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The Verteba Cave: A Subterranean Sanctuary of the Cucuteni-Trypillia Culture in Western Ukraine

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Abstract

In Eneolithic Europe, the complexity of mortuary differentiation increased with the complexity of the society at large. Human remains from the Verteba Cave provide a unique opportunity to study the lives, deaths and cultural practices of the Cucuteni-Trypillia culture in Western Ukraine. The subterranean sanctuary of Verteba was without a doubt a rallying point of both religious and social significance. Therefore, this investigation focuses on the role and character of ritual activities, the diversity and variety of religious orientations in the Eneolithic period and the question of how and for what reason this particular cave was modified from a natural space to a sacred place. We also seek to clarify the research potential of the site in relation to highly developed and relatively wide-spread religion with direct implications for the Cucuteni-Trypillia social structure.

Site location

Situated atop a loess plateau, Verteba Cave is located approximately two kilometers southeast of the site of Ogród near Bilcze Złote village, Borshchiv district, Ternopil province, Ukraine (Fig. 1; Kadrow 2013b, 23 fig. 2). Set within Precambrian granites and gneisses, beneath Mesozoic and Cenozoic deposits, Verteba Cave is situated in the Volhynian-Podolian Upland (Kondracki 1978, 243 fig. 92). The Podolian Upland is comprised of rich and thick loess topsoil. In the surrounding landscape, tributaries of the Dniester, flowing from north to south, reveal a sequence of geological deposits discernible in the deep ravines. One such tributary is the Seret River, with Bilcze Złote located on its eastern bank. The village is located on grey leached loess soils. The climate is warm and temperate, but with greater temperature ranges between winter and summer than usual for Eastern Europe (Kadrow 2013b, 23–25 fig. 3). Verteba Cave (Fig. 2) is found within a larger complex of gypsum caves in the karst region, incorporating various karst formations such as caves, sinkholes and pits (Sokhatskiy 2001b, 115–118). This region stretches along the northern bank of the Dniester, over an area of ca. 8,000 km². In congruence with many other gypsum caves near the Dniester, Verteba Cave was formed in the Neogene. During the Miocene, the whole area was under a shallow sea and therefore gypsums, up to 35 m thick, precipitated in the same epoch.

The cave itself has a floor area of 23,000 m² and a capacity of 47,000 m³, with the combined length of all the passageways inside the cave totaling 8 km (Sokhatskiy 2001a, 209 fig. 1; 2001b, 117–120 table 1).

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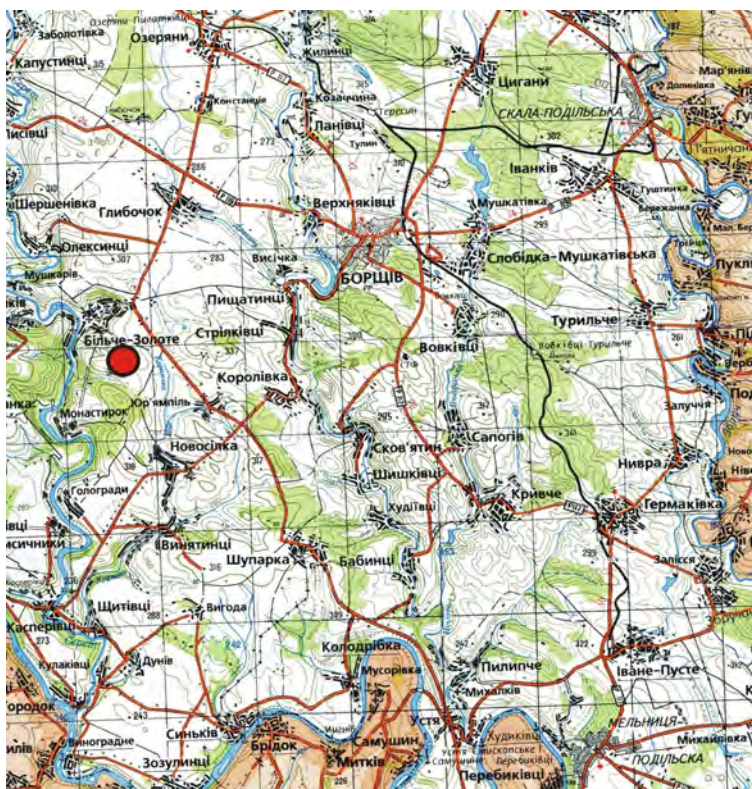


Fig. 1. The location of the Verteba Cave in Bilcze Złote in Ukraine (red circle).



Fig. 2. Ukrainian and Polish archaeologists at the entrance of the Verteba Cave in Bilcze Złote (photo: E. Trela-Kieferling).

History of research

The Verteba Cave was discovered by chance within the confines of Prince Adam Sapieha's estate in 1820 (Rook/Trela 2001, 183). His son, Leon Sapieha, a member of the Anthropological Committee of the Academy of Arts and Sciences in Kraków, influenced the later exploration of the site (Kadrow/Trela-Kieferling 2013, 9). In 1876 and 1878, Adam Honory Kirkor (1879) carried out the first scientific research in Verteba. Two well-preserved human skeletons and the remnants of several more were identified. In the 1890's, the site was explored by Gotfryd Ossowski (1891; 1892; 1895), and in following years by Włodzimierz Demetrykiewicz (1900; 1906; 1908; cf. Rook/Trela 2001, 183–193; Woźny 2010, 179).

After Demetrykiewicz's excavations in Verteba, further examination was undertaken between 1914–1928 and after World War II, however records from these investigations are limited and of poor scien-

tific quality (Sokhatskiy 2001, 208). Scientific research was resumed with the 1996/1997 exploration at Vertebea by a team led by Myhai-lo Sokhatskiy of the Regional Museum in Borschiv, Ukraine (Sokhatskiy 2001). The most recent excavations began in 2008 (Karsten et al. 2015, 121–122).

Re-evaluation of the stratigraphic sequence within the cave has contributed greatly to a reconstruction of the chronology of the site during the Eneolithic period (Kadrow et al. 2003, 119–128). In recent years, new materials have been collected and rigorously analysed, including DNA screening of human bones in addition to environmental and bioarchaeological testing (Nikitin et al. 2010; Karsten et al. 2015). A comprehensive chronological and taxonomic overview of the ceramic materials from Vertebea Cave has been proposed by Taras Tkachuk (cf. Kadrow et al. 2003, 53–74 fig. 7–24; Tkachuk 2013, 32–44 pl. 4–98, 114–35), who has analysed the entire available assemblage.

Traces of settlement in Vertebea Cave are represented by a specific chronological sequence: a) BZ WI, the oldest horizon, related to the Shipentsy group and dated to the late CI phase; b) BZ WII, related to the Koshilivtsy group and dated to the early CII phase; and c) BZ WIII, associated with the Kasperivtsy group and dated to the younger phase of the CII period (cf. Kadrow et al., fig. 55; Tkachuk 2013, 32–44; Kadrow 2013, 14–16 fig. 3). This was confirmed by the stratigraphic relationships (cf. Sokhatskiy 2001), and in congruence with radiocarbon dating (3700–2700 BC) of selected materials (Kadrow et al. 2003, 119–123 fig. 53, 54; Kadrow 2013, 13–16 fig. 3; Nikitin et al. 2010, 12–16 table 1, fig. 6). Recent data and research (cf., for example, Nikitin et al. 2010; Nikitin 2011) reinforce the debate that the local populations maintained regular and frequent contacts with surrounding groups of the Trypillia culture as well as more remotely located Eneolithic cultures from Central Europe (Kadrow et al. 2003, 67–69, 71–73, 123–128). Moreover, a modern understanding of the Vertebea phenomenon includes the discussion regarding its cultic function (Kadrow et al. 2003, 128; Kadrow 2013a, 18–19).

Vertebea Cave has long been interpreted as a refuge settlement. However, it has also been suggested that the cave may have had an undetermined cultic function (Kadrow et al. 2003, 128; Kadrow 2013a, 18–19) – a theory that currently seems to be gaining popularity (cf., for example, Nikitin et al. 2010, 17; Nikitin 2011, 9).

