

Anna Zakościelna¹, Grzegorz Osipowicz²

MADE OF FLINT, BONE AND BOAR'S TUSKS – BURIAL GOODS FROM MALE GRAVE NO. 2 IN ŚWIERSZCZÓW (KOLONIA) SITE 28, HRUBIESZÓW DISTRICT – ATTRIBUTED TO THE MALICE CULTURE – IN THE LIGHT OF TRACEOLOGICAL ANALYSIS

ABSTRACT

Zakościelna A. and Osipowicz G. 2024. Made of flint, bone and boar's tusks – burial goods from male Grave No. 2 in Świerszczów (Kolonía) Site 28, Hrubieszów District – attributed to the Malice culture – in the light of traceological analysis. *Sprawozdania Archeologiczne* 76/1, 335-358.

The article presents the results of a traceological analysis conducted on artefacts made of bone, boar's tusks and flint – the only funerary goods discovered in Grave No. 2 at Świerszczów (Kolonía) Site 28, in which an adult male was buried. Despite the lack of pottery vessels that could indicate cultural affiliation, the grave is attributed to the Rzeszów phase of the Malice culture, *i.e.*, the final, Eneolithic, stage of that culture. This attribution is based on ¹⁴C dating and on the presence in the grave of artefacts made of boar's tusks and flint burins. Microscopic analysis conducted on the discovered artefacts revealed traces related to their production, use and repair on their surfaces. Most items bear traces indicating their usage in processing soft materials, like siliceous (wild and domesticated) plants and hide. Interestingly, the artefacts with holes for hanging – traditionally regarded as adornments in archaeological literature – were also employed in different activities.

Keywords: Eneolithic, Malice culture, Rzeszów phase, male burial goods, artefacts made of bone, traceological analysis

Received: 02.11.2023; Revised: 18.11.2023; Accepted: 18.01.2024

¹ Institute of Archaeology, Maria Curie-Skłodowska University; M.C. Skłodowska sq. 4, 20-031 Lublin, Poland; anna.zakoscielna@mail.umcs.pl; ORCID: 0000-0002-1487-0117

² Institute of Archaeology, Nicolaus Copernicus University in Toruń, ul. Szosa Bydgoska 44/48, 87-100 Toruń, Poland; grezegor@umk.pl; ORCID: 0000-0002-4393-655X

INTRODUCTION

Thanks to a recently growing number of Polish archaeologists/traceologists, microscopic use-wear and technological analyses are becoming an increasingly popular method supplementing not only traditional research on the production and use of flint, stone and osseous raw materials that concern their technological and morphological as well as raw material aspects but also studies of the socio-economic and ritual behaviours of prehistoric societies in general. To a great degree, we owe this to Jolanta Małecka-Kukawka, who – along with Małgorzata Winiarska-Kabacińska – was the forerunner of Polish specialist research on functions of artefacts made of siliceous rocks. For over 30 years, she has conducted traceological and experimental analyses of flint inventories discovered at functionally and chronologically diverse sites, mainly dated to the Neolithic (Małecka-Kukawka 1999; 2001; 2017). Her efforts resulted in the publication of the first Polish handbook of use-wear analysis (Korobkova 1999). She educated at least several researchers of the younger generation, and the research centre in Toruń has become one of the leading institutions specialising in traceological and experimental analyses. We may venture to say that a pessimistic reflection expressed by the distinguished celebrator nearly 20 years ago in the question ‘Why has traceology not been developed in Poland?’ (Małecka-Kukawka 2005, 66) is just history now, and our country can boast a group of traceology specialists, a community where one can discuss and exchange experiences (as well as collections of experimental materials for comparative studies).

However, the already rich specialist literature still lacks works discussing the results of traceological analyses of materials attributed to the Malice culture (hereinafter: MC). This paper is a step towards filling this void. It presents the results of the first microscopic studies on a set of artefacts associated with the MC discovered in a male grave in Świerszczów (Kolonія), Site 28. The collection consists of semi-products and tools made of flint, bone and boar’s tusks (Zakościelna 1988, 9-11; Kadrow and Zakościelna 2009, 224, 225). The discussed site is known in archaeological literature as Świerszczów Kolonia 28, while in the official list of localities, it is referred to as Świerszczów. For this reason, we put the term ‘Kolonія’ in brackets.

SITE AND FEATURE

The multicultural Site 28 in Świerszczów (Kolonія) is located on the south-western edge of a circular elevation that lies at the base of a loess hilltop on the margin of the valley of the Huczwa River. The central part of the site was divided by a trench dug prior to the construction of a modern road leading from Hrubieszów to the Ukrainian border (Fig. 1). The site was discovered in the spring of 1988 during earthworks on the property of Waclaw Suchecki. A feature (clay extraction pit) attributed to the Linear Pottery culture (LBK) was partly damaged at that time. Rescue excavations (1988) resulted in recording the remains

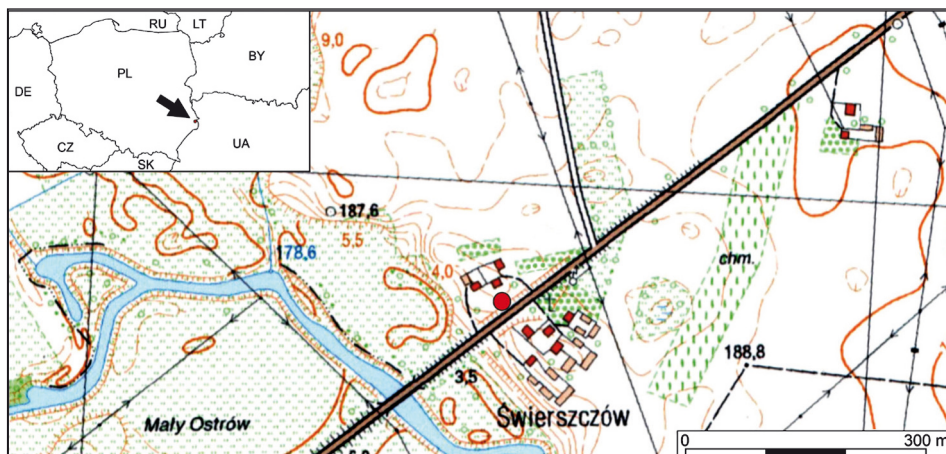


Fig. 1. Świerszczów (Kolonія), location of site 28
(graphic editing by M. Juran and P. Mączyński; base map: 65)

of a multicultural settlement initiated by a community associated with the younger stage of the Music-Note phase of the LBK, with elements of the Szarvas-Érpart style (three settlement features). The subsequent stages of occupation at the site were associated with the classical phase (Ib) of the MC (materials from accumulation layers outside anthropogenic features), the early horizon of the Rzeszów phase of the MC (IIa – two graves), the Mierzanowice culture (two settlement features) as well as the Strzyżów, Trzciniec and Lusatian cultures (materials from accumulation layers outside anthropogenic features), and with a residential building from the 5th-6th centuries AD (Zakościelna 1988a, 9; Zakościelna and Gurba 1993).

The graves from the early Rzeszów phase of the MC were discovered in Features 4 and 5, adjacent to the limit of the excavation trench on the east, *i.e.*, from the side of the edge of an escarp located near the road (Zakościelna 1988, fig. 1). The remains were buried in pits of a circular plan and trapezoidal cross-section. Originally, they were most likely of a utilitarian nature. Grave No. 2 (Feature No. 4) contained remains of an adult male equipped with artefacts made of boar's tusks and bones as well as flint semi-products and tools. In Grave no. 3 (Feature No. 5) a child aged Infans I was buried. Wanda Kozak-Zychman performed both anthropological examinations. The child's grave was equipped with an unornamented pear-shaped beaker (Kadrow and Zakościelna 2009, 224, 225, fig. 49, 50).

