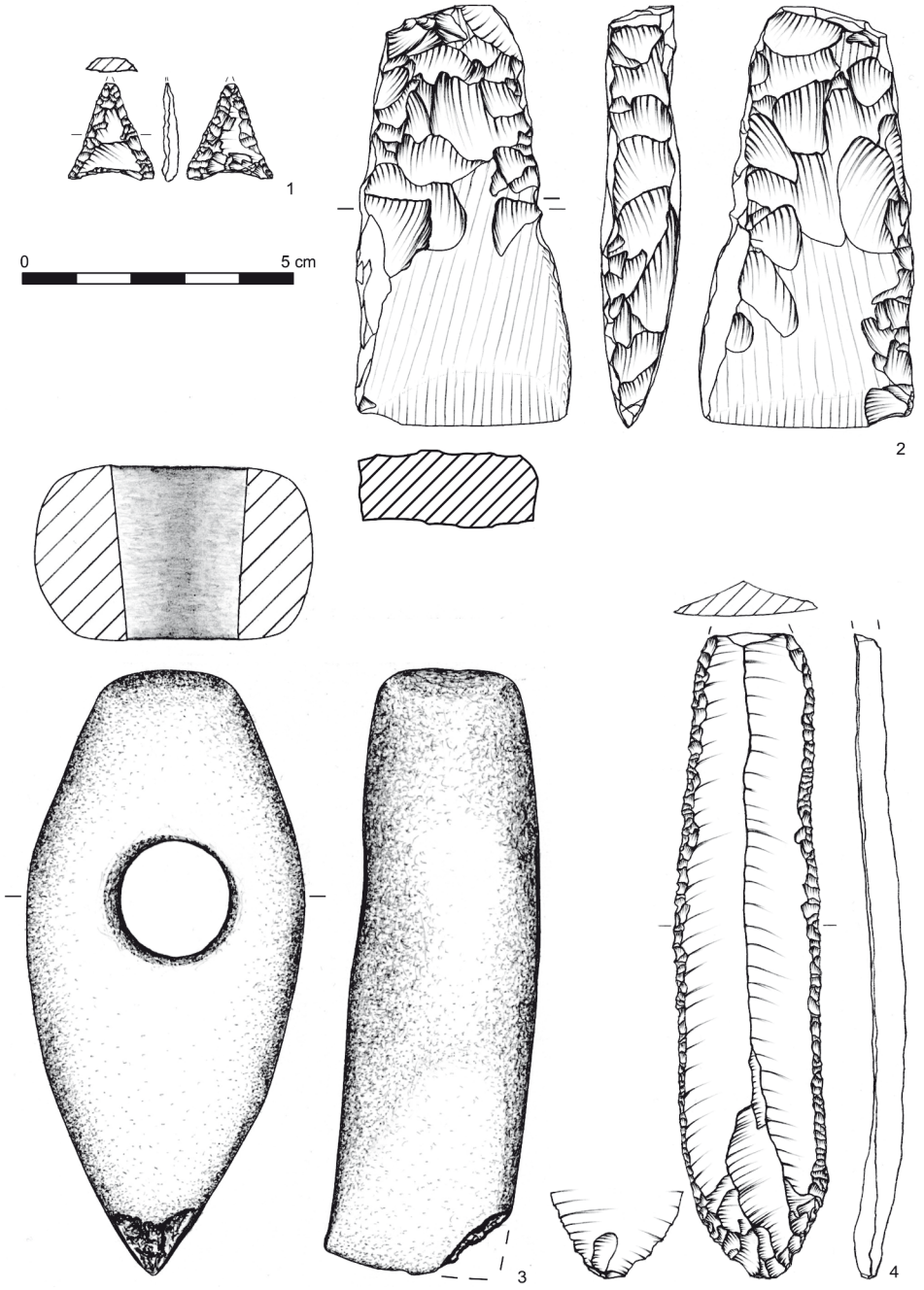


Fig. 11. Ulów, Site 3, Barrow III, Feature 103/2 (central pit under the barrow). 1 – arrowhead. 2 – axe. 3 – stone battle-axe. 4 – retouched blade (Drawn by T. Wiśniewski)

vessel. Dimensions: height – about 20 cm; diameter of the rim – about 10.5 cm; the largest diameter of the belly – about 25-26 cm; diameter of the bottom – 7.5 cm.

2) Small beaker (Fig. 10) – pot-shaped or mortar-like or hourglass-shaped – fragmentarily preserved, heavily damaged and secondarily deformed, poorly burnt and fragile; only in general similar to the beakers of type VIc according to J. Machnik (1966, 30, 31, Pl. 48) and the beakers of type PVIC according to P. Włodarczak (2006, 15, Pl. 11: 23, 24); closest to the beakers of the newly separated type VId (Machnik *et al.* 2009, 180); walls curved inside about half the height of the vessel; a wide bottom, clearly concave; ornamentation on the whole surface in the form of horizontal, deeply incised herring-bone motif (5.5 bands); surface in places heavily damaged, spotted, and with dominant colour of brown-bronze and light brown-greyish places. Dimensions: height – about 13 cm; diameter of the rim – 10.5 or 12 cm; diameter of the bottom – 9 cm.

3) Axe (Fig. 11: 2) – quadrangular of type ID according to P. Włodarczak (2006, 28, fig. 23: 10); made of Cretaceous "Volhynian" type of flint; trapezoidal in a contour plane; wedge-shaped in a longitudinal section; quadrangular in a cross-section; rectangular shape of the butt; irregularly polished on whole surfaces (dorsal and ventral). Dimensions: length – 7.8 cm; width of the cutting edge – 3.8 cm; max. thickness – 1.5 cm.

4) Stone battle-axe (Fig. 11: 3) – made of amphibolite; rhomboidal shape with symmetrical, slightly hanging, partially damaged cutting edge; upper broader side is slightly convex, lower broader side is slightly concave; a hole of a shaft placed closer to the butt. Dimensions: length – 11.2 cm; max. width – 5.1 cm; max. thickness – 3.4 cm; height of the butt – 2.3 cm.

5) Retouched blade (Fig. 11: 4) – made of Cretaceous "Volhynian" type of flint; with bilateral retouch, partially flat and halfsteep, made to the upper side; broken tip; the blade blank was detached from a single-platform core. Dimensions: preserved length – 11.9 cm; max. width – 2.3 cm; max. thickness – 0.6 cm.

6) Arrowhead (Fig. 11: 1) – made of an indeterminate raw material; strongly burned; shaped by the partially bifacial retouch; slightly asymmetrical, triangular with indented base. Dimensions: length – 1.9 cm; max. width – 1.6 cm; max. thickness – 0.3 cm.

Feature 105/3 – posthole

At a depth of 41 cm below the level of the ground by the north wall of the central grave pit, an irregular dark brown-bronze darker area was found. At 56 cm depth its shape became almost square and colour steel grey-brown, it was 30 × 30 cm in dimensions. This proved that it was a posthole, probably connected with the construction of the central grave pit. At a depth of 93 cm, after reducing its size to 25 × 25 cm, it was dug in half-sections. Its base was found at 131 cm below the ground and 90 cm below the top of the feature. The shape of the profile of the posthole was similar to a letter "U" and its bottom was slightly curved (Fig. 5: A).

Feature 99/4 – hearth connected with the cemetery from the Roman Period.

The feature was found in the north-west part of the mound of the barrow and was placed north of the western part of the central grave pit. It had an almost perfect rectangular

shape and at the top, it measured 95 × 80 cm. Because of the big amount of charcoal, giving it a black colouring, it was clearly visible even at 19 cm. Its base was found at 55.5/56 cm. Below the base of the feature, to 68.5 cm, a clear layer of significantly scorched soil was found. Within the feature, a large amount of burned stones and fragments of a re-burned clay vessel were found (Fig. 3: B).

Except the features mentioned above, three darker areas were found within the mound of the barrow, yet it is hard to discover their functions. Maybe two of them, by the northern and southern edge of the central grave pit, were connected with the construction of the pit (Fig. 3: B).

ANALYSIS

Construction of the barrow and the central grave pit

Barrow III, the original diameter of which was about 8-8.5 m, is the smallest among the excavated barrows at Site 3 in Ulów. The original diameter of Barrow I at this site was about 10-10.5 m, and Barrow II – about 15.20 m on the line N-S and about 14.54 m on the line E-W (Niezabitowska-Wiśniewska and Wiśniewski 2011, 330, 348). The diameter of Barrow III, the remains of a weakly visible ditch as well as the dimensions and orientation of the grave pit do not differ from the rules of funeral rites of CWC (Machnik 1966, 70-74; 1979, 343). A gradual decrease of the size and shape of grave pits – oval in its upper parts and becoming a rectangular at the bottom – is typical mainly for areas east of the Vistula river (Jarosz 2002, 13).

