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Deposit of bifacial flint sickles from a late Bronze Age settlement in Korczowa, SE Poland

1. Introduction

Crescent-shaped flint sickles, though excavated not infrequently in south-eastern Poland and western Ukraine, tend to be stray single finds, very rarely attested in compact assemblages. Deposits containing artefacts made from raw materials other than metal seldom become the object of archaeological research. This paper presents two flint tools recovered from a settlement in Korczowa, SE Poland. Because the tools have been found in one pit, we treat them as a deposit, defining the term as an assemblage of artefacts, made from metal or some other material, deposited intentionally in a particular place (cf. e.g. Blajer 2001, 16-17, n. 4-6).

Site 12 in Korczowa, Jarosław district, was explored in the years 2009-2010 as part of archaeological rescue excavations which preceded the construction of the A4 international motorway linking Jędrzychowice to Korczowa (at the Polish-Ukrainian border) and Lvov, within the Radymno-Korczowa section[1].

2. Sickles

Two crescent-shaped flint sickles with well-defined bases, types BAII (fig. 1:1) and BAIII (fig. 1:2) in J. Libera's classification (2001, 54; fig. 20), have been recovered from Feature 1133, containing no other artefacts. The tools (124 × 29 × 8 mm and 142 × 29 × 13 mm, respectively), made from long Volhynian flint blades, have one convex and one concave more or less serrated edges, and both their surfaces are carefully worked with bifacial retouch. Morphologically, they are reminiscent of forms known

[1] The excavations were part of an assignment carried out by the Narnia-Arche-Archgeo consortium. We want to express our gratitude to Teresa Dąbrowa, who has made the artefacts available to us for publication.