The cultural background and Trypillian pottery from Vertebea cave

The sites in Bilcze Złote lie in a settlement area, which was densely populated by groups of the Trypillia culture, primarily settling on the Strypa, Seret and Zbruch Rivers, left-bank tributaries of the Dniester River (cf. Chernysh 1982, map 5 and 6; Kadrow 2013b, fig. 4). The oldest traces of human activity in the Vertebea Cave come from the late CI phase and are associated with the Shipentsy group, living near the Badrazhy group on the Central Dniester Plateau (Fig. 3).

In the following period, the beginning of phase CII, the cave was visited by members of the Koshilivtsy group, which developed simultaneously with the Branzeni group (Fig. 4). In the final stage, dated to the late CII phase, the area was populated by the Kasperivtsy group, which coincided chronologically with the Gordinești group (Fig. 5; cf. Tkachuk 2013; Kadrow 2013, fig. 3).

The largest portion of the ceramic material recovered from Bilcze Złote is related to the Vertebea I assemblage (BZ WI). Stylistic and typological analysis of the assemblage has shown that the material is affiliated with the late phase of the Shipentsy group (Fig. 6: 1, 5–9).

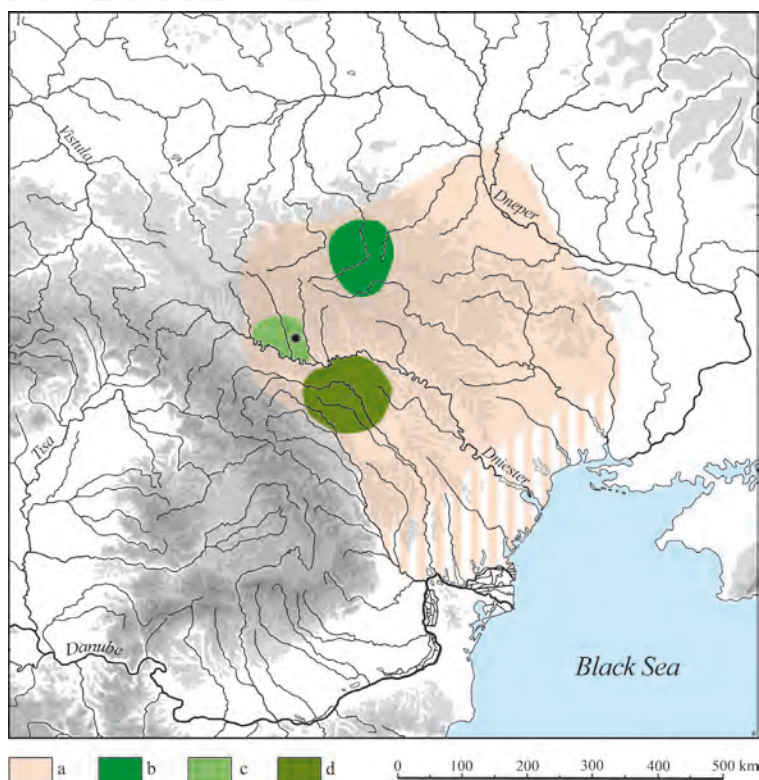
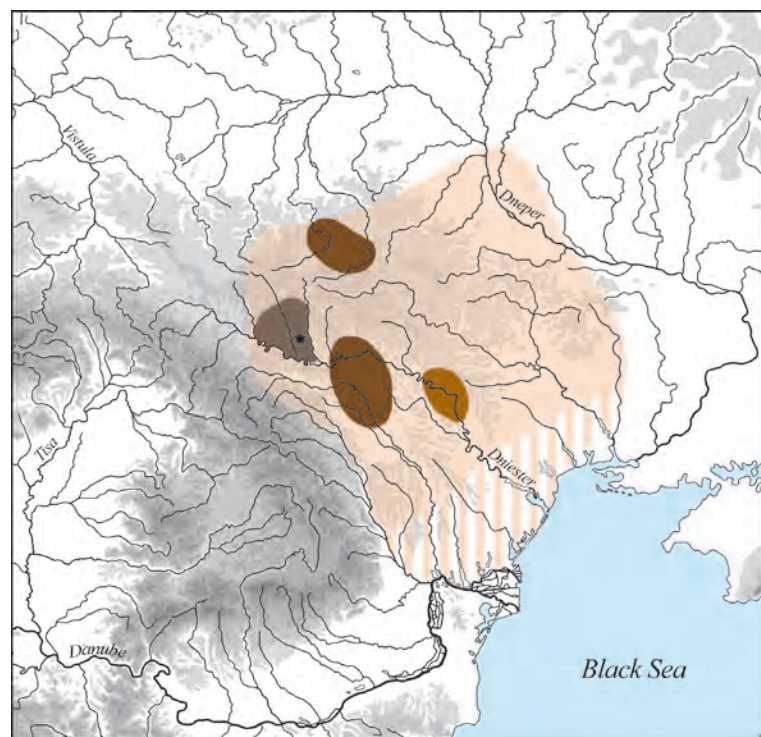


Fig. 3. (upper left) The location of the Verteba Cave in Bilcze Złote (black star) on the background of some local groups of Trypillia culture at the end of phase CI; 1 – maximal range of Trypillia culture; 2 – Shipentsy group; 3 – Badrazhy group; 4 – Petreni group.

Fig. 4 (upper right). The location of the Verteba Cave in Bilcze Złote (black star) on the background of some local groups of Trypillia culture at the beginnings of phase CII; 1 – maximal range of Trypillia culture; 2 – Koshilivtsy group; 3 – Branzeni group; 4 – Vykhvatinsty group.

Fig. 5 (left). The location of the Verteba Cave in Bilcze Złote (black star) on the background of some local groups of Trypillia culture at the end of phase CII; 1 – maximal range of Trypillia culture; 2 – Kasperovtsy group; 3 – Gordinești group; 4 – Gorodsk-Troyaniv group.

and dated to the close of the CI phase of the Trypillia culture (Fig. 3). The assemblage consists of almost 2500 painted ceramics and over 200 ceramic cooking vessels (Tkachuk 2013, 32). In total, the Verteba I ceramic assemblage is comprised of twenty-seven vessels imported from the Badrazhy group of the Tripillian culture (ca. 1 % of the total volume of painted ceramics from the sites).

Imported goods consist mainly of bowls of various shapes, including, e.g., S-shaped bowls (Fig. 6: 2), semispherical bowls (Fig. 6: 4) and conical bowls (Fig. 6: 3). Foreign items are also represented by