A light brown-yellowish sand layer, which was visible after removing the humus layer around the central pit under the mound and was best visible by the northern and eastern edge of the pit, may be the remains of a small mound formed before the grave was completely covered by the burial mound. Evidence of such small mound was found in Barrow II in Ulów. It was covering a central grave (no. 97/1; Niezabitowska-Wiśniewska and Wiśniewski 2011, 354, 361). A small mound was also covering Feature 4 (a grave) located in the centre of Barrow B in Bierówka, Jasło district (Gancarski and Machnikowie 1990, 106, 114, fig. 3), a central grave pit under Barrow 1 in Średnia, Przemyśl district (Machnik and Sosnowska 1996, 19, fig. 5), and a central grave pit in Wola Węgierska, Jarosław district (Machnik and Sosnowska 1998, 5-7, 15, fig. 5). However, it cannot be excluded that the lighter layer was created by the soil which was thrown in the northern and eastern direction during digging of the central pit under the barrow. Another possibility, though less probable, is that it was created from the soil removed during digging Feature 102/1 into the upper fill of the pit. Evidence of mounding the soil from digging a grave pit was also found in Barrow B in Bierówka (Gancarski and Machnikowie 1990, 114).

The presence of dark brown-grey or dark brown-bronze structures, visible mainly in the western part of the central pit under the barrow, may be evidence for the presence of a wooden construction. One such structure, visible even from the upper surface of the

feature by the western edge of the grave pit may be interpreted as a posthole. A similar feature was found by the northern edge of the grave pit and most probably was an element of the mentioned construction. The absence of clear traces of burning seems to indicate that the wood used in the construction was not burned. It might have been a shoring supporting and protecting walls of the pit from collapsing or remains of an indefinable overground construction. Traces of similar constructions were found in Grave 95/1 in Barrow I and in graves 98/2, 99/3 and Feature 66/8 in Barrow II in Ulów. In addition, the western edge of Feature 66/8 was formed in the shape of steps, almost exactly like the western edge of the central grave pit in Barrow III (Niezabitowska-Wiśniewska and Wiśniewski 2011, 330-337, 340-342, 355-361). This quality may also indicate the presence of a wooden constructions. What is more, the floor of the posthole located by the northern edge of Feature 103/2 (a grave) was almost at the same depth as the floor of the lower step in the western part of the feature (respectively 131 and about 135 cm).

The remains of the interior or overground constructions made of wood are very often found in graves under barrows of CWC, in Lesser Poland and the Carpathian Foothills (Machnik 1966, 73; 1992a, 73, fig. 2; 2001, 124; 2007, 22, 25, fig. 13; Gancarski 1992, 20, 21; Włodarczak 2006, 51; Jarosz 2011, 257-260, fig. 2). They were found, among others, in: the central part of Barrow 1 (Machnik and Sosnowska 1996, 9, 10, fig. 9) and Barrow 2 at Site 3 in Średnia (Jarosz 2002, 7, 13, figs 7, 9); Barrow I in Brzezinki, Lubaczów district (Machnik 1966, 240, 241); Feature no. 9 in Lelowice, Proszowice district (Rodak 2002, 126, 127, fig. 7, photo 6), Grave no. 1 in Kocmyrzów, Kraków district (Włodarczak 2000, 486; 2006, 51); Grave no. 1 in Gabułtów, Kazimierza Wielka district (Górski and Jarosz 2006, 405-407, figs 5, 6); Krajowice, Jasło district (Gancarski 1992, 24, fig. 18); Barrow A, Feature no. 1 and Barrow B, Feature no. 4 in Bierówka (Gancarski and Machnikowie 1986, 63, 64, 71, fig. 8; 1990, 103-106, 114, 119, figs 5, 7); Barrow 1 in Niepla, Jasło district (Machnik 1992a, 73, fig. 2: 2; 1992b, 269, fig. 3; 1998, 102, 103, fig. 3: 3; 2007, 25, fig. 13: C), and also probably in Barrow I in Lipie, Rzeszów district (Machnik 1966, 247) and in a mound in Morawsko, Jarosław district (Machnik 1995, 10). Traces of a wooden construction were also found in a grave pit, originally located at the edges of a barrow in Młodów-Zakącie, Lubaczów district (Pilch 1997, 175, 177, figs 3: b, c; 4). The remains of wooden constructions next to grave pits, above or within them, were found in Brestov in Slovakia (Gancarski *et al.* 2001, 29-31, 47, figs 5, 6, 8, 11) and in the Dniester basin in places like Kołpiec (Kollets, now part of Stebnyk, Lviv Oblast, UA), Kulczyce-Szlacheckie (Kulchytsy, Lviv Oblast, UA) and Ozimina (Velyka/Mala Ozymyna, Lviv Oblast, UA) (Sulimirski 1968, 125, 133, 134, 136, 138). Similar constructions were recognized also in the Middle Dnieper culture (Artemenko 1967, 61, 72, 81).

The presence of a lighter layer (border) around the central grave pit of Barrow III also has many analogies. It might be connected with traces of an organic construction, for instance casing of a grave. Similar layers, besides Grave 99/3 and Feature 66/8 in Barrow II in Ulów (Niezabitowska-Wiśniewska and Wiśniewski 2011), were found in Barrow 1 in

Wola Węgierska (Machnik and Sosnowska 1998, 5, 14, 15, figs 6, 7) and in Barrow 1 in Średnia (Machnik and Sosnowska 1996, 8, 9, 17-19, figs 5, 7), and in other graves under barrows of CWC, especially in the Carpathian Mountains (Machnik 1992a, 73, fig. 2).

Most probably, in the central grave (Feature 103/2), later covered by the mound, a male adult was laid. This matches norms observed in the barrow cemetreies of CWC. The presence of weapons in the inventory, a stone axe, an arrowhead and a retouched blade also indicates that the an adult male was buried inside the grave (Jarosz 2003, 250, 251, 253; Włodarczak 2006, 63, 66, 67).

A very interesting element is Feature 102/1 cut into the upper fill of the central pit under the barrow (Feature 103/2). Unfortunately we cannot be sure if it was made only of an oval structure consisting of three vessels or the feature was originally much bigger oval in shape and longer and the mentioned structure with three vessels was in its eastern part. We may assume that it was an inhumation grave, yet we cannot be certain since no bones were preserved.

If we assume that only the oval structure with vessels was the grave, its upper part was 100 × 135 cm, it seems we are dealing with grave of a child. Nevertheless, children were rarely buried under barrows, especially in their central parts/graves (*e.g.* Nedeżów, Tomaszów Lubelski district, Site 22, Barrow 2, Grave 2 – Bagińska 1996, 63; Machnik *et al.* 2009, 127, 130; Łubcze, Tomaszów Lubelski district, Site 1, Barrow 1, Grave 1; Barrow 2, Grave 1; Łubcze, Site 16, Barrow 2, Graves 1 and 2 – Machnik *et. al.* 2009, 43-46, 51-54, 244, 244; Zakłodzie, Grave 2 – Machnik 1966, 239 and probably Lelowice – Rodak 2002, 126, 127; Włodarczak 2004, 343, fig. 2: A). Whereas, in flat graves burials of men, women and children are similar in numbers (Jarosz 2003, 250) and, for example, in Kraków-Sandomierz CWC group graves of children are a significant part of all graves of this type (Włodarczak 2004, 341). Children were also very often buried in simple pit graves (Włodarczak 2004, 342, fig. 2: B). Mass graves where adults were buried together with children, whose bodies were placed in large beakers, are also known (Żerniki Górne, grave 31 and 34 – Włodarczak 2004, 346, 347). Child's pit graves dug into the upper fill of a grave under a barrow have never been found. Only at Site 4 in Ulów, were two other features dug into the central burial pit of Barrow II. Their size and furnishing indirectly suggest that they could be associated with children's graves, yet due to the fact that no bones were preserved, this fact cannot be proven conclusively (unpublished results of research; about use-wear analysis of flint artefacts from this barrow, see: Pyżewicz 2017,126, fig. 7).

The inventory of Feature 102/2, consisting of three vessels, is also troubling. Ceramic vessels were a basic element of the inventory of children's graves, but in most cases there was only one vessel. Furthermore, in children's graves, miniaturization of objects was clearly visible, including vessels (Włodarczak 2004, 348). Whereas, in the inventory of Feature 102/1 a large amphora, about 29 cm high, was found.