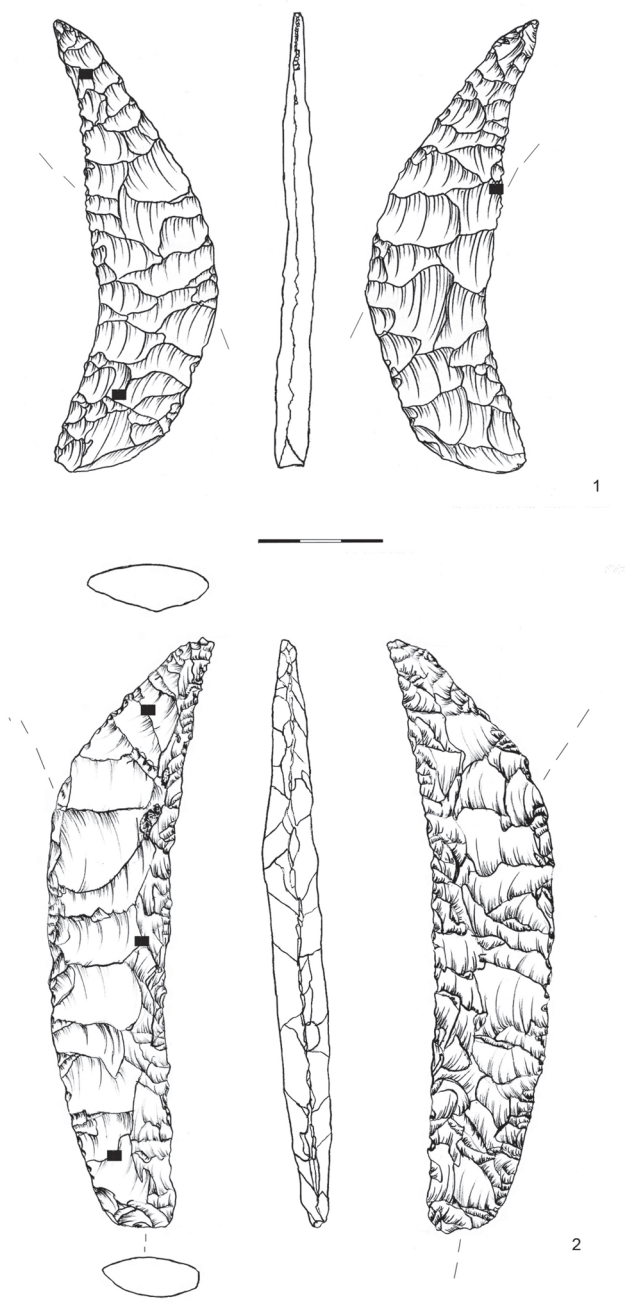

Fig. 1. Flint sickles recovered from Feature 1133, Site 12 in Korczowa, Jarosław district: 1 – Tool 1; 2 – Tool 2. Dotted lines indicate the area of gloss, black rectangles – places photographed under a microscope (drawing by K. Piątkowska, A. Olszewski, B. Kufel-Diakowska)

from inventories of the Trzciniec and the Lusatian cultures (Libera 2001, 98). Bifacial flint sickles have wide chronology, ranging from the Late Neolithic in the area between southern Scandinavia and Ukraine to the early Iron Age in present-day Holland (Gijn 2010).

3. Function

The function of the two flint sickles has been determined through microscopic examination of their use wear, employing the Olympus SZX9 stereo microscope (up to 114×) and the Nikon Eclipse LV100 metallographic microscope (50-500×)[2].

The artefacts from Korczowa have similar wear traces. Their concave edges and ridges of the bifacial retouch on both their surfaces close to the tips have become distinctly rounded during work. Gloss has formed wide strips along their convex sides, around the working edges and, with varying intensity, on the ridges between the negatives on the surface. The uppermost part of Tool 1 is entirely "surrounded" with gloss; on Tool 2, this is less noticeable. Within the polished surface, scars cross the polish, exposing surface without lustre. Their arrangement is sometimes random, but mostly parallel to the cutting edges (fig. 2-3, Tool 1; fig. 4-5, Tool 2). The features and location of the glosses and the rounding of the edges show quite clearly that the tools were used as sickles for harvesting cereals. Admittedly, scars without lustre may also occur in tools used for cutting sods (Gijn 1988, tab. 2:f), but in the finds from Korczowa they are less dense and run parallel to the cutting edge; moreover, there is no invasive functional retouch, and the gloss does not cover the entire surface of the artefacts. The presence of linear damage can also be related to the method of reaping; in the case of the two sickles, reapers presumably moved the tools toward themselves and cut stalks close to the ground, so that the sickles came into contact with mineral components of the soil (Ibáñez et al. 2008).

The flint sickles from Korczowa bear very intensive wear traces, which in Tool 2 are discernible also as a narrow strip at the very edge of the opposite side. Both artefacts are agricultural tools which must have been used for a long time before being deposited in the pit. Despite numerous experiments, the length of their lifecycle would be difficult to establish, mainly because gloss resulting from plant processing tends to intensify very quickly, after several hours (e.g. Gijn 1988, tab. 2:b), and working edges thicken noticeably after a dozen hours or so (Goodale et al. 2010). Besides, bifacial forms rank among curated tools,

[2] The analysis was carried out in the Laboratory for Archaeological Conservation and Archaeometry at the Institute of Archaeology, University of Wroclaw.

Fig. 2. Microtraces of use, Tool 1 (photo by B. Kufel-Diakowska)