Grave No. 2 (Feature No. 4) – at the bottom of the pit with a circular plan and trapezoidal cross-section (diameter at the bottom about 230 cm; depth 80-85 cm) and with uniform dark brown-black fill, archaeologists discovered a skeleton of an adult male. The skeleton was lying in a strongly flexed position on his right side, with his head pointing to the west and face to the south. His back was against the northern edge of the spacious burial pit (Fig. 2). His right hand was under his right cheek. The left hand – resting on his

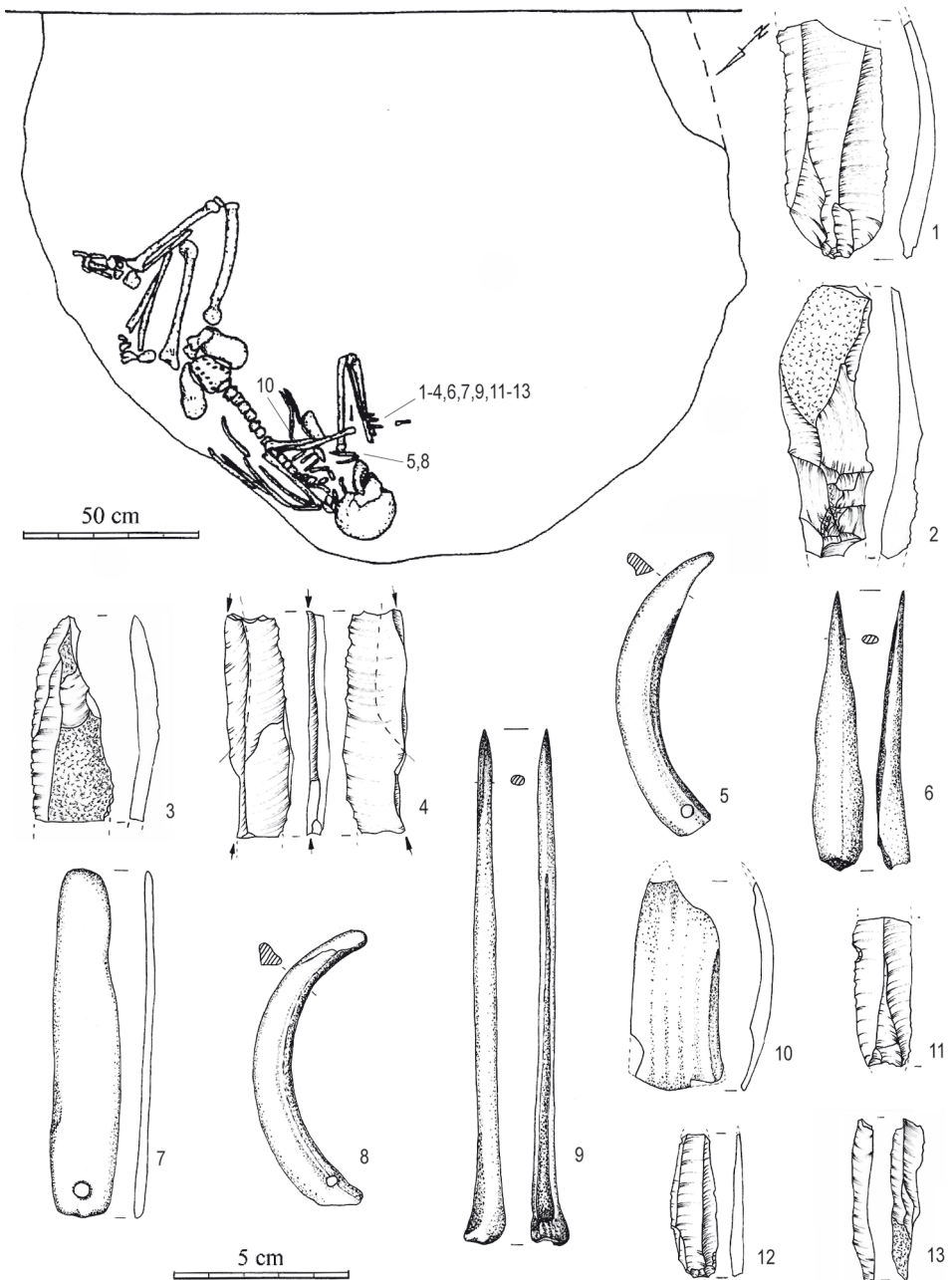


Fig. 2. Świerszczów (Kolonia), site 28. Layout and equipment of grave No. 2 (after Kadrow and Zakościelna 2009, fig. 49, with changes; graphic editing by M. Juran)

right forearm – was holding two spike-like tools and an artefact with an aperture for hanging – all made of bone – as well as seven items made of Volhynian flint. It is possible that all the above-mentioned artefacts were originally in a container/pouch made of organic matter. Near the man's mandible, there were two boar's tusks with holes in their thicker ends. A plaque made of the same material was found between the ribs (Fig. 2).

METHODS

All the artefacts made of flint (seven) and bone materials (six) discovered in the grave were subject to traceological analyses. Two microscopes were used in the research. The evaluation of the state of preservation of the products and preliminary analysis of techno-

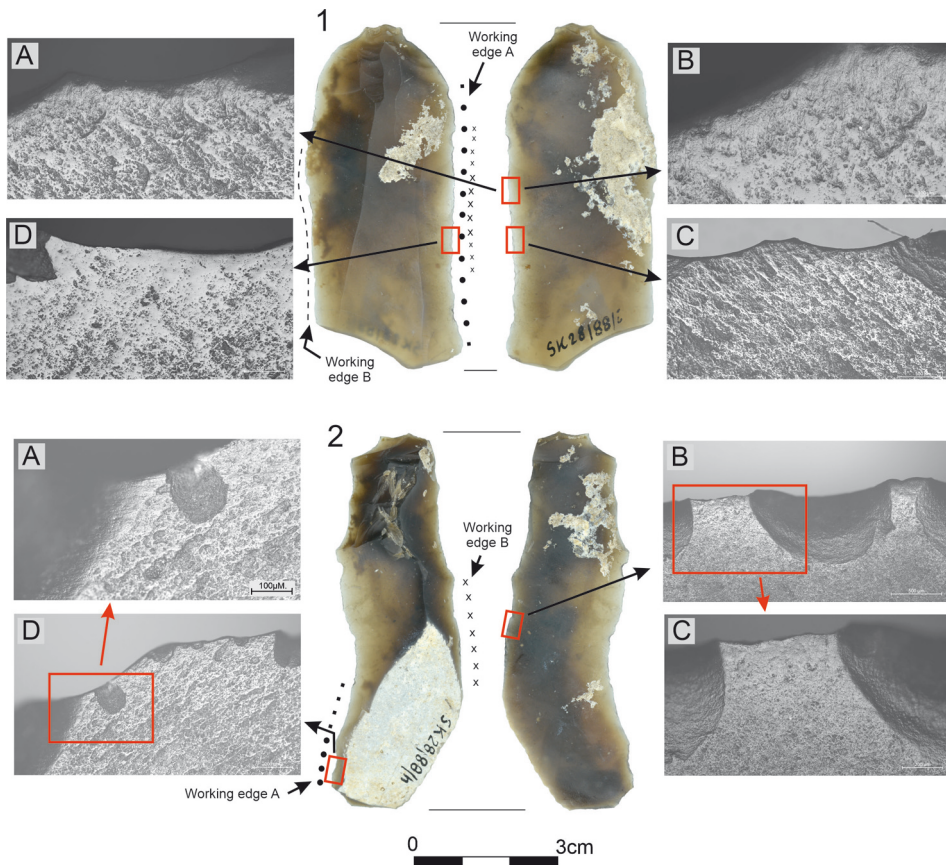


Fig. 3. Use-wear patterns recorded on flint artefacts Nos. 1 and 2 (photos and graphic editing of Figs. 3-10 by G. Osipowicz)