If we assume that Feature 102/1 is made of, not only the oval structure consisting of three vessels, but also another oval, longer structure which adjoined it from the west, the

feature would be approximately 185/195 × 90/100 cm and could be a grave of an adult. In this case, the three vessels were probably placed at the foot of the body. The size and type of the vessels, as well as the lack of weapons suggest that it was a grave of an adult female (Jarosz 2003, 253). Sometimes graves of adults were dug in mounds of barrows or on their edges (Machnik *et al.* 2009, 243, 244). In Barrow B in Bierówka, Feature 4a (grave) was cut into Feature (grave) 4 located in the centre of the barrow, damaging its western part. Both features had been created before the mound of the barrow (Gancarski and Machnikowie 1990, 114, 115). An even more complicated situation was observed in Barrow 2 in Średnia (Site 3), which was a multi-phase structure, where, among others, the centrally placed burial pit (no. 3) was damaged by a trench containing most likely two burials (nos. 1, 1a) stacked above each other (Jarosz 2021, 154-162, figs 2-7). Nevertheless, the most similar stratigraphic arrangement of graves was documented in a barrow in Nedeżów (Site 22). In the central part of the barrow there were two graves dug into each other. They were rectangular in shape and had similar size, and the newer grave was placed almost perfectly above the older grave pit. In Grave 2 (the lower one) the remains of a young male, aged 14-16, were found, Grave 1 (the upper one) consisted a male burial, aged 25-30 (Bagińska 1996). Similarly to the graves in Barrow III in Ulów, the lack of a preserved mound makes it impossible to say in what time intervals the graves were created. The younger grave could have been dug just after the older grave was created and before the mound was built, or if we assume that the older grave was covered with a small mound, the newer grave could have been dug before it was completely covered with a mound. It could have been also dug into the central point of an existing mound and by accident right into the middle of an existing grave which was under it. This latter hypothesis seems, however, unlikely. In addition, the inventory of the graves, which comes from the same period, does not help to discover at what time intervals the graves were dug.

We cannot also exclude the possibility, yet it is less probable, that the vessels dug into the upper part of the central grave under Barrow III at Ulów were a kind of deposit of grave goods. However, in most cases, grave goods were placed in mounds which were already built and very often they were small vessels (*cf.* Ulów, Barrow II – Niezabitowska-Wiśniewska and Wiśniewski 2011, 362, fig. 23: 2; Brzezinki, Barrow IV; Lipie, Barrow 1 – Machnik 1979, 343, 347). A completely different situation was recorded in Barrow 6 in Białka (Site 3), Krasnystaw district, where burial equipment was discovered in the upper fill of the burial pit, as in Ulów. At the bottom of the pit, however, no remains of a skeleton and other grave goods were found, which is definitely different from the situation observed in the grave from Ulów (Budziszewski *et al.* 2016, 373-377).

Feature 99/4 which was dug into the mound, should be interpreted as a hearth, functionally connected with the cemetery of the Wielbark culture. At Site 3 in Ulów, features of this type are located by the western border of a dense cluster of burials of this culture. Similar structures with cobbled stone paving were discovered, among others, at a biritual cemetery of the Wielbark culture in Krosno, Elbląg district (Okulicz and Bursche 1987,

223-229; Chowaniec 2005; Jarzec 2018). The mere fact that Feature 99/4 was dug into the CWC barrow indirectly suggests that it was undetectable at the time of the Goths' presence near Ulów. This population, at least in Ulów, did not disturb earlier barrows, which is best evidenced by the lack of features dated to this period in the mound of the largest one (Barrow II), which was certainly recognisable in this area in the Roman period.

Inventory

Taking into consideration the amount of artefacts discovered in the two features of Barrow III, it should be recognized as the richest among other barrows explored in the site in Ulów.

The large amphora no. 1, with three handles placed on the base of the neck (Fig. 7), and the beaker (Fig. 8: 2) from Feature 102/1 represent widely spread types of CWC vessels which have been found in the area of the Little Poland Uplands, in the San river basin and in the southern part of the Lublin Land. There are also similarities in the way of decorating the beaker. Amphorae of type IIa, according to J. Machnik, were often decorated with patterns of horizontal cord impressions, similar to ones found in the vessel from Ulów. There is only a problem finding the exact analogy to the whole composition of the ornament, which cover the amphora no. 1, including the strings of horizontal cuts.

The other three vessels seem more interesting. The first of them is a small amphora (no. 2) from Feature 102/2 with a horizontal plastic band vertically pierced in eight places at the base of the neck (Fig. 8: 1). Amphorae with horizontal bands with crescent projections in the form of perforated lugs are characteristic mainly for the Little Poland Uplands (Machnik 2011, 63; Hozer *et al.* 2017, 81-83). These amphorae are known basically from the sites as: Pełczyska, Pińczów district, Site 6, Feature 50 (Włodarczak 2006, Pl. 40: 13); Miechów, Miechów district, Site 18 (Włodarczak 2006, Pl. 81: 3); Witów, Proszowice district, Site 5, Grave 2 (Rydzewski 1973, 74, fig. 4: a; Włodarczak 2006, Pl. 34: 11). Two vessels of this type also come from the Rzeszów foothills, from recently discovered graves in Szczytna, Jarosław district (Site 5, Grave 220; Site 6, Grave 84 – Ligoda and Podgórska-Czopek 2011, 239 cat. 63: 8; Hozer *et al.* 2017, 24-26, 62, 81-83, figs 12: 4; 35: 2). All the above-mentioned amphorae are however different from the amphora from Ulów. They have different proportions and the way of forming the belly, the bottom and plastic band. Moreover, their height often highly exceeds twenty centimetres. Among the aforementioned amphorae, we will also not find the ornament similar to the one on the amphora from Ulów. Apart from the lack of similar decorative motifs, their position also differs – in all examples it is on the neck, often on the plastic band and sometimes it occurs below the band, in the upper part of the belly.

The next two vessels come from the central grave pit of Barrow III (Feature 103/2). Mortar or pot-shaped beaker (alternatively an hourglass shape) ornamented on the whole surface with a herringbone pattern (Fig. 10) is the most similar to the vessel from Wola Węgierska (Barrow 1, central grave – Machnik and Sosnowska 1998, 8, 16, fig. 11). The next two beakers come from Wierszczyca, Tomaszów Lubelski district (site 1 and 30), how-

ever they differ from the one from Ulów as there is lack of ornament on the lower part of the vessel (Site 1, Barrow 1, Feature 1 – Bagińska 1997, 50, 51, fig. 4: c; Machnik *et al.* 2009, 139-142, fig. 111: 2) or the ornament in the shape of oblique grooves only a bit similar to a herringbone pattern (Site 30, Barrow 1, Feature I – Machnik 1999, 236, fig. 4: B/4; Machnik *et al.* 2009, 151, 152, fig. 119: 5). It is generally maintained that such characteristic features of these beakers, such as clear narrowing at half height of the vessel, or slightly above and decorations with incisions (mainly in the herringbone pattern) on the whole or almost whole surface of the vessel, are similar to the beakers of the Middle Dnieper culture. We can only say here about the continued existence of a tradition and adapting it to the CWC canon (Machnik 1979, 58; Machnik and Pilch 1997, 161, fig. 9; Machnik 1999, 235, 239, figs 4: B/4; 6: A/4, 8; Machnik *et al.* 2001, 392).

Near the beaker, there was also found a double conical and non-ornamented amphora with handles placed one on top of the other – two on the base of the neck and two in the most protruding part of the belly (Fig. 9). From the areas east of the Vistula river, only one similar vessel is known, which was found in Nedeżów, site 22, Barrow 2, Feature 1 (Bagińska 1996, 63, fig. 4: a; Machnik *et al.* 2009, 127, fig. 99: 1). However, it differs from the amphora from Ulów in proportions as well as the presence of the spherical belly and much greater size. Fragments of an amphora with handles placed on the widest part of the belly and at the base of the neck are part of the collection of artefacts found on the surface in Markowa, Łańcut district. However, it differs from the specimen from Ulów in proportions, as well as the presence of a plastic band at the height of the upper handles and the presence of an ornament (Podgórska-Czopek and Czopek 1985, 51-54, fig. 1: 5). The tradition of placing handles on non-ornamented amphorae, placed one above the other, is characteristic for the area of Czech Republic. However, the number of upper handles is often higher (usually four). The amphora from Ulów is placed in the type 25 according to M. Buchvaldek (1967, 31, fig. 3, map 11; 1986, 88, figs 44; 52: 2). The proportions, size and the belly form are closer to the variant "e" of this type. The most similar to the amphora from Ulów is the amphora found in Vikletice, Chomutov district, Grave 141 (1963) – Buchvaldek and Koutecký 1970, 39, 208 tab. 1: 141/1, fig. 60: 1). Similar, yet representing type 25f and 25g, are the amphorae from graves 60 (1963), 109 (1963) and 54 (1964) – (Buchvaldek and Koutecký 1970, 27, 30, 54, tab. 1: 60/2, 109/1, 54/3, figs 18: 2; 29: 1; 100: 3).