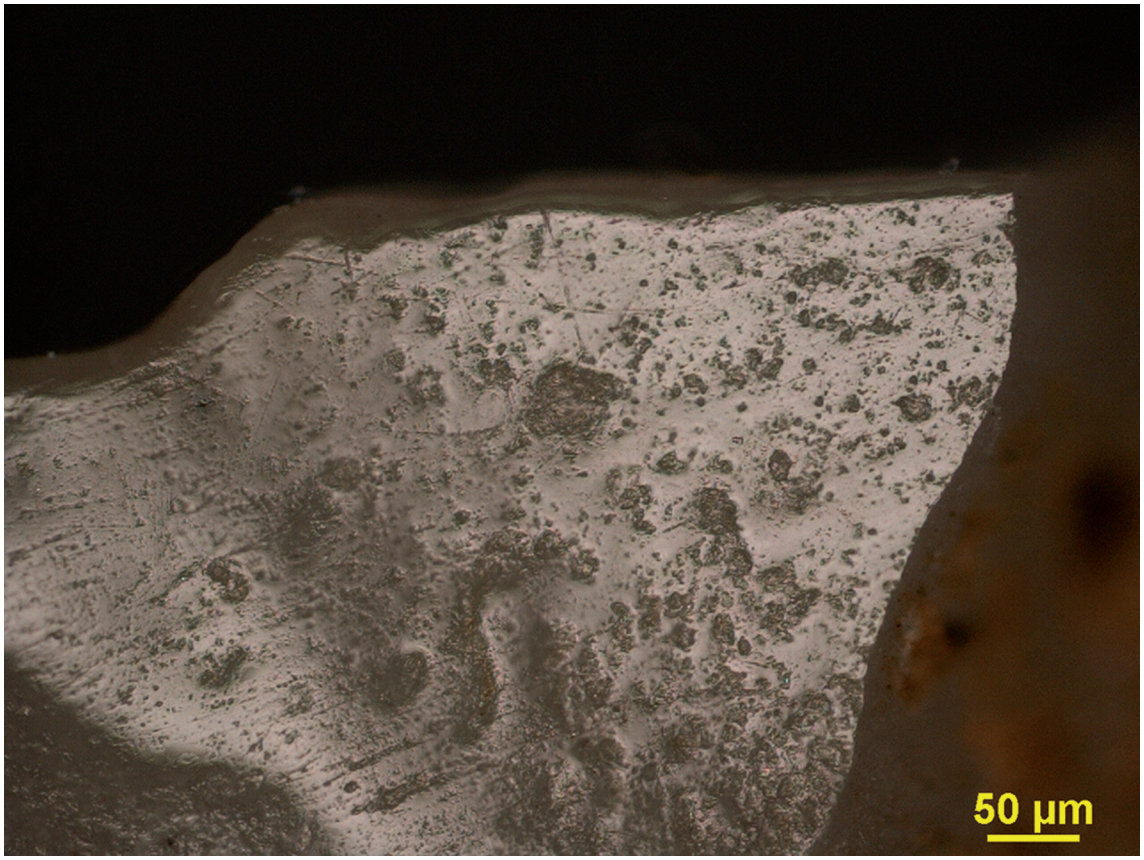

Fig. 3. Microtraces of use, Tool 1 (photo by B. Kufel-Diakowska)