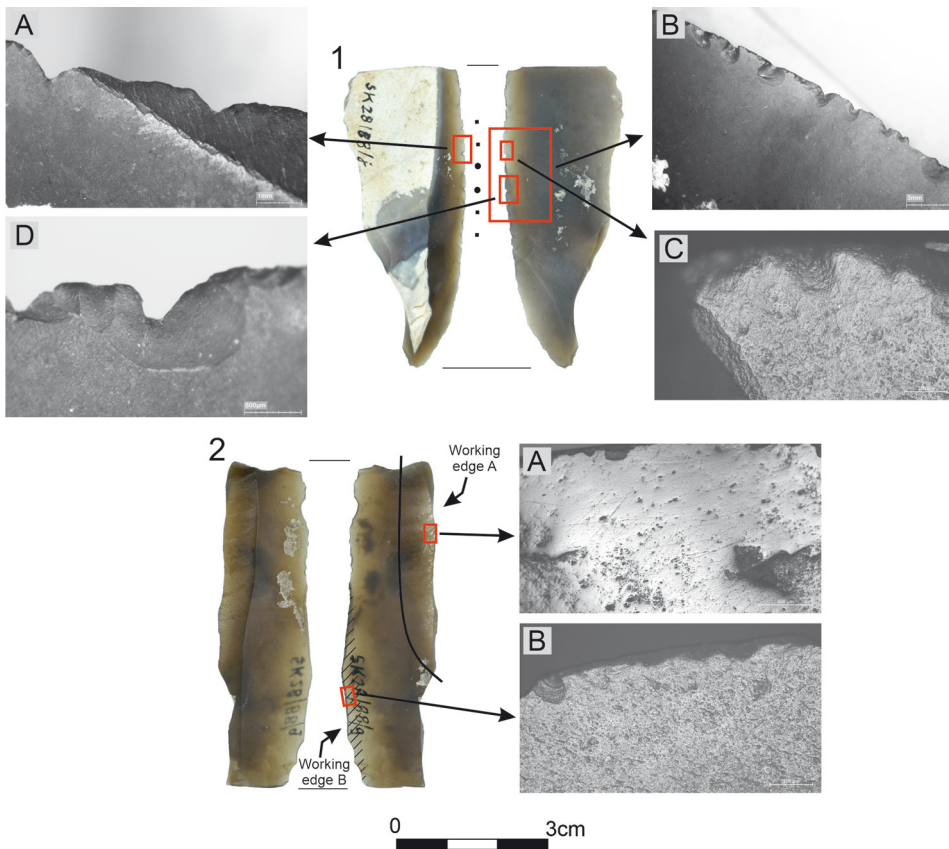


Fig. 4. Use-wear patterns recorded on flint artefacts Nos. 3 and 4

logical and use-wear traces was conducted using an optical Nikon SMZ-745T microscope fitted with a Delta PixInvenio 6EIII camera. This microscope provides a maximum optical magnification of 50×. The equipment was used to take microphotographs presented in Figs. 4: 1A, B, D, 5A-F, I, 6, A, D, F, G, 8C, E, G, 9C, E, F and 10A, D. A metallographic microscope Zeiss Axioscope 5 Vario fitted with an Axiocam 208 camera was utilised in analysing polished surfaces. It provides a maximum lens magnification of 50× (optical magnifications up to 500×) and was used to record the remaining microphotographs presented in this article.

The terminology applied in the traceological studies was based on the conceptual system known from the archaeological literature (*e.g.*, Vaughan 1985; van Gijn 1989; Sidera 1993; Juel Jensen 1994; Legrand 2007; Osipowicz 2010; Buc 2011) and adjusted to the needs and requirements of the conducted analysis.

During the description of the location of wear traces observed inside the perforations created in “typological” pendants, a scheme based on a dial plate was used with specific

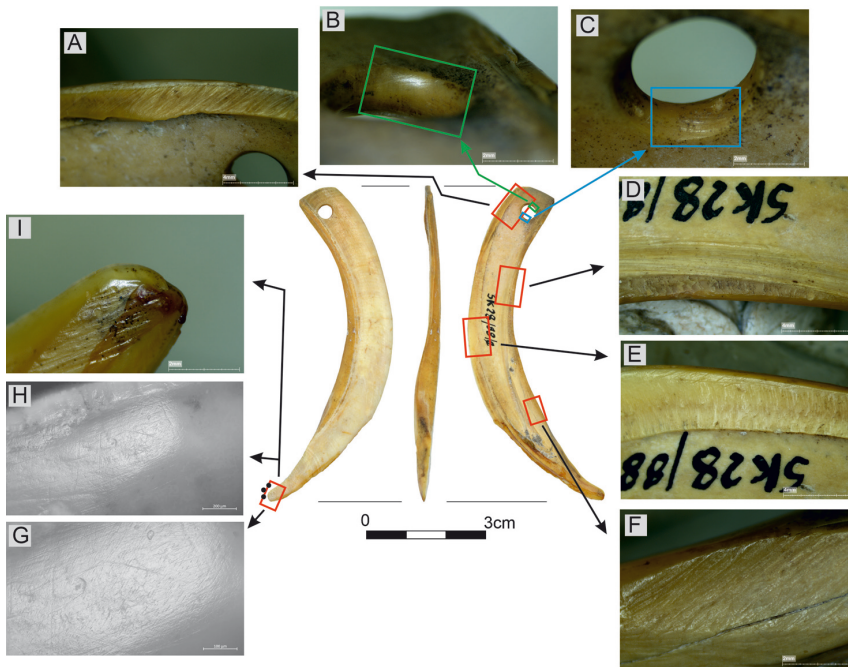


Fig. 5. Technological and use-wear patterns recorded on artifact No. 5 – specimen with a hole, made of a boar's tusk

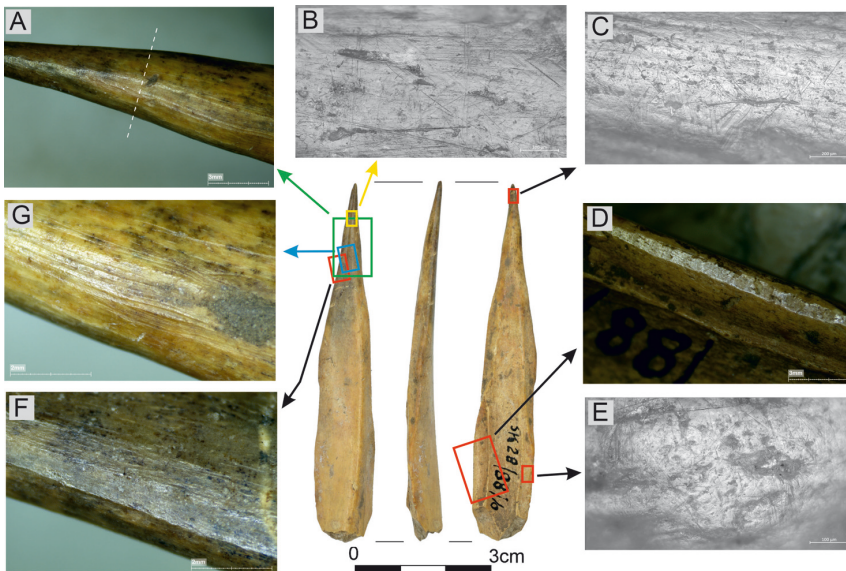


Fig. 6. Technological and use-wear patterns recorded on artifact No. 6 – spike-like tool

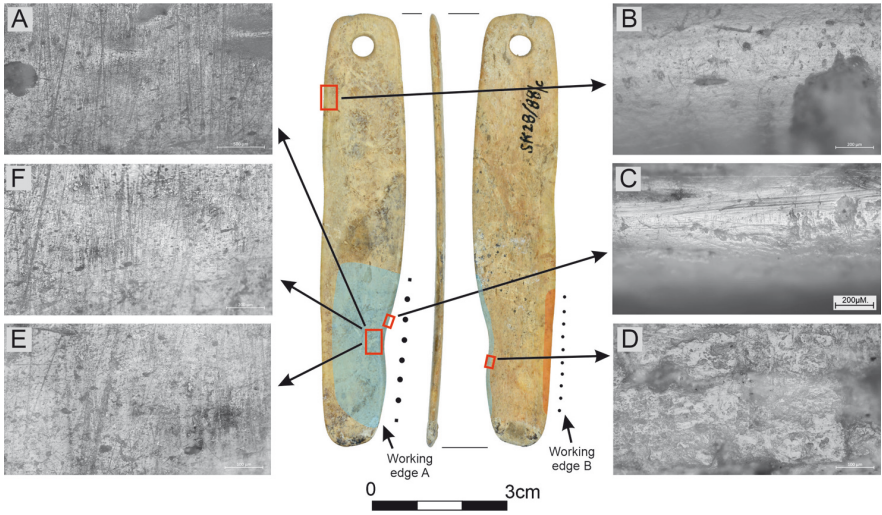


Fig. 7. Technological and use-wear patterns recorded on the rectangular artefact with a hole, made of animal bone (No. 7)

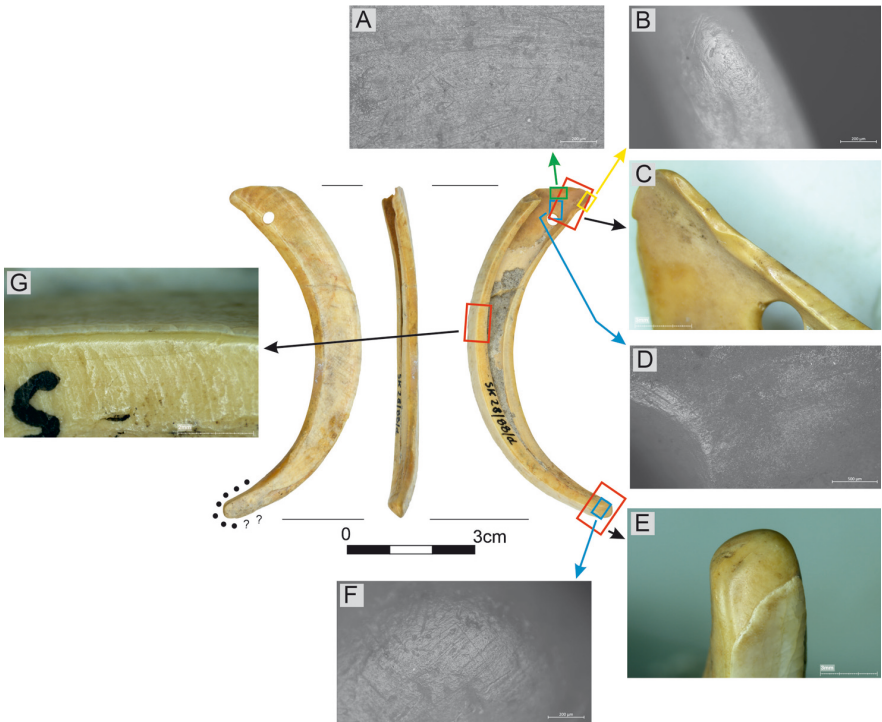


Fig. 8. Technological and use-wear patterns recorded on artefact No. 8 with a hole, made of a boar's tusk