USE-WEAR ANALYSIS

Use-wear analysis included a retouched blade and a flint axe (Fig. 12). A flint arrowhead, on account of its high degree of burning, was not subjected to it. As results of use-wear analysis conducted by Katarzyna Pyżewicz have already been published (Pyżewicz 2017), this paper includes only general findings. The retouched blade exhibits minor traces of storage, discernible along both side edges and on prominent inter-scar ridges. The

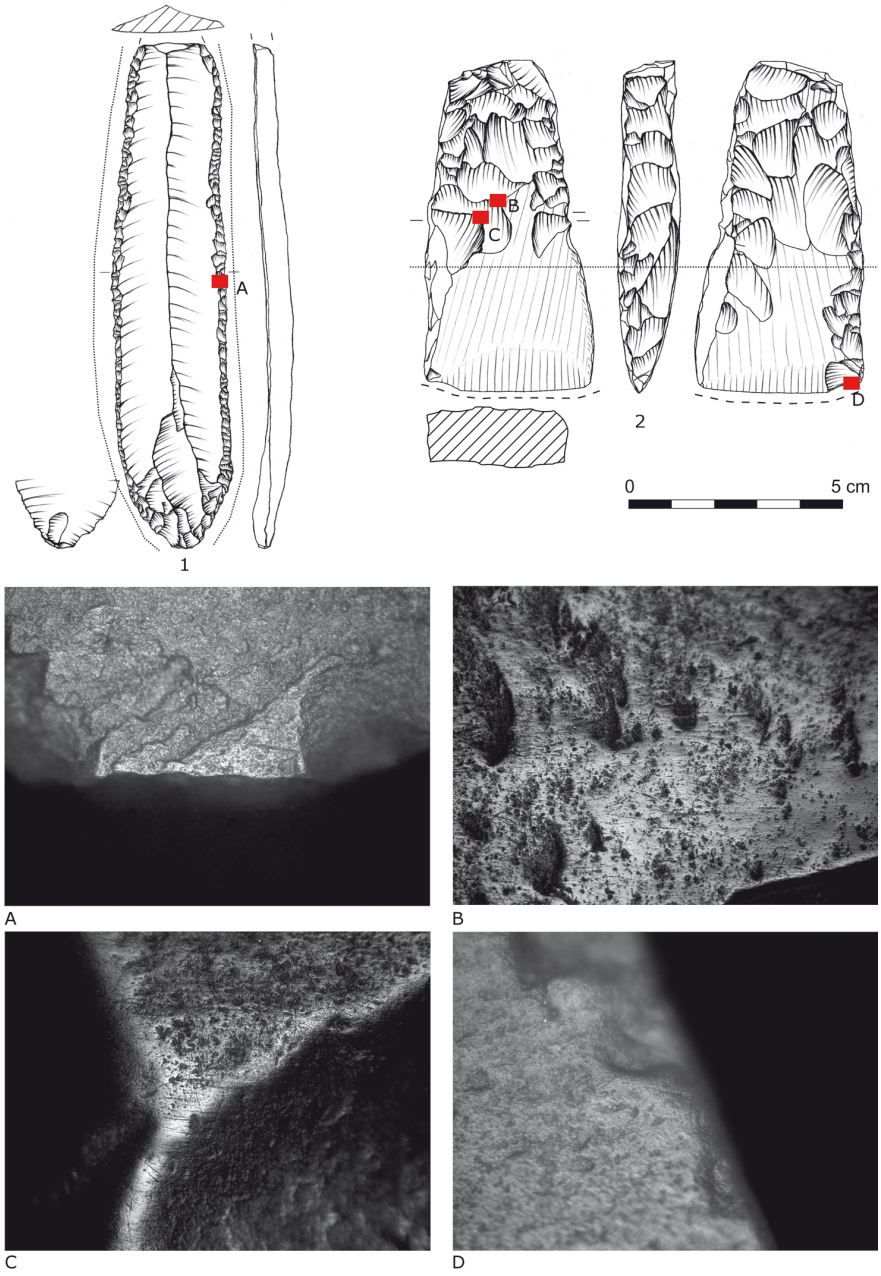


Fig. 12. Ulów, Site 3. Flint artefacts from Barrow III. 1 – retouched blade. 2 – axe. A – traces of contact with hide/plant fibre (storage/transport). B–C – traces of contact with hide/plant fibre (hafting). D – traces of wood chopping. A – 100× magnification. B–C – 50× magnification. D – 200× magnification (After Pyżewicz 2017)

axe, apart from intense traces of hafting made of organic materials, including plants and hide, is distinguished by chipping and polish on the cutting edge, which most likely developed as a result of using it for wood processing. The reach of the haft largely coincides with the end of the polished zone of the cutting edge, approx. half of which was stuck in a haft (Pyżewicz 2017, 123, 126-130, fig. 4).

CHRONOLOGY

On the basis of the inventory, the central grave (Feature 103/2) in Barrow III in Ulów can be compared with younger CWC complexes (III phase of CWC or the last stage of the II phase of CWC). This is confirmed by the chronological position of the mortar beakers (Bagińska 1997, 52; Machnik and Sosnowska 1998, 16; Machnik *et al.* 2009, 214, 230, fig. 137), as well as placing unornamented amphorae with handles placed one above the other in the late III phase of CWC in Czech Republic (Buchvaldek 1967, fig. 21; Machnik 1999, 233-235, fig. 5: 3). In this way, the Feature 102/1 dug in the central grave pit is surely younger, yet it is difficult to determine unambiguously the time interval that separated the creation of these two features.

Unfortunately, Barrow III, including its central grave, did not yield organic traces that would enable radiocarbon dating (the charcoal fragments were too small and most of them could not be taken out). Nonetheless, we have obtained a date for charcoal (*Fraxinus excelsior*) from the central grave under Barrow I at the same cemetery – *ca*. 2621-2491 BC (68.2% probability). Feature 60/2, dug into the south-east part of Barrow II, just by its encircling ditch, is dated to a similar period – *ca*. 2569-2467 BC (68.2% probability). Within it, a fragment of a well-preserved, burnt wooden beam (*Quercus* sp.) was discovered (cf. Niezabitowska-Wiśniewska and Wiśniewski 2011, 351; this paper was produced before conducting radiocarbon dating and it erroneously indicated that features cut into the edges of the barrow should be associated with the cemetery of the Wielbark culture). Unfortunately, we do not have radiocarbon dates from the central burial pit under Barrow II (Grave 97/1). It was nearly completely destroyed by three later additions, including the oldest one, which had probably been dug before the mound was constructed (Feature 67/9), one from the end of antiquity (Feature 68/10 – *ca*. 474-600AD; 68.2% probability), and another from the Middle Ages (Feature 68A/11 – *ca*. 1310-1401AD; 68.2% probability; Fig. 13; Table 1; *cf*. Moskal-del Hoyo *et al*. 2017, tab. 1). Thus, it is very likely that the dating of Barrow III roughly corresponds to that of Barrow I from the same cemetery. This dating coincides with the findings about the occurrence of CWC in what is now Poland. In south-eastern Poland, the CWC emerged between 2800 and 2700 BC and declined about 2300 BC. Absolute age estimates, however, are complicated by the two flattenings of the calibration curve (plateaux) covering the periods 2880-2580 BC and 2470-2200 BC. This significantly extends the ranges of dating probability of some of the samples (Włodarczak 2006, 121, 122; 2009; 2016; 2018; Jarosz and Włodarczak 2007).

Table 1. Ulów, site 3. Radiocarbon dating of charcoal samples from features within the barrows of the Corded Ware culture (compare Fig. 13)

Sample name	Taxon (charcoals)	Lab nr	Age ^{14}C	Cal age BC/AD (68.2%)	Cal age BC/AD (95.4%)
Barrow I, central grave	*Fraxinus excelsior*	Poz-73135	4045 ± 35 BP	2621BC (36.8%) 2559BC 2536BC (31.4%) 2491BC	2836BC (4.4%) 2816BC 2670BC (91.0%) 2473BC
Barrow II, feature 60/2	*Quercus* sp.	MKL-2846	3980 ± 40 BP	2569BC (40.3%) 2517BC 2500BC (27.9%) 2467BC	2618BC (0.6%) 2610BC 2582BC (90.4%) 2399BC 2383BC (4.4%) 2347BC
Barrow III, feature 99/4	*Quercus* sp.	MKL-2730	1750 ± 40 BP	239AD (68.2%) 340AD	144AD (1.1%) 154AD 168AD (3.2%) 195AD 210AD (91.0%) 392AD
Barrow II, feature 68/10	*Carpinus betulus*	Poz-76338	1515 ± 30 BP	474AD (5.6%) 485AD 536AD (62.6%) 600AD	428AD (24.6%) 495AD 507AD (2.1%) 520AD 527AD (68.6%) 615AD
Barrow II, feature 68A/11	*Fagus sylvatica*	Poz-76337	595 ± 30 BP	1310AD (53.7%) 1360AD 1387AD (14.5%) 1401AD	1298AD (69.7%) 1371AD 1379AD (25.7%) 1410AD