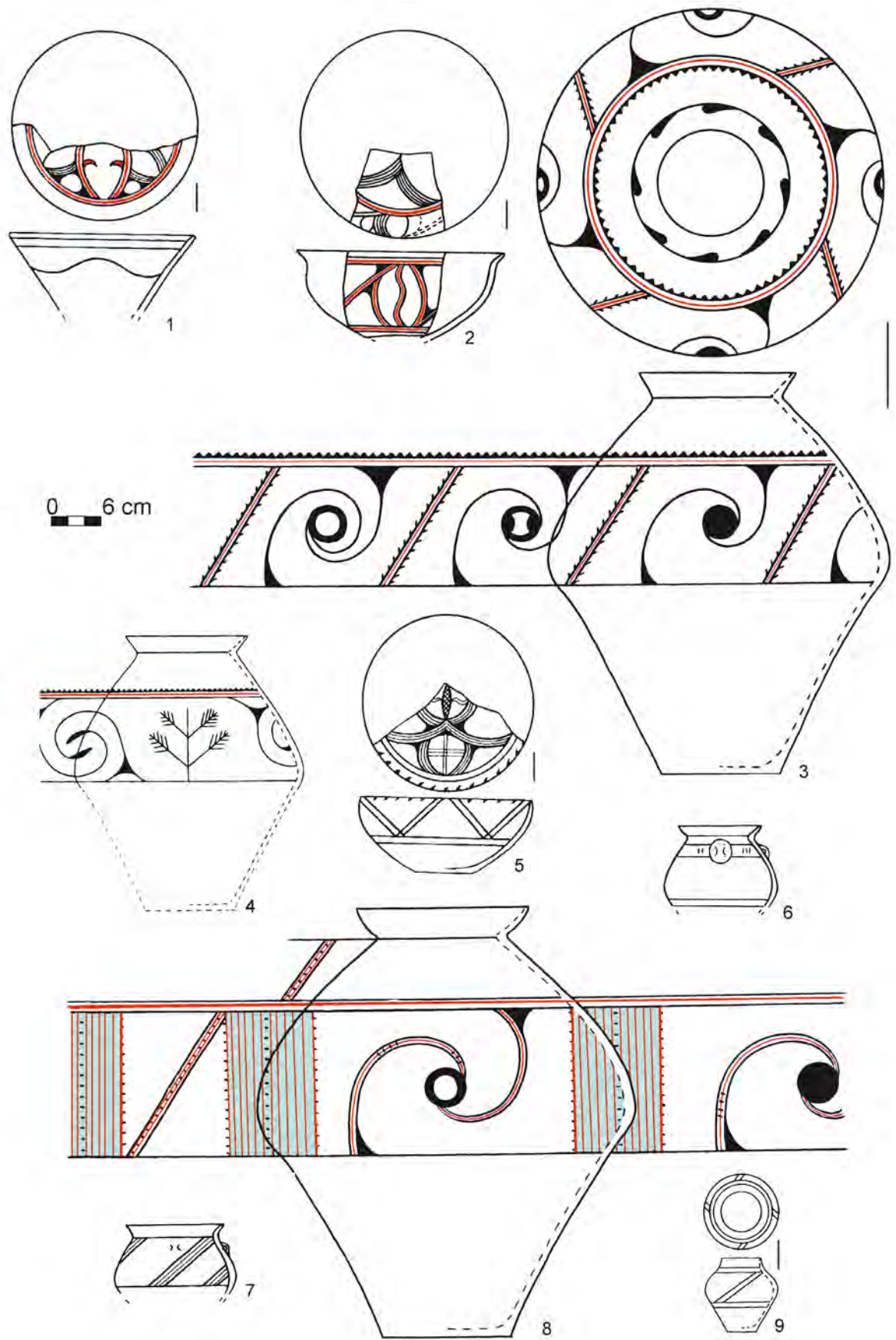


Fig. 6. The pottery of Shipentsy (1, 5–9) and Badrazhy (2–4) groups of Tripillia culture from the Verteba I assemblage in Bilcze Złote (after Tkachuk 2013).

nine fragments of large amphora-like vessels with round bodies, two vessels with high conical necks and one crater (Tkachuk 2013, 37). The Vertebe I ceramic assemblage includes items clearly associated with Badrazhy pottery making traditions, for example, a vessel with an image of a cow placed between elements of the *Tangentenkreisband* pattern pottery of the Shipentsy group of the Trypillia culture at Vertebe Cave in Bilcze Złote from phase WI (after Tkachuk 2013).

Moreover, on one large amphora-like vessel, these decorative elements are separated by S-shaped lines. Wavy stripes within the *Tangentenkreisband* pattern have often been recorded for Badrazhy ceramics, while they are entirely unfamiliar in the Shipentsy group (Tkachuk 2013, 38).

The Shipentsy ceramics from the late chronological phase are also decorated with other ornamental motifs, which are atypical for that group, and reassemble patterns used by the Badrazhy group. Among them we encounter: 1) vertical and oblique lines crossed by perpendicular strokes (on pyriform vessels or semispherical-conical vessels); 2) empty or filled in black circles with short lines; and 3) filled in red circles (Tkachuk 2013, 38). Among beakers belonging to the Vertebe I assemblage, one fragment is particularly noteworthy. It is decorated with a metopic motif of horizontal half ovals combined with a stripe of red vertical lines. The stripe, having double oblique strokes at the base, is flanked by elongated vertical half ovals. Such decorations have parallels in Petreny mugs found in Varvarovka III (cf. Markovich 1981, 26 pl. 25: 1; Tkachuk 2013, 38).

Amongst the serving vessels in the Vertebe I ceramic assemblage, one may distinguish a group of thin-walled vessels made of adobe clay, often tempered with crushed pottery (nearly a hundred items – comprising almost 4 % of the whole assemblage). The vessels are usually undecorated, occasionally with small handles pierced horizontally. Most fragments of large and medium vessels have the proportions of half-barrel-shaped vessels or vases; there are also a few handles preserved in this class. Semi-spherical bowls form the second largest group, whereas fragments of vessels with high, smooth cylindrical necks are even less frequent. These vessels may be viewed as imports, or alternatively as local adaptations produced in the late phase of the Lublin-Volhynia culture (numerous half-barrel-shaped vessels) and the Bodrogkeresztúr culture (handled vessels) (Tkachuk 2013, 38–39 pl. 113).

The Vertebe II ceramic assemblage from Bilcze Złote is comprised of nearly 800 painted vessels in various stages of preservation. They were all demonstrably related to the Koshilivtsy group (Fig. 4, 7: 1–4) from the early CII phase of the Trypillia culture (Tkachuk 2013, 39).

The Vertebe II painted ceramics attributed to the Koshilivtsy group have some ornamental patterns which are not known from Koshilivtsy traditions (Fig. 7: 5–9), e.g., long or short wavy lines recorded on eleven items in the assemblage. The lines, quite often doubled, have been found: 1) on rims; 2) between lenticular figures; 3) inside the vessels; 4) on the outer and inner walls of bowls; and 5) in the middle of stripes. Double wavy lines are characteristic of settlement assemblages of the Badrazhy population and of the Branzeni group in the CII phase of the Trypillia culture (Tkachuk 2013, 41).

Vessels produced by the Koshilivtsy group were influenced by the Branzeni group and therefore took on more rounded shapes with higher necks and slightly flaring mouths. Ornamental motifs used by the Koshilivtsy group are mainly represented by big, vertical lenticular figures linked to one another by diagonal stripes (some with hooks) and lenticular figures arranged in cruciform patterns on the inner surfaces of conical bowls. Less frequently, we encounter semi-spherical motifs also found in the Branzeni group. The predomi-