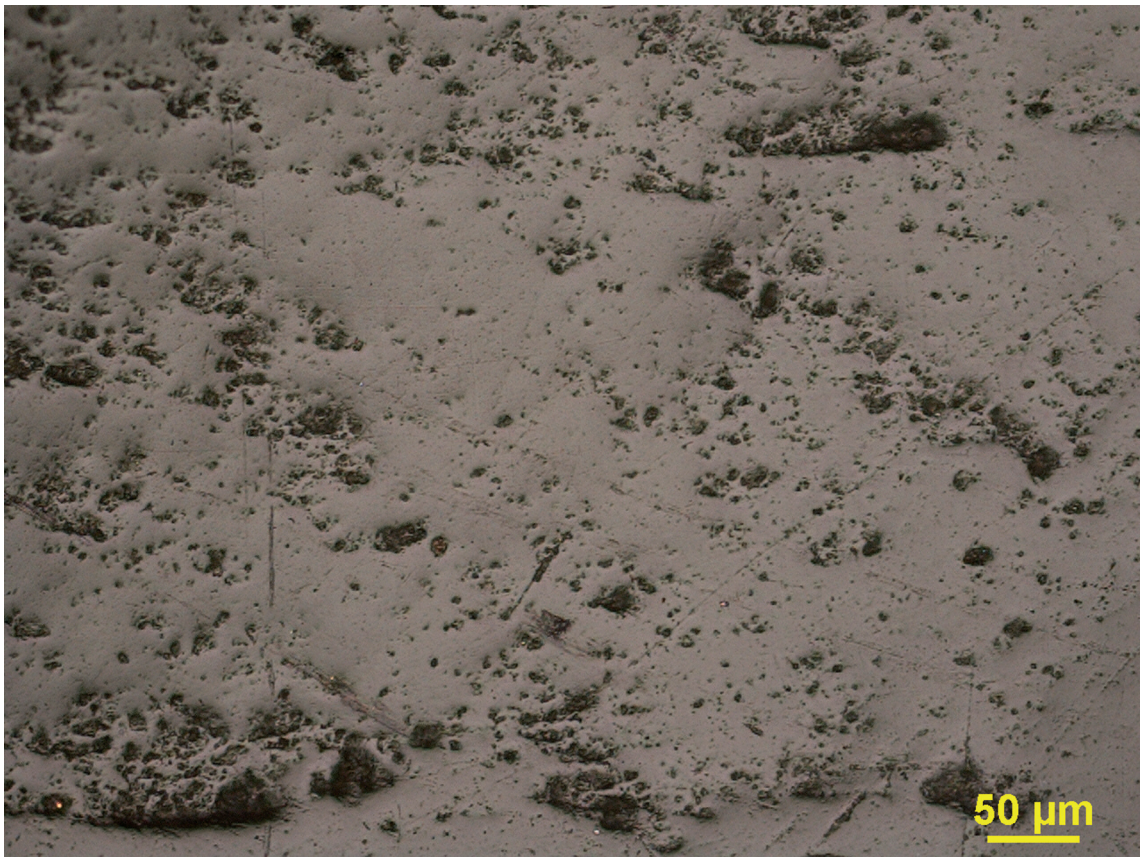

Fig. 4. Microtraces of use, Tool 2 (photo by B. Kufel-Diakowska)