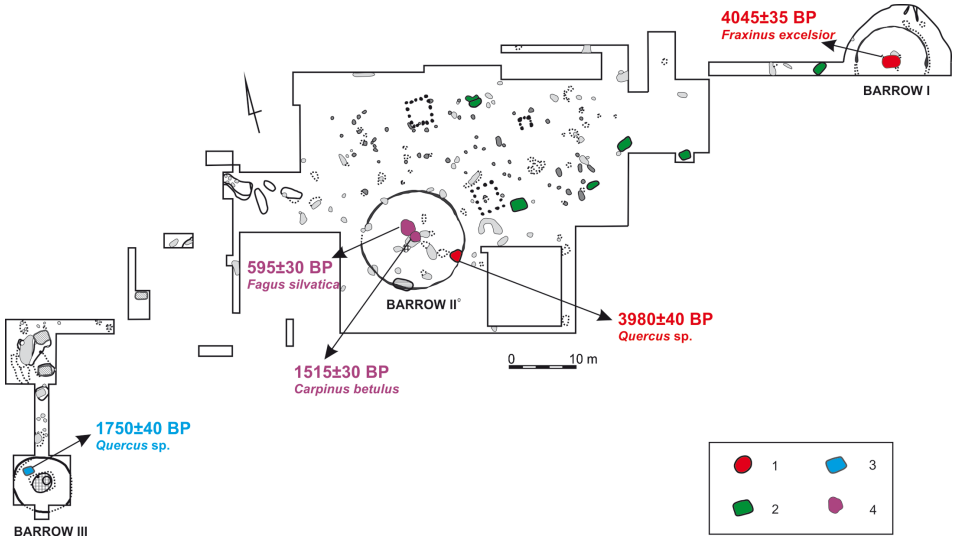


Fig. 13. Ulów, Site 3. Radiocarbon dated features within the barrows of the Corded Ware culture (compare Table 1). 1 – features of the Corded Ware culture. 2 – other radiocarbon dated features with remains of wooden construction from the late Neolithic (the Corded Ware culture?). 3 – feature of the Wielbark culture (hearth with a stone paving). 4 – features from the end of antiquity and from the Middle Ages destroying the central part of Barrow II (Compiled by B. Niezabitowska-Wiśniewska)

Several features containing burnt wooden beams (*Quercus* sp.) were also discovered at Site 3 in Ulów, the radiocarbon dating of which indicated that they should be associated with the end of the Neolithic. A discussion of this dating goes far beyond the scope of this article and requires comparison with dating obtained for other barrow cemeteries in the Ulów microregion (*cf.* Moskal-del Hoyo *et al.* 2017, tab. 1; Niezabitowska-Wiśniewska 2017, 25-27, 37-38).

Feature 99/4, which was dug into Barrow III, can be ^{14}C dated to *ca.* 239-340 AD (68.2% probability), which precisely corresponds with dating of other features and graves associated with the cemetery of the Wielbark culture. It also coincides with the archaeological dating (Fig. 13; Table 1; *cf.* Moskal-del Hoyo *et al.* 2017, tab. 1; Niezabitowska-Wiśniewska 2017, 25-30, 37-39).

THE CEMETERY AT SITE 3 IN THE CONTEXT OF OTHER BARROW CEMETERIES IN ULÓW

As previously mentioned, the CWC cemetery at Site 3 is not the only structure of this type near Ulów. Ten sites of this culture are located in two, strikingly different zones – on the hilltop (five sites) and on meadow terraces in the valley floor (five sites). These two settlement enclaves are 1.5 to 2 km distant from each other (Figs 2; 14).

The location of individual barrows on the hilltop reveals certain differences. Three sites (nos. 3, 4, 5) are situated on its relatively flat part, forming two barrow fields approx. 150 metres apart. Two other sites (nos. 25 and 26) are located above the slope of a small, dry valley and should be treated as one barrow field. All barrows are situated on, or in the immediate vicinity of, long and narrow dunes oriented along the E-W or NW-SE axes (Fig. 14).

Barrows on the valley floor, divided into five archaeological sites (nos. 19, 20, 21, 22, 23) form a series of mounds arranged in accordance with the direction of the valley, which stretches from NE to SW. In all likelihood, some of them were destroyed during construction of an asphalt road which cuts across the valley (Fig. 14).

In total, there are at least 34 barrows in the environs of Ulów. Thirteen CWC barrows have been excavated, with ten having been explored entirely or almost completely along with their central burial pits; the rest underwent only trial excavations which confirmed that they could be associated with the CWC. One barrow was radiocarbon dated on the basis of a charcoal sample obtained through geological probing. Even though other mounds were probed only geologically, they are most likely related to this culture (probably with the exception of the a single mound at site no. 11, which – on the basis of geological probing – can be interpreted as a modern border mound; *cf.* Niezabitowska-Wiśniewska 2021, 173, 174, photo 65). This is evidenced by the arrangement and formation of layers recorded during geological probing, including the character of the fillings of central burial pits recorded in some of them. Most likely, a flat CWC cemetery also functioned at what is now Site 26. To date, only one grave of this type has been investigated (Fig. 14).

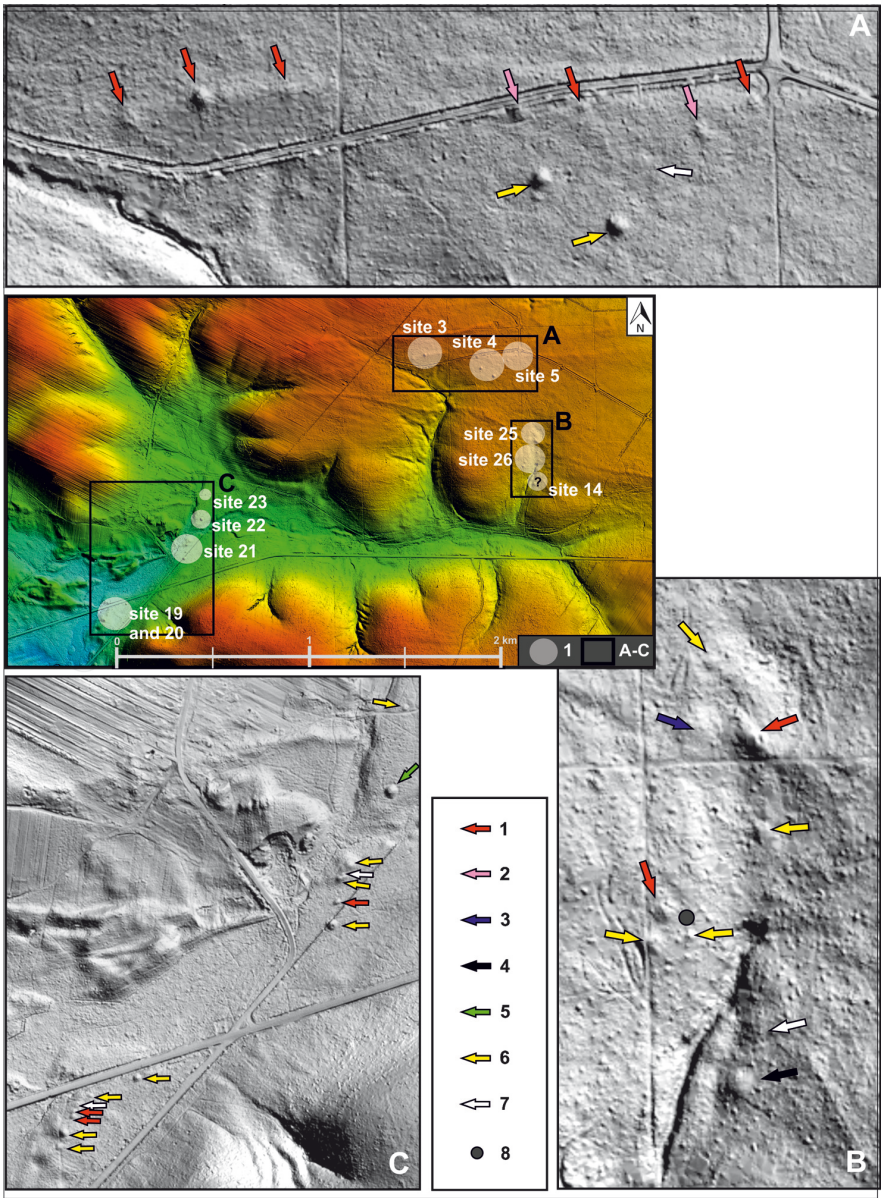


Fig. 14. The Ulów microregion – range of the Corded Ware culture settlement occurrence (1 – archaeological sites, A–C – barrow fields). A – burial mounds at Sites nos. 3, 4 and 5. B – burial mounds at Sites nos. 14, 25 and 26 (question mark – uncertain site). C – burial mounds at Sites nos. 19, 20, 21, 22 and 23. 1 – barrows excavated with central burial pits. 2 – barrows tested by the survey. 3 – an alleged barrow, heavily damaged and excavated. 4 – excavated barrow of undetermined chronology. 5 – barrow geologically probed and radiocarbon dated. 6 – barrows geologically probed. 7 – alleged barrows, almost invisible in the field. 8 – a flat grave of the Corded Ware culture (Compiled by B. Niezabitowska-Wiśniewska)

At this moment, it is difficult to address the cultural affiliation of two rather indistinct barrows, including one which was excavated, associated with Site 14. Due to the lack of artefactual material and the construction of the alleged central burial pit which has not been recorded at other sites, it is impossible to conclusively establish the chronology of the cemetery (Figs 2, 14; Niezabitowska-Wiśniewska 2017, 17; 2021, 188).