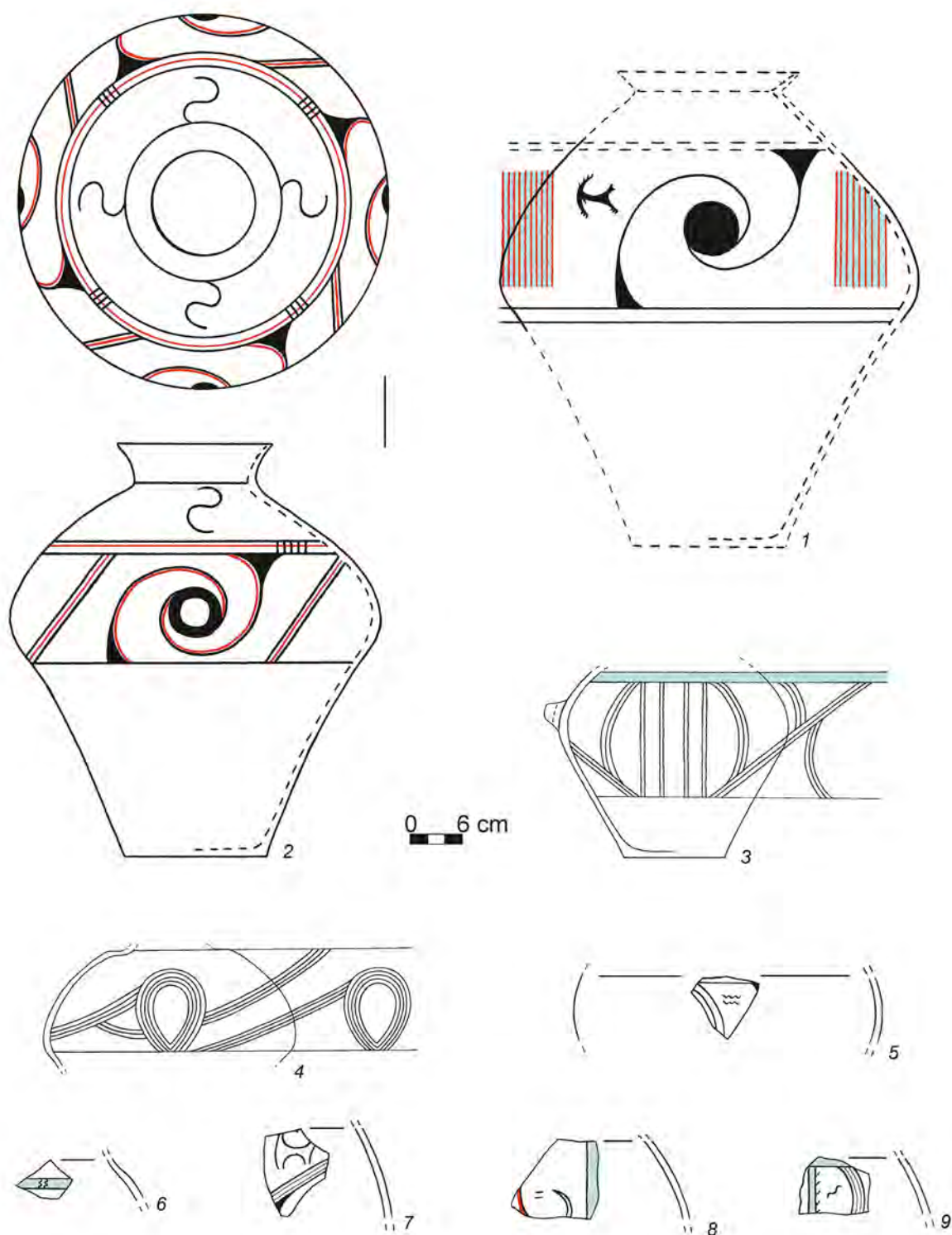


Fig. 7. The pottery of Koshilivtsy (1–4) and Branzeni (5–9) groups of Tripillia culture from the Verteba II assemblage in Bilcze Złote (after Tkachuk 2013).

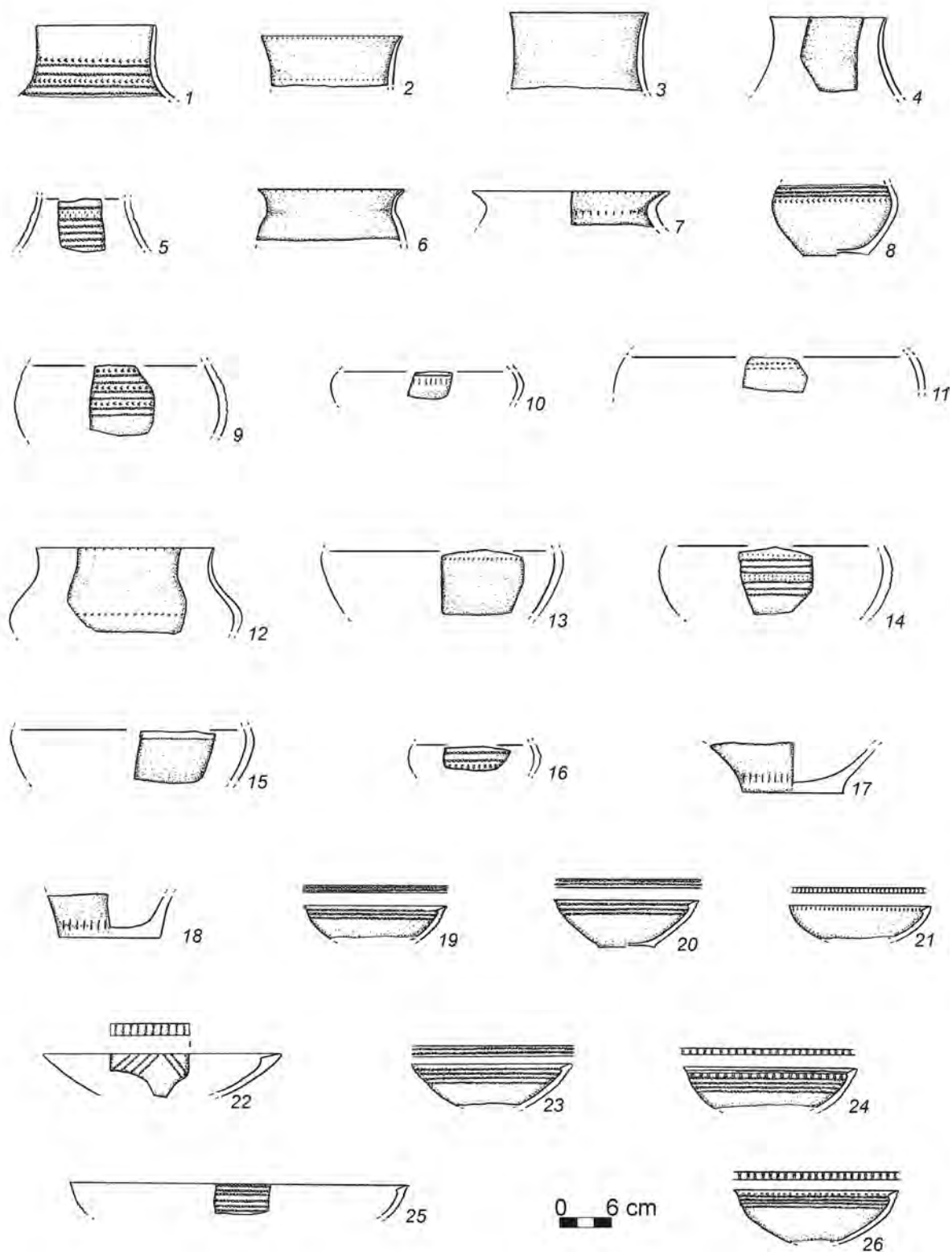


Fig. 8. The pottery of the Kasperivtsy group of Tripillia culture from the Verteba III assemblage in Bilcze Złote (after Tkachuk 2013).

nance of semi-spherical bowls, decorated on the inner and outer walls, is another typical feature of that group. The Verteba II assemblage includes thirty-six imports and vessels inspired by the Branzeni group, nearly 5 % of the painted ceramics in the assemblage (Tkachuk 2013, 41).

Only a small portion of the ceramic material from Verteba Cave may purport to the Kasperivtsy population from the last phase of the Tripillian culture (fragments of 68 vessels; the late CII phase). Unlike the vessels described so far, the Verteba III assemblage is dominated by ceramics mainly used for cooking. They constitute 72 % of the whole assemblage (49 items). The clay of these vessels is tempered mainly with crushed mollusc shells (25 vessels) or, less often, with an admixture of fire clay, grit or sand (Tkachuk 2013, 43).

The Verteba III assemblage includes only 4 sherds of painted vessels, 7.3 % of the whole assemblage. Ceramics produced by the Kasperivtsy group (Fig. 8) in the late CII phase of the Tripillian culture (Fig. 5) had complex characteristics. At that time, Trypillian decorative patterns were gradually influenced by the Funnel Beaker culture and, to a lesser degree, the Baden culture (Tkachuk 2013, 43).

Cord impressions on vessels with their rims obliquely cut off inwards are a typical feature of the Kasperivtsy group of the Trypillia culture in Verteba (Tkachuk 2013, pl. 111: 19–26). Similar motifs can be found on Funnel Beaker pottery from SE Poland on sites such as Majdan Nowy (Bronicki/Kadrow 1988) and Tominy, site 12 (Kadrow/Olejarczyk 2010). This kind of decorative motif is associated and inspired by Anatolian traditions and the eastern Balkan cultural background (culture complexes Sitagroi Va-Radomir I-II-Yunacite XIII-IX traditions; cf. Němejcová-Pavúková 1999; Kadrow 2005, fig. 17–18), as well as the cultural impact of the Pontic steppes. Decorative motifs of pottery found in Verteba Cave show a wide range of cultural links between this region and surrounding territories, including the Pontic zone, the Eastern Balkans, Anatolia, Volhynia and Lesser Poland.

The collection of anthropomorphic and zoomorphic plastic art (kept at the Archaeological Museum in Kraków) is comprised of 79 and 36 items, respectively (Fig. 9–10). The analysis of these artefacts confirms the chronological timeline of Verteba Cave (Țurcanu 2013, 53, 68). There are no major differences to be found between the anthropomorphic and zoomorphic plastic art from Verteba and that of neighbouring, contemporary settlements around Bیلcze Złote (Țurcanu 2013, 80–81).