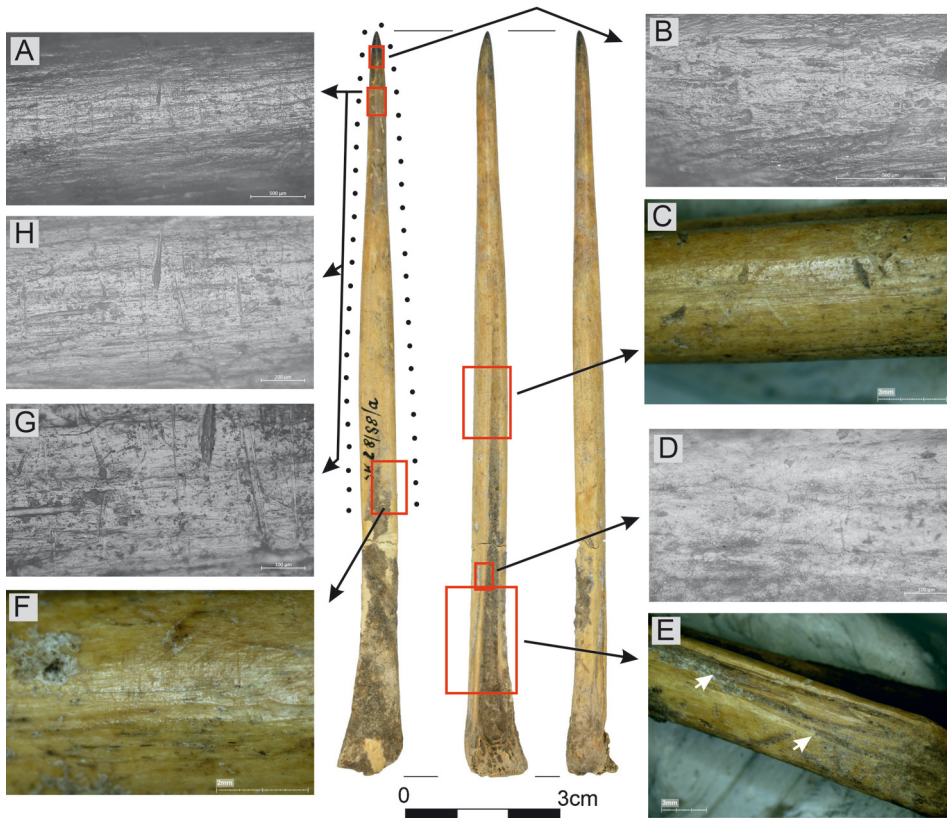


Fig. 9. Technological and use-wear patterns recorded on artefact No. 9, spike-like tool

hours on the dial plate corresponding to the sectors where traces occurred, *i.e.*, sector 1 marked the area between hours 12 and 1, sector 2 – the area between hours 1 and 2, and so on (*cf.* Osipowicz *et al.* 2020).

The research results omit the taphonomic data as the evaluation of the state of preservation of the analysed artefacts indicated that they were well preserved.

To avoid the usage of functionally tinged terms before the presentation of the results of the use-wear analyses, when typologically classifying bone artefacts having a separate tip (point), we refrained from using such terms as 'awl' or 'piercer' in favour of neutral designations like 'spike-like tool' (*cf.*, Jaworski 1990, 61; Makowiecki 2010, 84). A similar procedure was adopted when presenting the artefacts made of boar's tusks, which were not referred to as 'pendants' or 'tools' (as it is generally accepted in archaeological literature, *e.g.*, Wiślański 1966:, 43; Szymt 1996, 56), but they were described as 'an item made of boar's tusks, with a hole'.

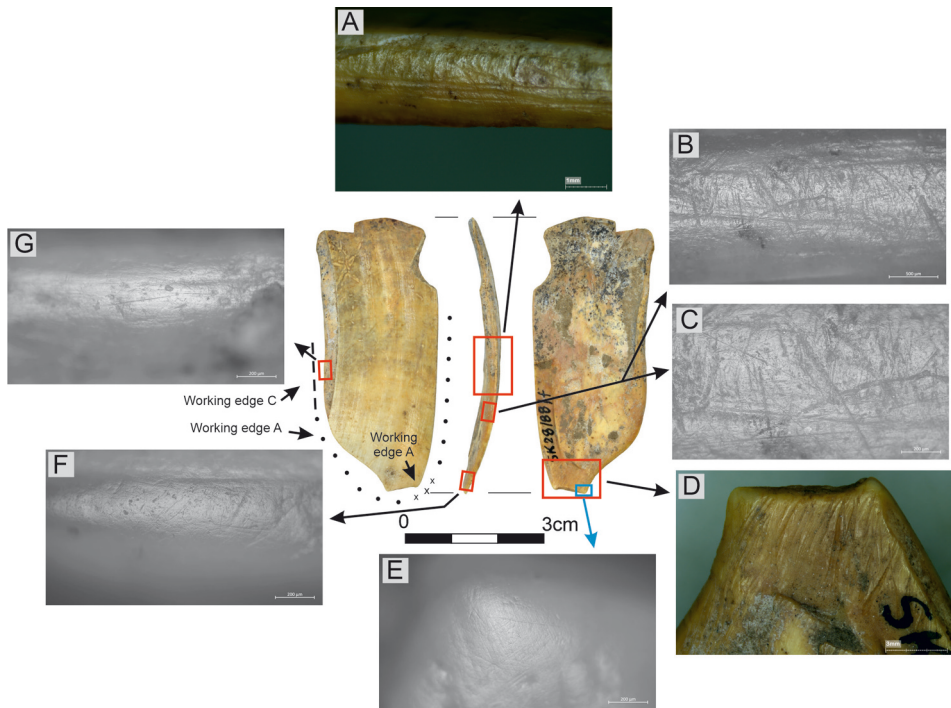


Fig. 10. Technological and use-wear patterns recorded on artefact No. 10, made of a boar's tusk

MATERIALS

The following artefacts were subject to traceological analyses:

1. Flint blade with broken-off tip; prepared butt; lip under the butt; prominent percussion bulb; scars of platform edge trimming; triangular-trapezoidal cross-section; slight longitudinal polish of the left edge on both sides; dimensions: 71 × 31 × 6 mm (Fig. 2: 1).
2. Partially cortical crested flint blade with slightly broken-off tip and broken-off butt; lateral edges having an irregular shape; triangular cross-section; dimensions: 78 × 22 × 7 mm (Fig. 2: 2).
3. Partially cortical flint blade with broken-off proximal part; fine retouch limited to the right edge, near the fracture; chipped left edge with use-wear retouch on the ventral side; triangular-trapezoidal cross-section; dimensions: 59 × 23 × 6 mm (Fig. 2: 3).
4. Flint double burin: on a transverse break + on a transverse burin facet; with extensive sickle gloss on both the ends; dimensions: 64 × 19 × 5 mm (Fig. 2: 4).
5. Artefact made of a boar's tusk, with a hole; dimensions: 81 × 13 × 6 mm; diameter of the hole = 4 mm (Fig. 2: 5).
6. Spike-like artefact made of an animal bone; dimensions: 80 × 14 × 8 mm (Fig. 2: 6).

7. Rectangular artefact with a hole, made of an animal bone; dimensions: $100 \times 21 \times 3$ mm; diameter of the hole = 5 mm (Fig. 2: 7).
8. Artefact made of a boar's tusk, with a hole; dimensions: $78 \times 12 \times 7$ mm; diameter of the hole = 3 mm (Fig. 2: 8).
9. Spike-like artefact made of a halved/split bird bone (?); dimensions: $147 \times 8 \times 6$ mm (Fig. 2: 9).
10. Plaque made of a boar's tusk, with all surfaces smoothed; the tip and base damaged in two places; dimensions: $60 \times 26 \times 4$ mm (Fig. 2: 10).
11. Flint blade with broken-off butt and tip; with a micro-notch on the left edge; diffuse bulb with a scar; platform edge trimming scars; triangular-trapezoidal cross-section; dimensions: $43 \times 17 \times 5$ mm (Fig. 2: 11).
12. Flint blade with broken-off tip; prepared butt; diffuse bulb; platform edge trimming and abrasion scars; dimensions: $42 \times 13 \times 3$ mm (Fig. 2: 12).
13. First series flint burin-spall with a cortical tip; dimensions: $47 \times 11 \times 5$ mm (Fig. 2: 13).