In the uplands of south-east Poland, the CWC population located their barrows on the top parts of loess hills, rather avoiding steep slopes and valley floors. In the Lublin region, we know of few sites located on small hills within wide river valleys or on their fringes. CWC barrows were very rarely built in low landscape zones, including terraces in river valleys. Such have been recorded, above all, in Łukawica and Brzezinki, Lubaczów district. Such a location is also characteristic of some barrow sites of the Middle Dnieper culture and CWC settlements (Machnik 1966, 240, 246; Jarosz 2011, 256, 257; 2016, 509-514).

Thus, it can be initially assumed that in Ulów, the CWC settlement recorded in the uplands is associated with a population arriving from the north-east – from the Sokal Ridge– where it built barrows in upland areas (Fig. 1; Machnik *et al*. 2001; 2009). Barrows situated in the valley perhaps should be associated with a CWC population arriving from the south – along Potok Łosiniecki, from the upper Tanew basin – where barrows are situated in valley bottoms, like those in Ulów (Fig. 1; Machnik 1966, 240, 246). This hypothesis is indirectly confirmed by LIDAR images that feature several unexplored clusters of barrows along the Tanew valley and Potok Łosiniecki, though the cluster near Ulów is the northernmost enclave of barrows situated in the Potok Łosiniecki valley and its mostly unnamed tributaries. The above-mentioned preliminary findings require further studies, also based on the comparison of radiocarbon dates. This, however, far exceeds the scope of this paper.

It was initially assumed that the occurrence of one large barrow (no. II) at Site 3 in Ulów, and two, almost indistinct ones in the area (nos. I and III), is connected with the levelling of two of the mounds. Upon inspection of the arrangement and sizes of mounds at other sites in the Ulów microregion, it can be assumed with high probability that the arrangement of cemeteries and various mound sizes were intentional. At nearly each cemetery there are maximally two, relatively large mounds, clearly visible in the landscape. They are accompanied by significantly smaller mounds, with some of them being visible only in the DTM image. As regards Site 3, the largest mound was built in the middle of the cemetery; the other two – at similar distances to the east and west from it (Figs 3: A; 14). The visibility of mounds in the field directly affected their future fate. As previously mentioned, the excavated Barrow II at Site 3 had previously been damaged by earlier incursions, quite possibly attempts at looting. Two large barrows at Site no.4 also exhibit evidence of incursions visible on their tops in the form of vast hollows in the ground. On the other hand, all the excavated barrows with indistinct or poorly visible mounds were found to have had the central burial pits that were undisturbed by the later populations inhabiting the environs of Ulów.

CONCLUSIONS

It is important to notice the similarities between the features discovered in Barrow III in Ulów and some features from Sokal Ridge. In the grave in Wierszczyca, which was mentioned earlier (Site 1, Barrow 1, Feature 1) apart from the mortar beaker, similar to the one from the central grave in Barrow III, a small amphora with two handles placed above the curve of the belly and with its upper part damaged, was discovered (Bagińska 1997, 50, 51, fig. 4: a). It is similar to the amphora from the central grave in Barrow III in Ulów in the placing the handles on the belly and lack of ornament. The damage to the upper part of the vessel from Wierszczyca does not allow a precise reconstruction of its form. The appearance of the original additional upper handles in the neck of the amphora cannot be exclusively denied.

The grave in Nedeżów (Site 22, Barrow 2, Feature 1) not only contained the amphora mentioned earlier (the handles of which were placed one on top of the other and was the only analogy from the areas east of the Vistula to the amphora found in the grave in Barrow III in Ulów), but also a small pot-shaped beaker, decorated with vertical and horizontal herringbone pattern (Bagińska 1996, 63, fig. 4: c). Although the shape of this beaker was slightly different from the shape of the beaker that accompanied the amphora with handles placed one on top of the other found in Ulów, its pattern of decoration is also similar to the Middle Dnieper culture (Machnik and Pilch 1997, 161, fig. 9: 32, 33). It is interesting that a set of vessels with similar features and references to similar cultural traditions were found in two grave complexes coming from sites that were relatively close to each other. Taking into consideration the location of these two graves, the biggest difference was that the grave from Nedeżów was cut into the fill of a lower and older CWC grave; whereas, the central grave (103/2) in the Barrow III in Ulów was a feature in which the younger CWC Feature (102/1) was cut.

There are two large groups of CWC barrows relatively close to Ulów: at a distance of about 20-35 kilometres east, on the area of Sokal Ridge, so called Sokal group (Machnik *et al.* 2001, 2009; Bagińska and Machnik 2003), and at a distance of about 15-20 kilometres south east, in the vicinity of Lubaczów, mainly on the Eastern Roztocze according to Solon *et al.* 2018 – the so-called former Lubaczów group (Machnik 1966; 1979). Without any doubt, that "neighbourhood" affected the cultural image of CWC settlement in the area of Ulów. The characteristic features of the burial rites show similarities and connections both in the areas mentioned earlier, as well as much more distant groups of that culture, which is the Kraków-Sandomierz group or the settlement from the Carpathian area. Many rituals or characteristic features of secondary artefacts from Ulów, however, do not exhibit exact similarities, which make the CWC ones specific in this particular area. Thus, the archaeological excavations of these CWC barrows in Ulów are a useful starting point in order to learn about this cultural unit in the area of Middle Roztocze.

References

Artemenko I. I. 1967. *Plemena Verkhnego i Srednego Podneprovya v epokhu bronzy* (= *Materialy i Issledovaniya po Arkheologii SSSR* 148). Moskva: Izdatelstvo 'Nauka'.

Bagińska J. 1996. Kurhan kultury ceramiki sznurowej o stratygraficznym układzie grobów z Nedeżowa w woj. zamojskim na Grzędzie Sokalskiej. *Sprawozdania Archeologiczne* 48, 59-66.

Bagińska J. 1997. Badania kurhanu kultury ceramiki sznurowej na Grzędzie Sokalskiej – stanowiska: Łubcze 37, Werszczyca 1. *Archeologia Polski Środkowowschodniej* 2, 45-52.

Bagińska J. and Machnik J. 2003. Wyniki ratowniczych badań zniszczonego kurhanu na stanowisku 31 w Werszczycy, pow. Tomaszów Lubelski na Grzędzie Sokalskiej. Wyodrębnienie grupy Sokalskiej kultury ceramiki sznurowej. *Archeologia Polski Środkowowschodniej* 6, 38-57.

Balcer B., Machnik J. and Sitek J. 2002. *Z pradziejów Roztocza na Ziemi Zamojskiej*. Kraków: Instytut Archeologii i Etnologii Polskiej Akademii Nauk.

Buchvaldek M. 1967. *Die Schnurkeramik in Böhmen* (= *Acta Universitatis Carolinae. Philosophica et historica. Monographia* 19). Praha: Universita Karlova.

Buchvaldek M. 1986. *Kultura se šňůrovou keramikou ve střední Evropě. I. Skupiny mezi Harcem a Bílými Karpaty* (= *Praehistorica* 12). Praha: Universita Karlova.

Buchvaldek M. and Koutecký D. 1970. *Vikletice. Ein Schnurkeramisches Gräberfeld* (= *Praehistorica* 3). Praha: Universita Karlova.

Budziszewski J., Jarosz P., Libera J., Szczepanek A. and Włodarczak P. 2016. Badania wykopaliskowe kurhanów na stanowisku 3 w Białce, pow. krasnostawski. In P. Jarosz, J. Libera and P. Włodarczak (eds), *Schyłek neolitu na Wyżynie Lubelskiej*. Kraków: Instytut Archeologii i Etnologii Polskiej Akademii Nauk, 359-380.