Ritual practice in Verteba Cave

Neolithic populations are often argued to have had a complex burial programme; combining rites such as primary burial, secondary burial, excarnation and the ceremonial manipulation of bones. Archaeologists have interpreted these funerary rites either as expressions of territoriality (Renfrew 1979; Chapman 1995), ideological masks of inequality (Hodder 1984), ethnicity (Sherratt 1990) or ritual ways of creating relationships between the living, the dead and dwellings (Whittle 1996; Bradley 1998). There has been surprisingly little osteological research to support this grand theoretical edifice, however, the discovery of disarticulated human remains in Verteba Cave provides a unique opportunity to study the lives, deaths, and cultural practices of the Tripillian culture. Osteological materials, curated at the Archaeological Museum in Kraków, derive from early excavations undertaken by Demetrykiewicz in 1898, 1904 and in 1906. Originally, the collection was comprised of probably 36 specimens (according to catalogue numbers), however today it is repre-

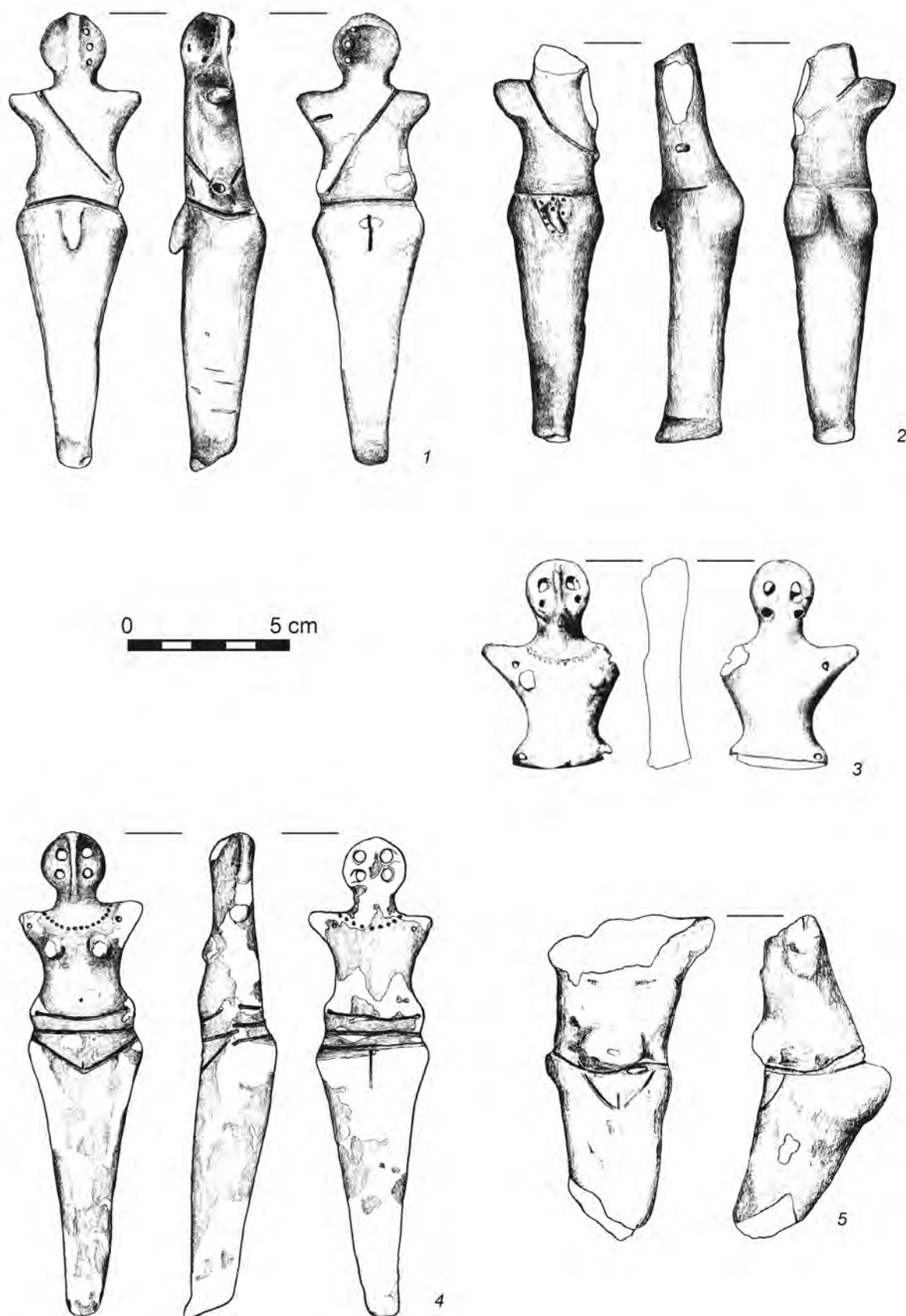


Fig. 9. Anthropomorphic figurines from the Verteba Cave in Bilcze Złote (after Țurcanu 2013).

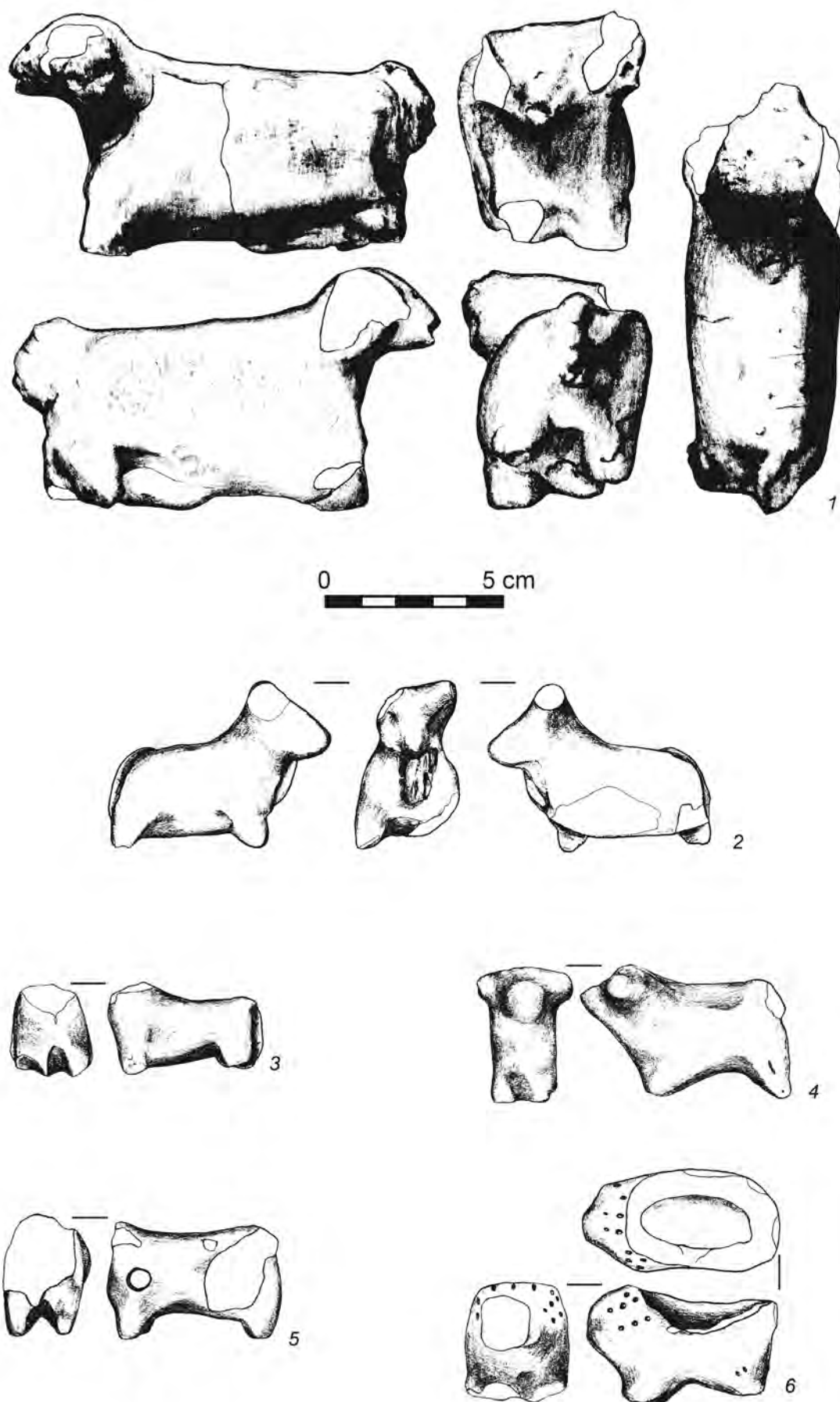


Fig. 10. Zoomorphic figurines from the Verteba Cave in Bilcze Złote (after Țurcanu 2013).