RESULTS

Detailed results of the traceological research with a precise description of the observed technological and use-wear traces are presented in Table 1.

Among the seven analysed flint artefacts, four bear use-wear traces developed to a degree that allows us to interpret their function. Two of them were utilised in processing siliceous plants: one is a sickle insert for harvesting cereals (Fig. 4: 2), and the other was probably employed to cut wild plants (Fig. 3: 1). The latter tool was also secondarily used to scrape hide (with an addition of some abrasive admixture, *e.g.*, charcoal or ochre) and most likely to cut it as well. Hide was also cut with the last flint artefact that bears evident use traces (Fig. 3: 2). Additionally, one of the artefacts shows traces of use (Fig. 4: 1), but its function remains unclear.

The analysed osseous artefacts were used in processing similar organic materials. Three of them were most probably used to work with vegetal material. This group includes both the examined spike-like tools (Figs 6 and 9). The latter specimen is particularly interesting due to its exceptionally long working edge. The rectangular bone artefact with a hole (Fig. 7) is the last artefact utilised in plant processing, possibly in threshing, *viz.*, separating cereal grains from grain ears.

The remaining three bone artefacts (all specimens made of boar's tusks – Figs 5, 8, 10) were probably used in processing hide. Although the nature of the activity remains unclear, it resembled carving/cutting or rubbing. At least one of the tools might have come in contact with material covered with an abrasive admixture.

Distinct traces of hafting or “holding in hand” were observed on most of the analysed flint and bone tools (*cf.*, Table 1).

Table 1. Świerszczów (Kolonia), site 28, grave 2. Results of the traceological analysis of the artefacts (Dots and dashes in brackets indicate the range of traces of use in the drawings)

No.	Raw material	Morphological description	Technological traces	Use-wear	Function	Comments	Figure
Flint artefacts							
1	Vollhymian flint	Blade with broken-off tip section	-	Retouch (both working edges): both sides, half-moon scars, one-step; Polish and linear traces: Working edge A: Type 1 (range •••): on both sides, glossy, band along the edge; domed and flat topography; smooth texture. At the cutting edge, the polish is slightly linear and connected with single linear traces (black and filled in striations – Fig. 3:1C, D). Type 2 (range x x x): only on the ventral side and tip; perpendicular linear matting with a cratered topography and rough texture (Fig. 3:1A, B). Edge B (range - - -): rounding of the working edge, a polish with a cratered topography, delicately linear.	Edge A: cutting siliceous plants (probably grass or reed); followed by scraping dry hide with an admixture of abrasive material; edge B – possibly used to cut hide	Inv. no. SK28/88/i	Fig. 3:1
2	Vollhymian flint	Crested blade	-	Retouch: close/irregular, on both sides, one-step type; feather-terminated scars. Near the tip, at the length of ca. 0.5 cm: multi-step retouch on one side, hinge- or step-terminated scars. Polish: Edge A (range •••): rounded working edge, linear matting with a cratered topography and rough texture (Fig. 3:2A, D); Edge B (range - - -): matting with a varied character, rounding of the edge (Fig. 3:2B, C)	Edge A – cutting hide; Edge B – probably used	Most of the use-wear damages on edge B were probably caused by hafting (presumably result of holding the tool through a piece of hide). Inv. no. SK28/88/h	Fig. 3:2

No.	Raw material	Morphological description	Technological traces	Use-wear	Function	Comments	Figure
3	Volhynian flint	Microdentate-saw	Retouch forming notches of the microdentate (Fig. 4:1B) was done with a hard tool having a triangular cross-section of the working edge with a width of not much more than 100 micrometres (made of metal?) (cf. Fig. 4:1A, D). The retouch is secondary, i. e., it removed earlier damages and is not covered with use-wear traces.	Flint artefacts Apparent 'hide' polish with a strictly limited range is recorded on the ventral side, in certain parts - outside retouch scars (Fig. 4:1C). Its origin is unclear. There are no use-wear traces on the dorsal side.	Used	Inv. no. SK28/88/j	Fig. 4:1
4	Volhynian flint	Multiple burin	Burin blows obliterated entirely the original working edge of the tool. It seems that this was their purpose. The artefact was not used afterwards.	Retouch: on edge B, half-moon scars in the tip section; Polish: Edge A: burin negatives do not bear use-wear traces. A glossy polish with flat topography and slightly rough texture can be observed on the preserved part of the working edge. It is associated with linear traces (comet-tails and black striations oriented along the line of the edge – Fig. 4:2A). Edge B: rounding and polish of 'hide-like' characteristics (its range marked with a hachure) (Fig. 4:2B);	Cutting cereals (edge A)	'Hide-like' traces on edge B were caused by hafting. A part of the edge with half-moon scars was already outside the hafting. Inv. no. SK28/88/g	Fig. 4:2

No.	Raw material	Morphological description	Technological traces	Use-wear	Function	Comments	Figure
Flint artefacts							
Bone artefacts							
5	Boar's tusk	Artefact with a hole	<p>The method of the initial splitting of the raw material is unclear. After the tusk was split, the redundant fragment on the concave side of the specimen was removed by sawing (from the inner side of the tusk) and breaking (Fig. 5D). There are no remains of sawing on the convex side of the specimen - the split surface shows the fracture (Fig. 5E). Both mentioned split surfaces were ground to a great extent, which was complemented with scraping at some places (Fig. 5A, F). The hole in the specimen was drilled (Fig. 5C).</p>	<p>An obvious rounding and bright linear polish is visible at the top of the spike. It is the most distinct at the (concave) processed side of the artefact, where it blurs technological traces (Fig. 5I). The polish has a homogenous (generally flat) topography with regular micro-relief and considerably rounded highest points (Fig. 5G, H). Its texture is smooth. The polish is linked with numerous linear traces, in the form of thin, black and filled-in striations arranged according to the axis of the specimen. In the perforation on the sawed side, in section 1, polish caused by a threaded cord/thong completely blurred traces left by drilling (Fig. 5B).</p>	Cutting/carving soft material (hide?)	<p>The origin of the slanting grooves presented in Figs. 5G, H is unclear (left by grinding?). Inv. no. SK28/88/e</p>	Fig. 5

No.	Raw material	Morphological description	Technological traces	Use-wear	Function	Comments	Figure
6	Bone	Spike-like tool	<p>The tool was made using a split long bone with an appropriate shape. Processing the tool was limited to correcting one of the split surfaces (by planing) (Fig. 6D). The working edge was initially formed by planing – hence its multi-faceted character – Fig. 6F) – and finished by scraping (Fig. 6G).</p>	<p>Flint artefacts</p> <p>Use-wear patterns blurred technological traces at the length of ca. 1 cm from the tip of the spike (Fig. 6A – the extent is marked with a dashed line). The polish damaged mainly the upper parts of the micro-relief. It is bright and has a homogenous (generally flat) topography, regular micro-relief, slightly rough texture and somewhat flat highest points. It is linked with numerous multidirectional linear traces of different characteristics (Fig. 6B, C). In the central part of the tool, a polish with the 'hide-like' characteristics can be observed (Fig. 6E).</p>	Perforator, used to work in organic material, most probably of vegetal character	Observed 'hide-like' traces are probably caused by holding the tool in hand. Inv. no. SK28/88/b	Fig. 6
7	Bone	Artefact with a hole	No technological traces preserved on the surface of the artefact. They were blurred by use-wear damage and post-depositional alterations. The hole in the specimen is of hourglass shape (it was probably drilled).	<p>Edge A (range of the use-wear traces marked with blue): Lower side (contact surface): very invasive, surface polish with homogenous, generally flat topography, regular relief and rough texture. It is linked with numerous hair-like linear traces having uneven edges, which overlap with the lateral edge of the specimen (Fig. 7A, E, F; working edge – Fig. 7C). Upper side (non-contact surface): polish/melting visible only in the upper parts of the relief. Its topography is heterogeneous, the micro-relief is irregular, and the highest points are convex (Fig. 7D). No linear traces. Edge B (the range of the use-wear traces marked with red): traces analogous to the ones present on edge A but of a very limited range (basically, present only on the cutting edge).</p>	Threshing cereals (?)	Edge B was used for a very short time. Damages resulting from holding the item in hand a visible in the central part of the tool and near the hole (Fig. 7B) Inv. no. SK28/88/c	Fig. 7