Chowaniec R. 2005. Kilka uwag na temat palenisk z birytualnego cmentarzyska w Krośnie, gm. Pasłęk. In P. Łuczkiewicz, M. Gładysz-Juścińska, M. Juściński, B. Niezabitowska and S. Sadowski (eds), *Europa Barbarica. Ćwierć wieku archeologii w Masłomęczu*. Lublin: Wydawnictwo UMCS, 57-64.

Gancarski J. 1992. *Pradzieje Kotliny Jasielskiej i jej obrzeży; wyniki badań archeologicznych w ostatnich latach*. Jasło: Muzeum Regionalne w Jaśle.

Gancarski J., Machnik J., Strakošová I. and Tunia K. 2001. Results of the Research of the Corded Ware Culture Barrow in Brestov, Slovakia. In J. Machnik (ed.), *Archaeology and Natural Background of the Lower Beskid Mountains, Carpathians. Part I* (= *Prace Komisji Prehistorii Karpat* 2). Kraków: Polska Akademia Umiejętności, 27-52.

Gancarski J. and Machnikowie A. and J. 1986. Wyniki badań kurhanu A kultury ceramiki sznurowej we wsi Biegówka, gmina Jasło, w województwie Krośnieńskim. *Acta Archaeologica Carpathica* 25, 57-87.

Gancarski J. and Machnikowie A. and J. 1990. Kurhan B kultury ceramiki sznurowej w Biegówce, gmina Jasło, w świetle badań wykopaliskowych. *Acta Archaeologica Carpathica* 29, 99-123.

Gawrysiak L. 2004. *Województwo lubelskie – cieniowana mapa rzeźby*. Lublin: Polskie Towarzystwo Geograficzne.

Górski J. and Jarosz P. 2006. Cemetery of the Corded Ware and Trzciniec Cultures in Gabułtów. *Sprawozdania Archeologiczne* 58, 401-451.

Górski J. and Tyniec A. 2018. Katalog kurhanów, nasypów i obiektów zarejestrowanych/odkrytych w trakcie badań wykopaliskowych na stan. 6 w Guciowie, pow. Zamość w latach 1959-1965. In J. Górski and A. Tyniec, *Fenomen miejsca. Nekropola kurhanowa z neolitu, epoki brązu i wczesnego średniowiecza w Guciowie, pow. zamojski* (= *Biblioteka Muzeum Archeologicznego w Krakowie* 6). Kraków: Muzeum Archeologiczne w Krakowie, 53-66.

Hozer M., Machnik J. and Bajda-Wesołowska A. 2017. Groby kultury ceramiki sznurowej i domniemane kultury mierzanowickiej w Szczytnej, pow. Jarosław – źródła, analiza, wnioski. In P. Jarosz and J. Machnik (eds), *Nekropole ludności kultury ceramiki sznurowej z III tysiąclecia przed Chr. w Szczytnej na Wysoczyźnie Kańczuckiej* (= *Via Archaeologica Ressoviensia* 12). Rzeszów: Fundacja Rzeszowskiego Ośrodka Archeologicznego, 7-130.

Jarosz P. 2002. Kurhan kultury ceramiki sznurowej w Średniej st. 3/2, pow. Przemyśl. Wyniki badań wykopaliskowych prowadzonych w 2001 r. *Rocznik Przemyski* 38/2, 3-21.

Jarosz P. 2003. Pochówki kobiet i mężczyzn w kulturze ceramiki sznurowej na wschód od górnej Wisły. In W. Dzieduszycki and J. Wrzesiński (eds), *Kobieta – Śmierć – Mężczyzna* (= *Funeralna Lednickie*, spotkanie 5). Poznań: Stowarzyszenie Naukowe Archeologów Polskich, Oddział Wielkopolski, 249-255.

Jarosz P. 2011. Kurhany kultury ceramiki sznurowej na pogórzach i wysoczyznach karpackich. In H. Kowalewska-Marszałek and P. Włodarczak (eds), *Kurhany i obrządek pogrzebowy w IV-II tysiącleciu p.n.e.* Kraków, Warszawa: Instytut Archeologii i Etnologii PAN, 255-277.

Jarosz P. 2016. Kultura ceramiki sznurowej na Wyżynie Lubelskiej i terenach przyległych. In P. Jarosz, J. Libera and P. Włodarczak (eds), *Schyłek neolitu na Wyżynie Lubelskiej*. Kraków: Instytut Archeologii i Etnologii PAN, 509-536.

Jarosz P. 2018. Groby oraz pozostałości osadnictwa ze schyłku neolitu i wczesnego okresu epoki brązu w Guciowie, na stan. 6. In J. Górski and A. Tyniec, *Fenomen miejsca. Nekropola kurhanowa z neolitu, epoki brązu i wczesnego średniowiecza w Guciowie, pow. zamojski* (= *Biblioteka Muzeum Archeologicznego w Krakowie* 6). Kraków: Muzeum Archeologiczne w Krakowie, 67-85.

Jarosz P. 2021. Barrows in the funeral space at the turn of the Final Neolithic and the beginning of the Bronze Age in the Carpathian basins of Vistula and San rivers. *Acta Archaeologica Carpathica* 56, 153-174.

Jarosz P. and Włodarczak P. 2007. Chronologia bezwzględna kultury ceramiki sznurowej w Polsce południowowschodniej oraz na Ukrainie. *Przegląd Archeologiczny* 55, 71-108.

Jarzec A. 2018. *Krosno, stan. 1. Nekropola kultury wielbarskiej z obszaru starożytnego ujścia Wisły. Materiały z badań w latach 1980-2009* (= *Barbaricum* 12). Warszawa: Instytut Archeologii Uniwersytetu Warszawskiego, Fundacja Przyjaciół Instytutu Archeologii Uniwersytetu Warszawskiego.

Koman W. 2005. Koczownicy, pradziejowi pasterze i hodowcy bydła na Roztoczu. In E. Banasiewicz-Szykuła (ed.), *Archeologia Roztocza. Krajobraz przyrodniczo-kulturowy* (= *Skarby z przeszłości*). Lublin: Wojewódzki Urząd Ochrony Zabytków, 45-61.

Ligoda J. and Podgórska-Czopek J. 2011. Katalog. In S. Czopek (ed.), *Autostradą w przeszłość. Katalog wystawy*. Rzeszów: Fundacja Rzeszowskiego Ośrodka Archeologicznego, 133-295.

Machnik J. 1966. *Studia nad kulturą ceramiki sznurowej w Małopolsce*. Wrocław, Warszawa, Kraków: Ossolineum.

Machnik J. 1979. Krąg kulturowy ceramiki sznurowej. In W. Hensel and T. Wiślański (eds), *Prahistoria ziem polskich* 2. *Neolit*. Wrocław, Warszawa, Kraków: Ossolineum, 337-411.

Machnik J. 1992a. Aus den Forschungen über die Schnurkeramikkultur auf dem Nördlichen Vorfeld des Niederen Beskid. *Acta Archaeologica Carpathica* 31, 69-90.

Machnik J. 1992b. Neue Daten zur Problematik der Schnurkeramikkultur in Südostpolen. In M. Buchvaldek and C. Strahm (eds), *Die kontinentaleuropäischen Gruppen der Kultur mit Schnurkeramik. Schnurkeramik-Symposium Praha-Stirin 1990* (= *Praehistorica* 19). Praha: Univerzita Karlova, 265-274.

Machnik J. 1995. Zapomniany kurhan kultury ceramiki sznurowej w Morawsku koło Jarosławia. *Rocznik Przemyski* 31/1, 3-22.

Machnik J. 1998. Uwagi o najstarszym osadnictwie pasterskiej ludności kultury ceramiki sznurowej (III tysiąclecie przed Chr.) w strefie karpackiej. In J. Gancarski (ed.), *Dzieje Podkarpacia* II. Krosno: Podkarpackie Towarzystwo Historyczne, 99-120.

Machnik J. 1999. Radiocarbon Chronology of the Corded Ware Culture on Grzęda Sokalska. A Middle Dnieper Traits Perspective. *Baltic-Pontic Studies* 7, 221-250.

Machnik J. 2001. Kultura ceramiki sznurowej w strefie karpackiej (stan i perspektywy badawcze). In J. Gancarski (ed.), *Neolit i początki epoki brązu w Karpatach Polskich, Materiały z sesji naukowej, Krosno 14-15 grudnia 2000*. Krosno: Muzeum Podkarpackie w Krośnie, 115-137.

Machnik J. 2007. Starożytne kurhany na współczesnych szlakach turystycznych. In M. Kotorová-Jenčová (ed.), *Archeologické pamiatky slovensko-pol'ského pohraničia v cestovnom ruchu*. Hanušovce nad Topl'ou: Vlastivedné muzeum v Hanušovciach nad Topl'ou, 19-29.