sented by a minimum of 17 identifiable individuals. Nonetheless, the collection does include over 300 fully preserved large ceramic vessels (measuring ca. 1 m in height), 35,000 pottery sherds and fragments of vessels, 120 anthropomorphic idols, over 60 clay items of varied functions, ca. 200 bone tools, 300 stone tools and implements as well as bone jewellery. Some of these finds are of considerable archaeological value and importance, for instance, the spectacular 'bull head' palette with an engraved female figure, or a green hematite disk. Throughout the 19th century, dozens of clay idols of both genders have been discovered inside Verteba Cave. They were hanging from the ceiling or driven into the walls of the cave. These artefacts create the archaeological background and setting for cultural practices in this case. The full archaeological potential of this site remains to be realised.

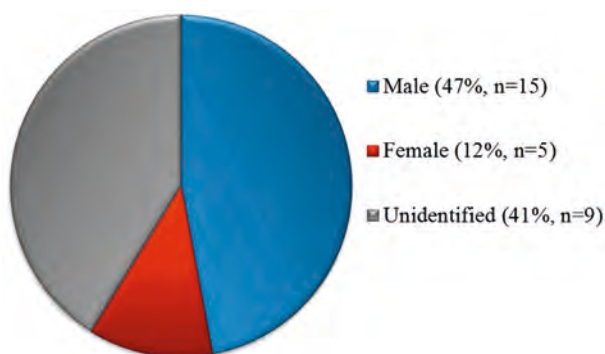
In recent years, until 2008, another 21 individuals were uncovered during excavations within the cave (Karsten et al. 2015). It is likely that the volume of osteological remains will increase in the future. Taking all this into consideration, the current study aims to investigate the materials using primary referents of mortuary variability: biological, cultural (pre-treatment of skulls, disposal modes) and locational criteria.

Skeletal remains from Verteba Cave can be divided into a few categories. Both human and animal remains exhibit similar levels of contextual complexity. The vast majority of human bone is represented solely by crania and mandibles. Excluding two cases, a child and an unidentified adult (stored in Kraków), no other body parts were ever found. The deposition of crania, with or without mandibles, must be analysed separately, as it may exhibit diversity with respect to the cultural phenomenon. Today, all materials deriving from Verteba Cave are divided between museums in Kraków and Borszhchiv, in more or less equal proportions, with the only difference being all child remains are stored in Poland (Fig. 11).

The excavated skulls form an unquantifiable sample of the deceased Tripillian population; the assemblage includes the remains of at least 5 (13 %) immature individuals and 33 adults (87 %; Fig. 12). All but 9 of the individuals were securely sexed, showing a much higher proportion of males (77 % adults) than females (23 % adults). The median age range for all adults is 35–45 years, there being little variation between the sexes. In an older collection, gathered by Demetrykiewicz, only two adult males were more than 40 years of age. There is a possibility of spatial separation based on the individual's age and/or sex, creating a biased view of the dead population, although the remains appear to demonstrate a dispersed distribution.

VERTEBA CAVE MATERIAL

Gender structure



Age structure

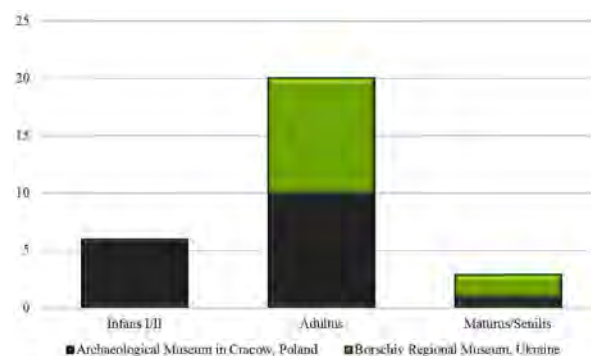


Fig.11 (left). Human skeletal materials from the Verteba Cave: gender structure according to study population.

Fig. 12 (right). Human skeletal materials from the Verteba Cave: age structure of the storage location.



Fig. 13. Brain removal in the Vertebe assemblages of the Tripillia culture. Archaeological Museum in Kraków (photo: D. Pokutta).

Brain removal and pigments

The cultural practice of post-mortem brain removal has been recorded in 4 crania from Vertebe. Specimens belong to 2 adult and 2 non-adult individuals. The recurring pattern covers four basic removal techniques: 1) brain tissue was extracted through the nose cavity; 2) through eye sockets; 3) through dilatation of the *foramen magnum*; and 4) through the large skull opening on the right or left side of the mainly temporal region (Fig. 13). The dilatation of the *foramen magnum* has been recorded in the cranium of an adult male (Vertebe no. 21), which was additionally coated with red ochre pigments. A similar process was administered to cranium no. 15 (non-adult), where the brain was extracted through large openings in both the left and right temporal bones prior to the empty skull being covered with pigments. Defleshing, including brain extraction via an opening in the temporal bones, and the use of ochre also reappear in cranium no. 18 (child, *Infans I*). Traseological evidence suggests that large stone hammers were used during the early stages of decomposition to open the skulls.

Death separated the deceased from their social status. The period of preparing the dead for burial moved them into a transitional phase, when they were neither their past selves, nor yet what they would become. Such moments of 'transition' often involve uncertainty and potential danger. Some ceremonial acts or customs employed at the time of death in the Tripillian culture seemed to encompass both ritual cleansing (defleshing) and apotropaic magic (red pigments).

However, ritualization is a strategy of power, whereby status functions (Bell 1992; Searle 1996) are collectively imposed on agents, objects and events. Despite the fact that death rituals are essentially deceptive and manipulative, they employ characteristically eye-catching (Clark 1986), costly, amplified, and stereotyped processes and are prone to massive redundancy signals. Ritualized defleshing is also an embodied experience with the transformations of body surfaces playing a key role. Body painting and cosmetics are among the simplest forms of such transformational techniques.

Excarnation and scalping

Scalping and excarnation in the archaeological record are recognized by patterns of cut marks. Scalping marks occur on the cranium, as cuts or clusters of cuts, and typically form a rough circle around the superior aspect of the skull. At least two individuals from Vertebe, an adult female (skull no. 4) and a child (*Infans I*, no. 18) have been subjected to such post-mortem treatment. The skull of the non-adult has been defleshed and subsequently covered with red pigments, indicating ritualistic cleansing. The incised marks were multiple, re-

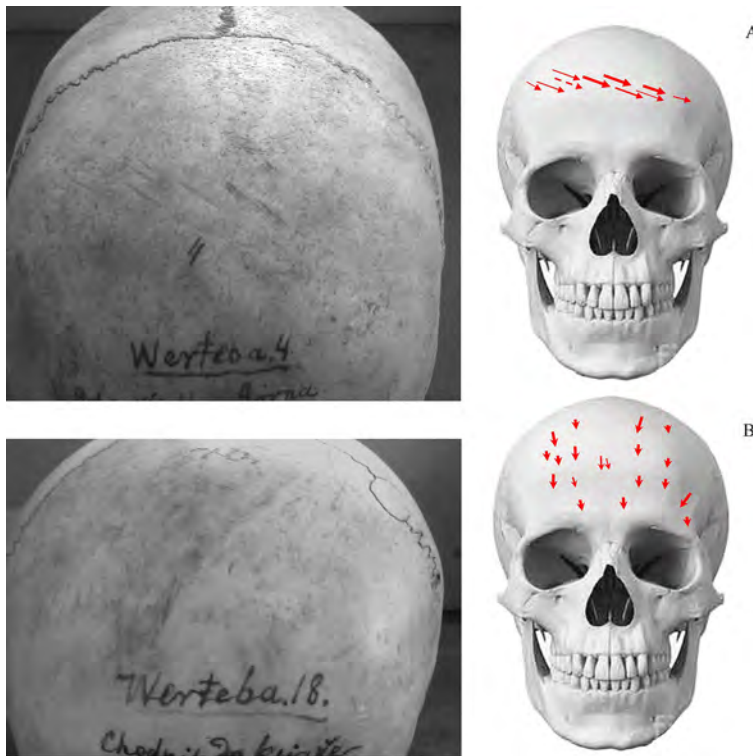


Fig. 14. Scalping (A, Verteba no. 4) and excarnation (Verteba no.18) techniques from Verteba bone assemblages. Archaeological Museum in Kraków (photo: D. Pokutta).