No.	Raw material	Morphological description	Technological traces	Use-wear	Function	Comments	Figure
8	Boar's tusk	Artefact with a hole	The method of tusk split is unclear. There are natural surfaces (fractures) on the split surfaces, in places lacking traces of the secondary processing. Processed areas are covered with grinding traces (Fig. 8G). The hole was drilled.	Flint artefacts The tip is considerably rounded (Fig. 8E) and covered with bright polish having a heterogeneous (considerably pitted) topography, irregular micro-relief, slightly rough texture and convex highest points (Fig. 8F). It is linked with linear traces, black and filled in striations with multidirectional orientation. The polish is invasive (covers ca. 1 cm of the spike length). In the hole, one can observe rounding and 'hide' matting that blur technological traces. A band of matting runs from here to the base of the specimen (Fig. 8A, D), where (on the edges of the fractures), changes into a more bright, greasy 'hide' polish (Fig. 8B, C). In the central part of the tool, there are traces resulting from holding it in hand (they cover the ground surfaces – Fig. 8G).	The working edge of the specimen had contact with soft material, most probably dry hide (maybe with an abrasive admixture). The character of the performed activity is unclear. It was not drilling holes (rotational movement), but it rather resembled cutting, carving or rubbing (linear movement).	A band of the 'hide-like' traces running from the perforation to the base of the specimen marks the contour of a strap used to attach the tool to a hide 'handle'. This term may refer to different things, e.g., a hide lining of a wooden handle or simply a strap wrapped around the base of the specimen. Inv. no. SK28/88/d	Fig. 8

No.	Raw material	Morphological description	Technological traces	Use-wear	Function	Comments	Figure
9	Bone	Spike-like tool	<p>The method of splitting the bone is unclear. There are incisions (Fig. 9E – marked with arrows), indicating that the raw material was sawed on the inside, near the articular head. The split surfaces and the spike of the specimen were formed by scraping, most probably with an untouched blade/flake (Fig. 9C).</p>	<p style="text-align: center;">Flint artefacts</p> <p>The use-wear traces are very invasive – they cover ca. 10 cm of the length of the tool working edge. On the greater part of this area (except the tip of the spike), there is pale linear polish (oriented along the axis of the specimen) with a heterogeneous topography, irregular micro-relief, convex highest points and slightly rough texture. It is linked with linear traces – arranged perpendicular to the edge – of various natures (single, grouped, black scratches, filled-in scratches, grooves, linear bands etc. (Fig. 9A, F-H). On the tip of the spike, the polish is of the same character, but there are generally no perpendicular linear traces (Fig. 9B). In the lower part of the tool (near its base), polish and 'etching' of the surface resulting from holding the specimen in hand was recorded (Fig. 9D).</p>	Spike for processing vegetal material (unclear character of the performed activity). The artefact was used in such a way that its tip punctured the processed material, and then –the tool was turned (like a borer), while pushing it inside the processed material.	Artefact broken in recent times; a great part of its base is covered with contamination. Inv. no. SK28/88/a	Fig. 9

No.	Raw material	Morphological description	Technological traces	Use-wear	Function	Comments	Figure
10	Boar's tusk	Plaque	<p>The method of splitting the material is unclear; only traces of scraping are present on the inner side and concentrate in its upper area (Fig. 10D). Scraping traces are also visible on split surfaces, but here, they are considerably obliterated by strongly developed use-wear changes (Fig. 10A).</p>	<p>Flint artefacts</p> <p>Edge A: rounding and polish obliterate technological traces. The polish topography is heterogeneous, micro-relief regular, somewhat rough texture, and the highest points are concave. The polish is linked with perpendicular linear traces (mainly black striations – Fig. 10B, C). In the most worn parts, the polish is completely flat and its texture is smooth (Fig. 10F).</p> <p>Edge B (xxx): topography of the polish is corrugated, and texture is smooth. The polish is associated with perpendicular linear traces (mainly filled in striations – Fig. 10E).</p> <p>Edge C (- -): polish with characteristics similar to the one visible on more worn fragments of edge A, but the linear traces recorded here are oriented parallelly to the line of the cutting edge (Fig. 10G).</p> <p>A polish resulting from holding the specimen in hand or hafting in a leather handle can be seen on the base.</p>	<p>Edge A – scraping soft (possibly vegetal) material. Edge marked as Edge C was used in cutting the same material. Edge B – processing (cutting/carving/rubbing) soft material, probably hide (?); activity analogous to the one described in the case of the other two artefacts made of boar tusks.</p>	<p>Traces of scraping present on the specimen are largely secondary with regard to the use-wear patterns (they cover them). Nevertheless, the edges of some scratches are covered with a polish, meaning the specimen was still used after scraping. Hence, the discussed activity should be considered as some sort of repair procedure, repeated several times while using the artefact. Inv. no. SK28/88/f</p>	

DISCUSSION

Grave No. 2 from Świerszczów (Kolonia) 28 definitely stands out from over 20 burial features attributed to the MC published so far. No special grave pit was prepared for the interment. Moreover, the burial was not equipped with vessels, viz., the typical burial goods deposited in MC funerary features (Kadrow 2009, tables III and IV). Additionally, burying the man with his head to the west instead of the south, is an aberration from the rules usually followed by the population of this culture. The facts mentioned above were the reason to doubt if the discussed feature was correctly attributed to the MC (Kadrow 2009, 53, 54). Eventually, the absolute dating of Grave No. 2 and nearby Grave No. 3 were decisive in this matter. For both features, ^{14}C measurements were made for samples collected from the respective skeletons. The obtained dates are: Grave No. 2 – Ki-4193 5430 ± 60 BP, Grave No. 3 – Ki 4189 5350 ± 50 BP (Kadrow and Zakościelna 2000, fig. 43). Both results correspond to ^{14}C dates for sites from the Rzeszów Foothills, Sandomierz Upland, and western Lesser Poland (Dębiec and Pelisiak 2008, 136-139, figs 5, 6; Włodarczak 2017, 103, figs 1, 2, 7, 9; Zastawny 2022, figs 9-10; Kadrow 2023, table 1) and fit well into the chronology of already Eneolithic development period of the MC, namely the Rzeszów phase (Kadrow 1996, fig. 19; 2009, 59, 60). The Eneolithic character and chronology of Grave No. 2 are also indicated by the grave inventory, especially the artefacts made of bored boar's tusks- attributes of Eneolithic male graves from South-Eastern and Central Europe (Bognár-Kutzián 1963, 310, 311; Nevizansky 1984, 272; Todorova 2002, 188-189). The burin and burin-spall are equally important in the chronological context of the grave, as they reflect the Eneolithic burin trend (Balcer 1983, 115, 116; Zakościelna 1996, 101-106). The mixed burin (on a truncation + on a break) finds very close analogies at the MC settlement in Werbkowice – dated to the Rzeszów phase (Zakościelna and Gurba 1997, 204) – where this type of tool clearly dominates (Zakościelna 1981, pl. 2. Tables 9-11).

The results of the conducted traceological analyses suggest a considerable functional coherence of the bone and flint artefacts deposited in the analysed grave, which may be of great importance for interpreting the character of activities performed by the buried man during his life. Undoubtedly, he had been a farmer, as indicated by the sickle insert and bone artefacts used (probably) in threshing. He had processed not only domesticated cereals but also wild siliceous plants, which is attested by the character of the use-wear traces present on the second knife for cutting plants (mainly lack of linear traces, including comet-tails – cf. Korobkova 1999, 134). Both bone spike-like tools deposited in the grave had also been engaged in activities linked with processing plants. The character of the wear observed on their surfaces indicates that they had come in contact with soft, not very abrasive material, possibly wet bark, phloem or other vegetal fibres, *e.g.*, during the production of baskets or mats. This assumption is corroborated by the length of the working edge of one specimen and the considerably invasive extent of the recorded use-wear patterns. Nevertheless, a definite answer to this question requires adequate experimental re-

search. The results of these studies are engaging in the context of the fact that for most Neolithic tools of this type from Poland, which were subjected to traceological analysis, a connection with hide processing was suggested (*cf.* Osipowicz *et al.* 2014, 2015; Lisowski *et al.* 2017).

Undoubtedly, processing hide had also been essential for the buried man. Quite importantly, he probably had used abrasive admixtures, such as ochre or powdered charcoal, when performing this activity. Ochre was applied in various stages of hide processing, mainly during fleshing and tanning. It was used primarily due to its very good fat absorption and drying properties, as well as its antibacterial and antifungal effect (Mandl 1961; Audouin and Plisson 1982; Wadley 2005; Dubreuil and Grosman 2009; Trąbska *et al.* 2007; Rifkin 2011; Hodgskiss and Wadley 2017; Kościuk 2017). Powdered charcoal (or ash) was added to water in which hides were soaked in the process of tanning, in order to remove fat, meat, hair and epidermis from the hide during the so-called 'wet-scrape process' (van Gijn 1989; Richter and Dettloff 1995; Rašková Zelinková 2011).