Machnik J. 2011. Znaczenie archeologicznych badań ratowniczych na trasie planowanej autostrady A4 na odcinku Przeworsk-Radymno dla znajomości problematyki schyłku neolitu i początków epoki brązu. In S. Czopek (ed.), *Autostradą w przeszłość. Katalog wystawy*. Rzeszów: Fundacja Rzeszowskiego Ośrodka Archeologicznego, 61-78.

Machnik J., Bagińska J. and Koman W. 2001. Nowa, synkretyczna grupa kultury ceramiki sznurowej w Polsce środkowo-wschodniej. In B. Ginter, B. Drobniewicz, B. Kazior, M. Nowak and M. Połtowicz (eds), *Problemy epoki kamienia na obszarze Starego Świata. Księga Jubileuszowa dedykowana Profesorowi Januszowi K. Kozłowskiemu [w czterdziestolecie pracy naukowej w Uniwersytecie Jagiellońskim]*. Kraków: Uniwersytet Jagielloński. Instytut Archeologii, 389-399.

Machnik J., Bagińska J. and Koman W. 2009. *Neolityczne kurhany na Grzędzie Sokalskiej w świetle badań archeologicznych w latach 1988-2006*. Kraków: Polska Akademia Umiejętności.

Machnik J. and Pilch A. 1997. Zaskakujące odkrycie zabytków kultury środkowodnieprzańskiej w Młodowie-Zakąciu koło Lubaczowa, w woj. przemyskim. *Sprawozdania Archeologiczne* 49, 143-168.

Machnik J. and Sosnowska E. 1996. Starożytna mogiła z początku III tysiąclecia przed Chrystusem, ludności kultury ceramiki sznurowej w Średniej, gm. Krzywcza. *Rocznik Przemyski* 32/3, 3-28.

Machnik J. and Sosnowska E. 1998. Kurhan ludności kultury ceramiki sznurowej z przełomu III i II tysiąclecia przed Chrystusem w Woli Węgierskiej, gm. Roźwienica, woj. przemyskie (Badania archeologiczne w 1997 r.). *Rocznik Przemyski* 34/3, 3-20.

Moskal-del Hoyo M., Krąpiec M. and Niezabitowska-Wiśniewska B. 2017. The chronology of site 3 in Ulów (Tomaszów Lubelski district, East Poland): the relevance of anthracological analysis for radiocarbon dating at a multicultural site. *Radiocarbon* 59/5, 1399-1413.

Niezabitowska-Wiśniewska B. 2008. Kompleks osadniczy w Ulowie, powiat tomaszowski – wstępne podsumowanie sześcioletnich badań wykopaliskowych. *Archeologia Polski Środkowowschodniej* 10, 67-93.

Niezabitowska-Wiśniewska B. 2017. Archaeological research results of the settlement micro-region in the area of Ulów in Middle Roztocze in the light of the project "Roztocze – the ancient *terra incognita*?...". *Folia Quaternaria* 85, 5-47.

Niezabitowska-Wiśniewska B. 2021. Ulów. In W. Koman, G. Mączka, Ł. Miechowicz, B. Niezabitowska-Wiśniewska and H. Taras, *Katalog zabytków*, *Kurhany na Roztoczu* (= *Skarby z przeszłości* 22). Lublin: Wojewódzki Urząd Ochrony Zabytków, 155-196.

Niezabitowska-Wiśniewska B. and Wiśniewski T. 2011. Kurhany kultury ceramiki sznurowej na stanowisku 3 w Ulowie, powiat tomaszowski. In H. Kowalewska-Marszałek and P. Włodarczak (eds), *Kurhany i obrządek pogrzebowy w IV-II tysiącleciu p.n.e.* Kraków, Warszawa: Instytut Archeologii i Etnologii PAN, 329-369.

Okulicz J. and Bursche A. 1987. Badania birytualnego cmentarzyska kultury wielbarskiej w Krośnie, na stanowisku 1 w województwie elbląskim. In A. Pawłowski (ed.), *Badania archeologiczne w woj. elbląskim w latach 1980-83*. Malbork: Muzeum Zamkowe, 207-231.

Pilch A. 1997. Weryfikacyjne badania w miejscu znalezienia zabytków kultury środkowodnieprzańskiej w Młodowie-Zakąciu, gm. Lubaczów, woj. Przemyśl. *Sprawozdania Archeologiczne* 49, 171-180.

Podgórska-Czopek J. and Czopek S. 1985. Zabytki kultury ceramiki sznurowej z Markowej, woj. Rzeszów. *Sprawozdania Archeologiczne* 37, 51-54.

Pyżewicz K. 2017. Use-wear analysis of flint artefacts from the barrows of the Corded Ware Culture in Ulów. *Folia Quaternaria* 85, 117-134.

Rodak T. 2002. Wyniki badań wykopaliskowych przeprowadzonych na stanowisku 4 w Lelowicach, gm. Radziemice, woj. małopolskie. *Materiały Archeologiczne* 33, 123-136.

Rogozińska R. 1963. Sprawozdanie z badań stanowisk kultury trzcinieckiej w Guciowie i Bondyrzu, pow. Zamość, w 1961 roku. *Sprawozdania Archeologiczne* 15, 84-93.

Rydzewski J. 1973. Dwa starosznurowe znaleziska grobowe z Witowa, pow. Kazimiera Wielka. *Sprawozdania Archeologiczne* 25, 71-77.

Solon J., Borzyszkowski J, Bidłasik M., Richling A., Badora K., Balon J., Brzezińska-Wójcik T., Chabudziński Ł., Dobrowolski R., Grzegorczyk I., Jodłowski M., Kistowski M., Kot R., Krąż P., Lechnio J., Macias A., Majchrowska A., Malinowska E., Migoń P., Myga-Piątek U., Nita J., Papińska E., Rodzik J., Strzyż M., Terpiłowski S. and Ziaja W. 2018. Physico-geographical mesoregions of

Poland: Verification and adjustment of boundaries on the basis of contemporary spatial data. *Geographia Polonica* 91/2, 143-170.

Sulimirski T. 1968. *Corded Ware and Globular Amphorae North-East of the Carpathians*. London: Athlone Press.

Wiśniewski T. 2007. Zanim przyszli Germanie. In B. Niezabitowska-Wiśniewska, *Ulów – tajemnica starożytnego Roztocza; siódma wystawa Instytutu Archeologii Uniwersytetu Marii Curie-Skłodowskiej w Muzeum UMCS*. Lublin: Muzeum UMCS, Instytut Archeologii UMCS, 39-48.

Wiśniewski T. 2017. The oldest traces of human settlement in the vicinity of Ulów in Middle Roztocze (SE Poland). *Folia Quaternaria* 85, 49-64.

Włodarczak P. 2000. Corded Ware Culture barrows in western Little Poland. In S. Kadrow (ed.), *A Turning of Ages. Im Wandel der Zeiten. Jubilee Book Dedicated to Professor Jan Machnik on His 70th Anniversary*. Kraków: Institute of Archaeology and Ethnology of Polish Academy of Sciences, 481-506.

Włodarczak P. 2004. Pochówki dzieci w kulturze ceramiki sznurowej na przykładzie cmentarzysk z Wyżyny Małopolskiej. In W. Dzieduszycki and J. Wrzesiński (eds), *Dusza maluczka, a strata ogromna* (= *Funeralia Lednickie*, spotkanie 6). Poznań: Stowarzyszenie Naukowe Archeologów Polskich, Oddział Wielkopolski, 341-351.

Włodarczak P. 2006. *Kultura ceramiki sznurowej na Wyżynie Małopolskiej*. Kraków: Instytut Archeologii i Etnologii Polskiej Akademii Nauk.

Włodarczak P. 2009. 14C and dendrochronological dates of the Corded Ware Culture. *Radiocarbon* 51/2, 737-749.

Włodarczak P. 2016. Chronologia absolutna cmentarzysk późno- i schyłkowoneolitycznych na Wyżynie Lubelskiej. In P. Jarosz, J. Libera and P. Włodarczak (eds), *Schyłek neolitu na Wyżynie Lubelskiej*. Kraków: Instytut Archeologii i Etnologii PAN, 537-548.

Włodarczak P. 2018. Chronometry of the Final Eneolithic Cemeteries at Święte, Jarosław district, from the Perspective of Cultural Relations Among Lesser Poland, Podolia ant the North-Western Black Sea Region. In A. Kośko, A. Szczepanek and P. Włodarczak (eds), *Reception of Pontic Culture Traditions Among the Final Eneolithic Communities in the Subcarpathian Region, 3rd Millennium BC* (= *Baltic-Pontic Studies* 23). Poznań: Adam Mickiewicz University, Institute of Eastern Studies, Institute of Archaeology, 178-212.