petitive and of varying length, appearing to run vertically along the frontal bone. This leads to the conclusion that the manner of scalp removal was clearly different to that of the adult female. Marks attributed to scalping generally matched the exterior surface of the bone in colour (Fig. 14). If the scalper was skilled at the practice, no damage would occur to the underlying bone. While scalping was most often performed at death or the minutes preceding it, in some instances evidence indicates that the practice of scalping was also performed on living individuals (Jacobi 2007, 312). If the removal of the scalp was not preceded by a circular incision outlining the perimeter of the scalp, the method was termed *sabrage*. In addition to the scalp, portions of the neck and face might also have been removed. This method involved making short, parallel cuts across the frontal bone, followed by short cuts around and behind one ear, then across the occipital bone near the nuchal crest and behind the other ear, and finally connecting the cut with the initial cuts on the victim's frontal bone (Bueschgen/Case 1996, 233).

It seems feasible that both defleshing and scalping in Eneolithic Ukraine were only performed with stone knives. Experiments on cadaver crania have elicited conclusive differences between cutting tools (Hamperl 1967). In general, scalping cuts are not left on the cranial bones if the incisions of the soft tissues were made with metal knives. When stone implements were used, these tools often had irregular edges that left parallel incisions or cuts on the surface of the cranial bones (Fig. 15A; Steinbock 1976, 26).

The two most likely behavioural interpretations of cut marks are scalping and ritual defleshing, however, scalping should be clearly separated from excarnation or defleshing. The number, location and placement of cuts can be used to distinguish excarnated and scalped crania (Owsley et al. 1994). A greater number of cuts and cuts that are scattered across the frontal bone usually indicated a skull that was systematically defleshed, rather than scalped (Fig. 15B). The typical pattern of cuts on scalped skulls consists of fewer incisions, generally in clusters that form a distinctive circumferential configuration. Also, scalped frontals often show cuts that originate at the tempo-

ral line, extend to approximately halfway between the hairline and the brow ridges, and finally terminate at the opposite temporal line (Owsley et al. 1994, 370).

Two contributing factors to the variation of scalping methods were cultural preference and the duration of time allotted for the removal of a trophy (Bueschgen/Case 1996). Ethnographic data indicates that scalping techniques utilized by different tribes were culturally transmitted behaviours passed down by each tribe's ancestors. Scalping methods differed in the amount of skin taken from the head, the number of scalps lifted from the same head, and the method of scalp removal. In both prehistoric and historic times, scalping by Native Americans was interpreted as a final insult or curse upon the victim. The underlying idea of scalping was the desire to preserve a souvenir of the slain enemy, while simultaneously dishonouring his remains. Scalping, therefore, was a tangible symbol of physical and spiritual dominance.

Among the Arikara tribes, for example, survival of scalping appeared to have strong cultural significance. In accordance with Arikara folklore, a male scalping survivor was forced into a solitary life outside of his village and had to stay hidden to avoid shocking or offending others. If scalped, only men were forced from their village. In the Northern American Plains and the South-West, burial patterns suggest that female scalping survivors were accepted back into their community and most often were buried with other members of their tribe (Owsley 1994, 337).

Re-burial practice

Secondary mortuary practices, including re-burial and intentional re-deposition of human remains, are relatively rare, especially in a prehistoric setting. The idea of re-interment is based on a certain set of cult practices and the intentionality of ritual cleansing procedures. A mortuary program, involving secondary disposal of the deceased, can be divided into two stages. The initial phase of the treatment commenced with the death or imminent death of an individual and terminated with the initial disposal. The second stage was initiated by an event non-associated with the death of the person; it involved the removal of the deceased from the location of initial disposal, followed by either replacement in the initial disposal facility, or removal to a place of secondary disposal. Re-interment is probably among the most time-consuming religious practices in prehistory and it may take a few years to bury any given individual. Interestingly, this indicates, in turn, that in the Tripillian culture secondary body treatment was a socially sanctioned and approved method of handling the deceased. Ethnographic sources infer that tribal societies, which practice re-burial, usually demonstrate greater cognitive concern in connection with the bones. This may be communicated in the rich vocabulary used to describe the bones and/or decaying body; or it might form a key portion of the myths of the culture (Goodale 1985).

The cranium of a reburied adult male individual discovered in Verteba Cave is shown in (Fig. 15). The bone surface in frontal and parietal regions indicates plant rooting and scalping. It seems feasible that this male had been buried in a different location and his body was kept in the ground for at least two years prior to re-deposition in the cave. The knife marks suggest that some loose and partially decomposed fragments of tissue have been removed. His 'cleansed' skull was deposited in Verteba Cave as *pars pro toto* interment of the whole body.