We have at our disposal considerable evidence that ochre was used as a substance facilitating hide processing in the prehistoric era. It is identified primarily on working edges of flint tools employed for processing this raw material (Keeley 1980; Solecki *et al.* 2004; Ahlrichs 2015; Wadley 2005; Hodgskiss and Wadley 2017), although it is also occasionally found on working surfaces of macrolithic stone tools used for the very same purpose (Dubreuil and Grosman 2009) or even bone tools (Osipowicz *et al.* 2019).

Technological traces observed on the analysed bone artefacts do not differ from the ones recorded on other Neolithic artefacts made of this raw material discovered in Poland (*e.g.*, Frankiewicz 2013; Osipowicz *et al.* 2014; 2015; Lisowski *et al.* 2015; 2017). One of the flint artefacts bears traces of an interesting technological operation that, as it seems, was aimed at completely blunting the working edge by burin blows. Such procedures, in fact a type of ritual renovation/destruction of tool edges before depositing them in graves, are recorded relatively often in Neolithic materials (Osipowicz 2022 – further literature there).

The presented results of the traceological research contribute considerably to the interpretation of artefacts with a hole through which a cord or thong was threaded. In archaeological literature, there is a convention of treating such products – according to their typological-functional character – as pendants or elements of necklaces and breast-plates – that is body adornments – and they were often discovered near necks or ribcages of buried remains (Bognár-Kutzián 1963, 310, 311; Nevizánsky 1984, 272; Zakościelna 2010, 152). Nevertheless, the results of the traceological research indicate that the rectangular 'pendant' and both artefacts made of boar's tusks were tools used in processing vegetal materials and hide, so they had utilitarian functions and were not, or at least not exclusively, of non-utilitarian nature.

CONCLUSION

The results of the traceological analyses conducted on the bone and flint artefacts from the inventory of Grave No. 2 in Świerszczów (Kolonía) 28 indicated that the buried man (farmer) used them during work associated with harvesting – probably processing both domesticated cereals and wild siliceous plants. Some flint artefacts also played a different role – they were secondarily used to process hide. The items made of bone and boar's tusks had also been used to process plant material and hide. Particularly interesting are the outcomes of the analysis of the rectangular artefact with a hole, as the recorded patterns most likely resulted from threshing. The utilitarian nature of this item and the two specimens made of boar's tusks calls for caution when interpreting objects provided with holes for threading a cord or thong.

Acknowledgements

We express our gratitude to Maria Juran and Piotr Mączyński for preparing Figs 1 and 2. We would also like to thank Piotr Moskała for translating this text into English.

References

- Ahlrichs J. J. 2015. *Ocker im Paläolithikum* (= *Universitätsforschungen zur prähistorischen Archäologie* 265). Bonn: Rudolf Habelt GmbH.
- Audouin F. and Plisson H. 1982. Les ochres et leurstémoins au Paléolithique en France: Enquête et expériences sur leur validité archéologique (= *Cahiers du Centre de Recherches Préhistoriques* 8). Paris: Université de Paris I, Centre de recherches préhistoriques, 33-80.
- Balcer B. 1983. *Wytwórczość narzędzi krzemiennych w neolicie ziem polskich*. Wrocław: Zakład Narodowy im. Ossolińskich, Wydawnictwo Polskiej Akademii Nauk.
- Bognár-Kutzián I. 1963. *The Copper Age Cemetery of Tiszapolgár-Basatanya* (= *Archaeologica Hungarica Series Nova* 42). Budapest: Akadémia Kiadó.
- Buc N. 2011. Experimental series and use-wear in bone tools. *Journal of Archaeological Science* 38, 546-557.
- Dębiec M. and Pelisiak A. 2008. The first ¹⁴C dates for Malice culture artefacts. Rzeszów, site 31. *Analecta Archaeologica Resoviensia* 3, 129-144.
- Dubreuil L. and Grosman L. 2009. Ochre and hide-working at a Natufian burial place. *Antiquity* 83, 935-954.
- Frankiewicz M. 2013. Analiza traseologiczna materiałów kostnych. In M. M. Przybyła, A. Szczepanek, P. Włodarczak (eds), *Koszyce, stanowisko 3: przemoc i rytuał u schyłku neolitu / Koszyce, site 3: violence and ritual at the end of the Neolithic* (= *Ocalone Dziedzictwo Archeologiczne* 4). Kraków, Pękowice: Wydawnictwo i Pracownia Archeologiczna Profil-Archeo Magdalena Dziegielewska, 201-206.

- Hodgskiss T. and Wadley L. 2017. How people used ochre at Rose Cottage Cave, South Africa: Sixty thousand years of evidence from the Middle Stone Age. *PLoS ONE* 12/4, e0176317.
- Jaworski K. 1990. *Wyroby z kości i poroża w kulturze wczesnośredniowiecznego Ostrowa Tumskiego we Wrocławiu*. Wrocław: Oficyna Wydawnicza Volumen.
- Juel Jensen H. 1994. *Flint tools and plant working: hidden traces of stone age technology: a use wear study of some Danish Mesolithic and TRB implements*. Aarhus: Aarhus University Press.
- Kadrow S. 1996. Faza rzeszowska kultury malickiej. In J. K. Kozłowski (ed.), *Kultura malicka. Drugi etap adaptacji naddunajskich wzorców kulturowych w neolicie północnej części środkowej Europy* (= *Rozprawy Wydziału Historyczno-Filozoficznego* 80). Kraków: Polska Akademia Umiejętności, 51-70.
- Kadrow S. 2009. Obrządek pogrzebowy kultury malickiej. In A. Czekaj-Zastawny (ed.), *Obrządek pogrzebowy kultur pochodzenia naddunajskiego w neolicie Polski południowo-wschodniej (5600/5500-2900 BC) / The funerary rite of the Danubian cultures in the Neolithic of south-eastern Poland (5600/5500-2900 BC)*. Kraków: Polska Akademia Nauk Instytut Archeologii i Etnologii, 53-65.
- Kadrow S. 2023. Radiocarbon Chronology of the post-LBK Malice Culture in Lesser Poland. *Sprawozdania Archeologiczne* 75/2, 49-61.
- Kadrow S. and Zakościelna A. 2000. An Outline of the Evolution of Danubian Cultures in Małopolska and Western Ukraine. In A. Koško (ed.) *The western Border Area of the Tripolye Culture* (= *Baltic-Pontic Studies* 9). Poznań: Adam Mickiewicz University, Institute of Eastern Studies, Institute of Prehistory, 187-255
- Kadrow S. and Zakościelna A. 2009. Świerszczów Kolonia, stan. 28. In A. Czekaj-Zastawny (ed.), *Obrządek pogrzebowy kultur pochodzenia naddunajskiego w neolicie Polski południowo-wschodniej (5600/5500 – 2900 BC) / The funerary rite of the Danubian cultures in the Neolithic of southeastern Poland (5600/5500 – 2900 BC)*. Kraków: Polska Akademia Nauk Instytut Archeologii i Etnologii, 224-225.
- Keeley L. 1980. *Experimental Determination of Stone Tool Uses: A microwear Analysis* (= *Prehistoric Archeology and Ecology series*). Chicago: University of Chicago Press.
- Korobkova G. F. 1999. *Narzędzia w pradziejach. Podstawy badania funkcji metodą traseologiczną*. Toruń: Wydawnictwo Uniwersytetu Mikołaja Kopernika.
- Kościuk J. 2017. Użytkowe znaczenie ochry w społecznościach z okresu kultur Natufijskiej oraz PPNA na terenach bliskowschodnich. *Acta Archaeologica Lodziensia* 63, 79-84.
- Légrand A. 2007. *Fabrication et utilisation de l'outillage en matières osseuses du Néolithique de Chypre: Khirokittia et Cap Andreas-Kastros* (= *BAR International Series* 1678). Oxford: Archaeopress.
- Lisowski M., Pyżewicz K. and Frankiewicz M. 2015. Analiza funkcjonalno-technologiczna artefaktów wykonanych z kości, poroża i zębów. In A. Marciniak, I. Sobkowiak-Tabaka, M. Bartkowiak and M. Lisowski (eds), *Kopydłowo, stanowisko 6. Osady neolityczne z pogranicza Kujaw i Wielkopolski* (= *Ocalone Dziedzictwo Archeologiczne* 6). Poznań, Pętkowice: Wydawnictwo i Pracownia Archeologiczna Profil-Archeo Magdalena Dziegielewska, 245-264.
- Lisowski M., Pyżewicz K. and Frankiewicz M. 2017. Multi-Aspect Analysis of Neolithic Bone Tools

from Kopydłowo, Site 6, Poland. *Cuadernos de Prehistoria y Arqueología de la Universidad De Granada* 27, 245-267.