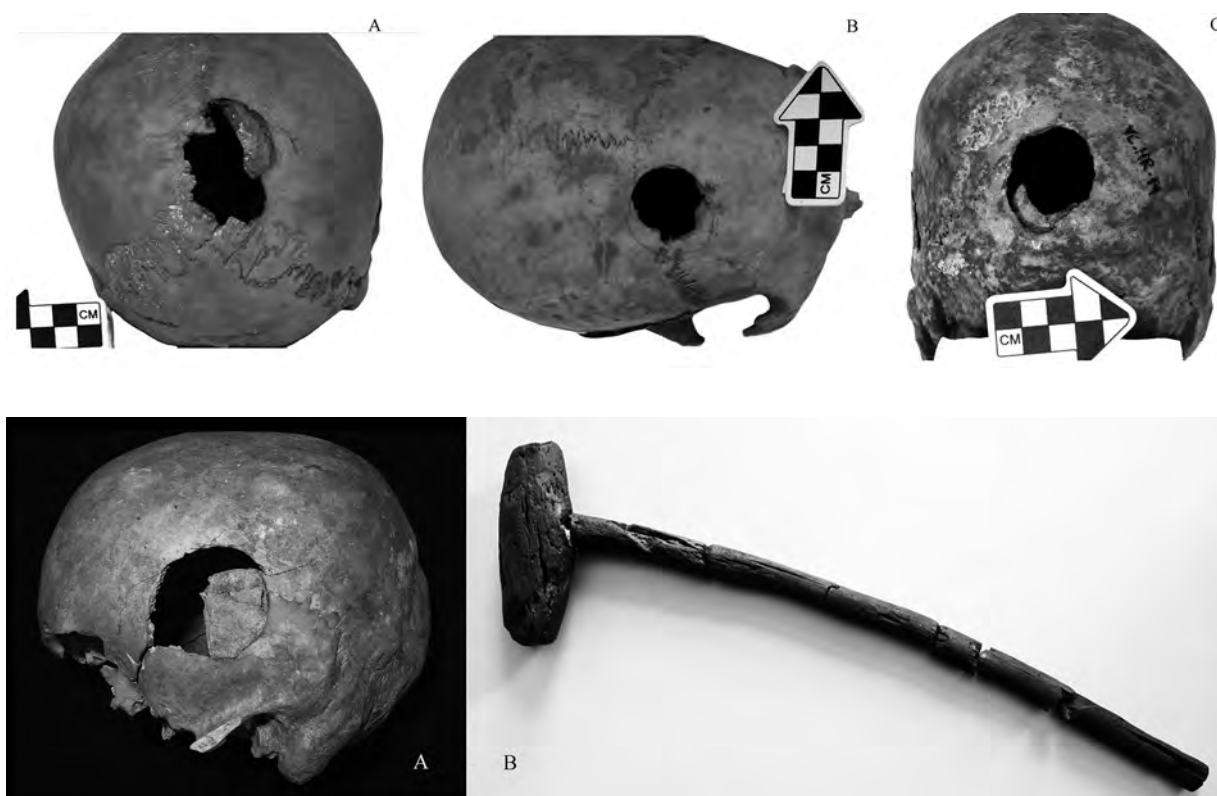
Perimortem blunt force trauma

In several cases of perimortem blunt force, injuries to the cranium have been recorded in Verteba assemblages. The morphology of these marks is a crucial factor that needs to be accurately described and accounted for in archaeological and forensic records. The evidence of violent death and the secondary treatment of the cadavers can be interpreted either as opportunistic votive burial, an actual sacrifice with a specific ritual pattern, or more traditionally, a deviant deposit in which the individuals were deprived of funerals and exposed to scavengers. Nasal septum deviation, probably caused by impact trauma, was found in the cranium belonging to an adult male (ca. 40 years of age, Verteba no. 19). This male had sustained a fracture to the inferior end of the nasal bone, slightly flattening and splaying both halves. The changes suggest a blow on the nose from directly in front of the individual, possibly accidental, but more likely deliberate, using a blunt implement. Moreover, the same individual sustained severe perimortem blunt force injury of the right eye (quite likely resulting from multiple blows). It is shown as a comminuted fracture to the left supraorbital margin with fracture lines measuring approx. 35 mm (mediolateral) x 22.5 mm (anteroposteriorly).

Female skull no. 16 shows several distinctive marks of traumatic brain injury. The occipital bone was crushed from behind by a large object, which left a circular depressed fracture to the parietal, probably in combination with a frontal fracture measuring ca. 9–10 mm. She died due to a severe brain-penetrating wound, caused by a high velocity blow with a long and pointy implement from the back. In addition, two deep ante-mortem longitudinal grooves have been recorded on the parietal bone, presumably the marks of a stone hammer. Her nasal septum has been totally removed, probably post-mortem.

Specific patterning of craniocerebral damage has been recognized in three male crania recently uncovered in Verteba Cave (Fig. 16; after Karsten et al. 2015). In all 3 cases, we are dealing with a large sub-circular comminuted depressed fracture which penetrates the skull. The ectocranial margins are sharp. Bevelling along the endocranial margin indicates the central fragments were inwardly displaced. The direct primary impact caused intracranial haemorrhaging, cerebral contusions, lacerations and deep brain haemorrhages. It may be asserted to a high degree of certainty that such a head injury would have been the sole cause of death. The full extent of the injuries suffered, however, cannot be precisely estimated due to a lack of other body parts. The discussed specimens have been compared with reference material deriving from mediaeval and Bronze Age warfare contexts (Fig. 17).

Fig. 15. Secondary burial practices in the Verteba Cave: cranium of an adult male with rooting and knife marks. Archaeological Museum in Kraków (photo: D. Pokutta).



Non-human biological agents

Taphonomic damage, specifically that created by rodent gnawing, root etching and excavation damage, may also be misinterpreted as tool marks. Haglund et al. (1988) provides a brief account of forensic cases in which human remains were ravaged by carnivores. In his later publications, he distinguished rodent from carnivore damage (Haglund 1997). Excluding co-mingled human remains found in the cave, some attention should be paid to the causes and overall impact of non-human agents, such as rodent gnawing on Verteba cultural deposits. Three crania (curated in Kraków) show evidence of rodent activity, following similar patterns. In specimen no. 19, gnawing was recorded on the right temporal bone and supraorbital margin. Cranium no. 4 displays a comparable arrangement. Rodent activity affected the right supraorbital margin and the left side of the maxilla. Obvious traces of gnawing with deep marks have also been found on the right temporal bone along the superior temporal line (attachment of the temporalis muscle) of the same skull. Due to specific alignments of gnaw marks, it seems credible to theorise that some parts of the skulls were deposited in the cave prior to any cleansing or processing. Some skulls were still covered with large parts of muscles, soft tissue and possibly blood with mandibles present. Additionally, skull no. 19 shows a vestige of scalping as well. It seems possible that during ritual cleansing, mandibles were detached from the rest of the skull. Regular, flat-bottomed grooves indicate the presence of large rodents, possibly rats (*Rattus rattus*) in the cave. Like carnivores, rodents can move bones around, often carrying them over large distances to their dens, where they accumulate and modify them by chewing, which to some extent may explain the formation of co-mingled deposits of bone. In addition to displaying indicators of chewing by mammals, bones can be scarred by the action of feet. Trampling and polishing by constant passage of carnivores in a lair may scratch and polish bone surfaces. Several skulls show randomly

Fig. 16 (above A–C). Ante-mortem cranial fractures from the Verteba Cave: adult males (no. 142, 171 and 14). Blows with wooden or stone implements were delivered from above and behind (photo: after Karsten et al. 2015).

Fig. 17 (below A–B). Reference materials; A) perimortem blunt force injury to the cranium, male individual, Battle of Towton 1461 AD, England; B) Bronze Age wooden club, used in battle in the Tollense Valley, Mecklenburg-Vorpommern, Germany.

orientated superficial scratches and some bones in Verteba's subterranean environment may have been relocated by animals.

Conclusions

It should be highlighted that there are several larger karst caves in the Blicze Złote region. However, traces of human occupation were only found in Verteba Cave. Regardless of this finding, the cave did not provide proper conditions for permanent inhabitancy per se. An obvious lack of an independent water source, poor ventilation, permanent darkness and very difficult or near inaccessible entrances (steep funnel-like precipice), can be mentioned among few leading reasons. Nonetheless, the specific appearance of artefacts and a significant volume of selected human remains undoubtedly indicates the cultic function of this site. Data collected in this study evidently points towards a multidirectional exchange network amongst a few local populations. The simultaneous presence of imported goods and local wares suggests the significant trans-regional importance of the Verteba sanctuary and a long-distance network of connections. The same can be maintained about immaterial aspects of the Trypillian cult.

The study of mortuary practices reflects social phenomena. In order to assess the usefulness of mortuary data from Verteba for social modelling, two criteria are important: 1) the range of social information that can be derived from mortuary remains, and 2) the reliability of burial data as indicators of social phenomena. In the case of the Verteba subterranean sanctuary, mortuary rituals were more than 'just' a way of disposing of the dead. They provided a forum for remembrance and celebration of the deceased, for engaging with and potentially challenging cultural norms, and for integrating the social units in ways that can mimic, mask, or modify social relationships that exist in the non-ritual social structure. While mortuary rituals are reproduced through acts of ritual performance and burial practices, each act offers opportunities to change the role of these rituals in society. Consequently, mortuary rituals could serve multiple roles that not only could but would change over time.

The majority of Trypillian materials from the Verteba Cave indicate the presence of a highly developed eschatological vision of the afterlife and rites of passage. Mortuary rituals seem to combine animistic beliefs and apotropaic magic. Nonetheless, certain evidence shows elements typical for warfare assemblages, trophy taking or executions. In global terms, it can be hypothesized that Tripillian warfare grew out of a combination of economic and demographic variables. It emerged in association with some degree of territoriality and sedentism and with concentrations of resources. The development of agriculture was probably not a necessary precondition for the onset of war, but it provides accommodating environments within which warfare could arise and spread. The level, intensity, and impact of warfare usually tend to increase as cultural systems become more complex, but in the case of Verteba Cave, this statement may be overrated.

Assemblages of highly fragmented or extensively processed human remains can derive from countless sources, including warfare, social control, cult and preparation of the deceased. According to some authors, the overall context of Verteba's skeletal assemblages can simply be seen as evidence of "trophy taking and cranial surgery and interpersonal violence" (Lillie et al. 2011). In fact, in this paper we demonstrate that the complexity of Tripillian rituals goes way beyond that. All human remains recovered during archaeological

prospections derive from the same location within the cave (Zawrat and the Great Hall). It seems feasible that ritual space was originally divided into sectors, with tools, ceramics, idols and other artefacts being deposited in specific places. The practice of cult depositions probably lasted through centuries and involved more than one population inhabiting the region.

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