- Makowiecki D. 2010. *Wczesnośredniowieczna gospodarka zwierzętami i socjotopografia in Culmine na Pomorzu Nadwiślańskim. Studium archeozoologiczne (= Mons Sancti Laurentii 6)*. Toruń: Wydawnictwo Naukowe Uniwersytetu Mikołaja Kopernika
- Małecka-Kukawka J. 1999. Sierpy, sierpaki, sierpce... – analiza funkcjonalna wczesnorolniczych wkładek żniwnych z ziemi chełmińskiej. In S. Kukawka (ed.), *Szkice Prahistoryczne. Źródła – metody – interpretacje*. Toruń: Wydawnictwo Naukowe Uniwersytetu Mikołaja Kopernika, 139-157.
- Małecka-Kukawka J. 2001. *Między formą a funkcją. Traseologia neolitycznych zabytków krzemienych z ziemi chełmińskiej*. Toruń: Wydawnictwo Uniwersytetu Mikołaja Kopernika.
- Małecka-Kukawka J. 2005. Z historii badań traseologicznych w polskiej archeologii epoki kamienia. *Folia Praeistorica Posnaniensia* 13/14, 59-70.
- Małecka-Kukawka J. 2017. *Traseologia w studiach nad pradziejowym krzemieniarstwem*. Toruń: Wydawnictwo Naukowe Uniwersytetu Mikołaja Kopernika.
- Mandl I. 1961. Collagenases and elastases. *Advances in Enzymology* 23, 164-264.
- Nevizánsky G. 1984. Sozialökonomische Verhältnisse in der Polgár-Kultur Aufgrund der Gräberfelderanalyse. *Slovenská Archeológia* 32/2, 263-310.
- Osipowicz G. 2010. *Narzędzia krzemienne w epoce kamienia na ziemi chełmińskiej. Studium traseologiczne*. Toruń: Wydawnictwo Naukowe Uniwersytetu Mikołaja Kopernika.
- Osipowicz G. 2022. Wyniki analizy traseologicznej wytworów krzemienych kultury ceramiki sznurowej ze stanowisk kurhanowych zlokalizowanych na Grzędzie Sokalskiej i Roztoczu. In: A. Szczepanek, P. Jarosz, J. Libera and P. Włodarczak (eds), *Spoleczności schyłkowego eneolitu w południowo-wschodniej Polsce w świetle badań archeologicznych i analiz interdyscyplinarnych*. Pętkowice, Kraków: Wydawnictwo i Pracownia Archeologiczna Profil-Archeo Magdalena Dziegielewska, 213-262.
- Osipowicz G., Pomianowska H. and Makowiecki D. 2014. Wytwory krzemienne, kamienne, z kości, poroża i zębów zwierzęcych. In G. Osipowicz (ed.), *Kowal 14: Miejsce sepulkralno-obrzędowe ludności kultury amfor kulistych / Kowal 14: Sepulchral and Ritual place of people Representing the Globular Amphora Culture*. Toruń: Wydawnictwo Naukowe Uniwersytetu Mikołaja Kopernika, 91-117.
- Osipowicz G., Kalinowska M., Weckwerth P. and Jankowski M. 2015. Osada kultury ceramiki wstęgowej rytej ze stanowiska Trzciano 40, gm. Wąbrzeźno. *Fontes Archaeologici Posnanienses* 51, 201-243.
- Osipowicz G., Piličiauskas G., Piličiauskienė G. and Bosiak M. 2019. Seal scrapers from Šventoji: in search of their possible function. *Journal of Archaeological Science: Reports* 27, 1-12.
- Osipowicz G., Piličiauskienė G., Orłowska J. and Piličiauskas G. 2020. An occasional ornament, part of clothes or just a gift for ancestors? The results of traceological studies of teeth pendants from the Subneolithic sites in Dventoji, Lithuania. *Journal of Archaeological Science: Reports* 29, 1-14.
- Rašková Zelinová M. 2011. Spatula-Like Tools: Hide Processing in the Pavlovian. In J. Svoboda (ed.), *Pavlov excavations 2007-2011 (= Dolnověstonické studie 18)*. Brno: Academy of Sciences of the Czech Republic, Institute of Archaeology at Brno, 180-199.
- Rifkin R. F. 2011. Assessing the efficacy of red ochre as a prehistoric hide tanning ingredient. *Journal of African Archaeology* 9/2, 131-158.

- Richter M. and Dettloff D. 1995. Experiments in hide rain-tanning with a comparative analysis of stone and bone tools, 301-317. https://www.uwlax.edu/globalassets/offices-services/urc/jur-online/pdf/2002/richter_and_dettloff.pdf
- Sidera I. 1993. *Les assemblages osseux en bassins parisien et rhéinan du VIe au IVe millénaire B.C. Histoire, techno-économie et culture*. Thesis for: PhD. Paris: Université de Paris I.
- Solecki R. S., Solecki R. L. and Agelarakis A. P. 2004. *The proto-neolithic cemetery in Shanidar Cave*. College Station: Texas A & M University Anthropology Series.
- Szmyt M. 1996. *Spółeczności kultury amfor kulistych na Kujawach*. Poznań: Uniwersytet im. Adama Mickiewicza w Poznaniu.
- Todorova H. 2002. Grandeln, Hirschgeweih, Eberhauer aus den Gräberfeldern von Durankulak. In H. Todorova (ed.), *Durankulak, Band II. Die Prähistorischen Gräberfelder von Durankulak, Teil 1*. Sofia: Deutsches Archäologisches Institut, 177-186.
- Trąbska J., Winiarska-Kabacińska M. and Trybalska B. 2007. Experimental Skin Processing with Ferruginous Material. Macro- and Microproperties. Preliminary Results. *Analecta Archaeologica Ressoviensia* 2, 191-210.
- van Gijn A. L. 1989. The wear and tear of flint. Principles of functional analysis applied to Dutch Neolithic assemblages (= *Analecta Praehistorica Leidensia* 22). Leiden: Universiteit Leiden.
- Vaughan P. C. 1985. *Use-wear analysis of flaked stone tools*. Tucson: University of Arizona Press.
- Wadley L. 2005. Putting ochre to the test: replication studies of adhesives that may have been used for hafting tools in the Middle Stone Age. *Journal of Human Evolution* 49, 587-601.
- Wiślański T. 1966. *Kultura amfor kulistych w Polsce północno-zachodniej*. Wrocław: Zakład Narodowy imienia Ossolińskich, Wydawnictwo Polskiej Akademii Nauk.
- Włodarczak P. 2017. Datowanie bezwzględne faz osadniczych ze stanowiska Wzgórze Zawichojskie w Sandomierzu. In H. Kowalewska-Marszałek (ed.), *Sandomierz – Wzgórze Zawichojskie – Neolityczna osada obronna. Badania 1981-1989. Część 1. Studia i Materiały*. Warszawa: Instytut Archeologii i Etnologii PAN, 91-103.
- Zakościelna A. 1981. Materiały krzemienne tzw. kultur południowych z Lubelszczyzny. *Annales Universitatis Mariae Curie-Skłodowska* sec. F, 35/36, 3-23.
- Zakościelna A. 1988. Wielokulturowe stan. 28 w Świerszczowie Kolonii, gm. Hrubieszów. In J. Gurba (ed.), *Sprawozdania z badań terenowych Katedry Archeologii UMCS w 1988 roku*. Lublin: Uniwersytet Marii Curie-Skłodowskiej, Katedra Archeologii, 6-11.
- Zakościelna A. 1996. *Krzemieniarstwo kultury wołyńsko-lubelskiej ceramiki malowanej*. Lublin: Wydawnictwo Uniwersytetu Marii Curie-Skłodowskiej.
- Zakościelna A. and Gurba J. 1993. Obiekt mieszkalny z początków wczesnego średniowiecza na stanowisku 28 w Świerszczowie Kolonii, woj. zamojskie. *Archeoslavica* 2, 7-24.
- Zakościelna A. and Gurba J. 1997. Z problematyki kultury malickiej na Wyżynie Lubelsko-Wołyńskiej. *Archeologia Polski Środkowowschodniej* 2, 201-209.
- Zastawny A. 2022. New radiocarbon dates for the Malice culture in western Lesser Poland. In: M. Dębiec, J. Górski, J. Müller, M. Nowak, A. Pelisiak, T. Saile and P. Włodarczak (eds), *From Farmers to Heroes? Archaeological Studies in Honor of Sławomir Kadrow*. Bonn: Verlag Dr. Rudolf Habelt GmbH, 151-171.