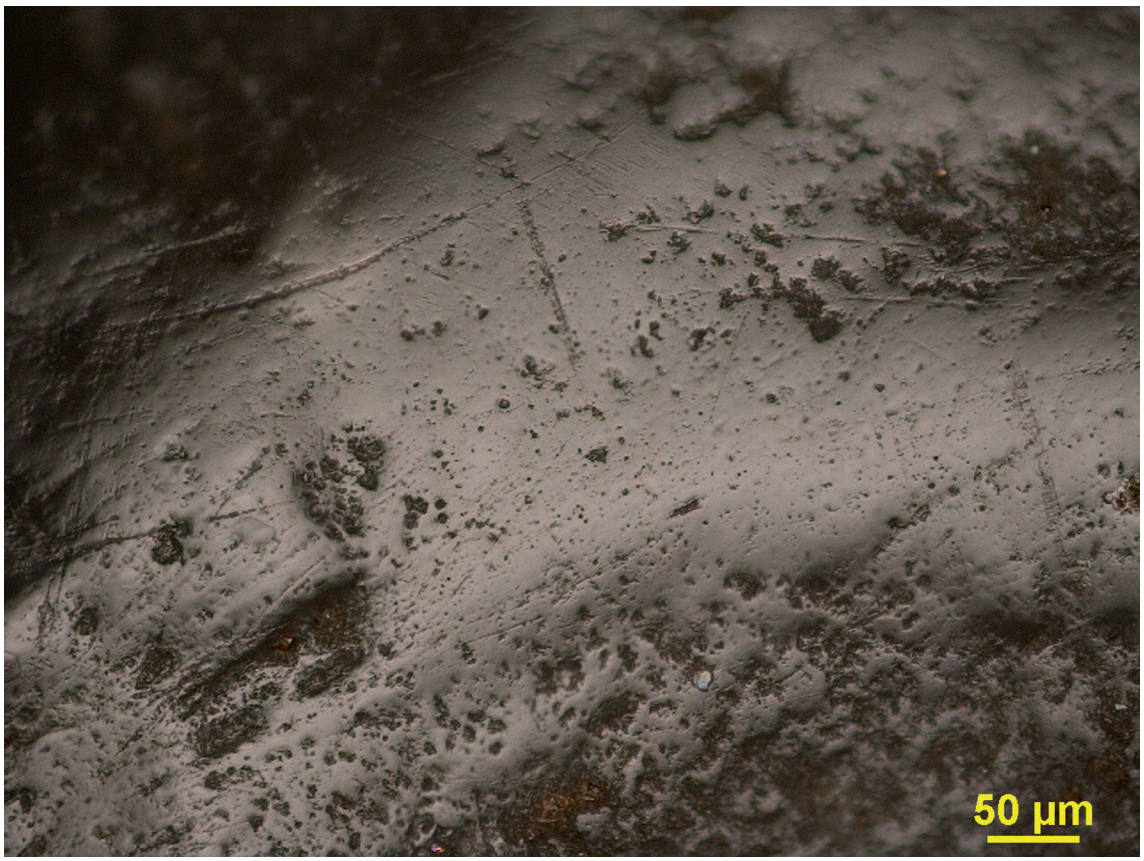

Fig. 5. Microtraces of use, Tool 2 (photo by B. Kufel-Diakowska)

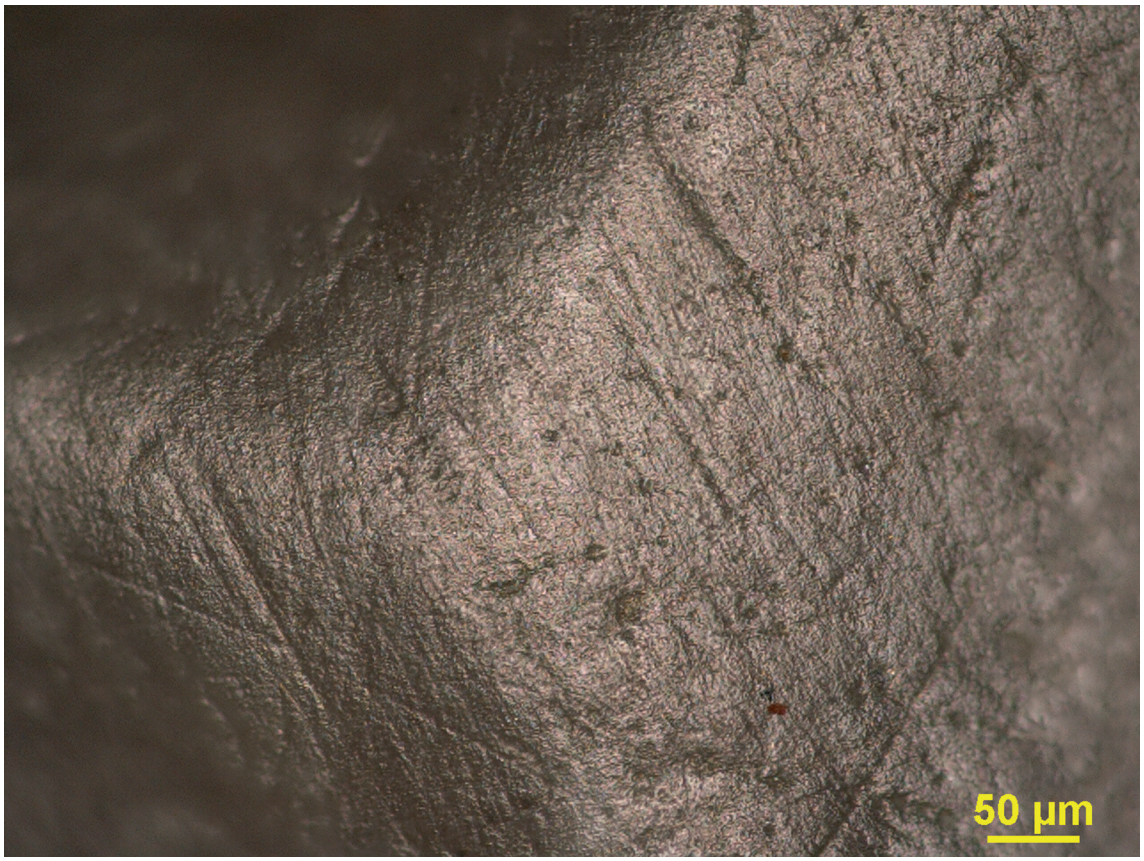

Fig. 6. Microtraces of hafting, Tool 2 (photo by B. Kufel-Diakowska)

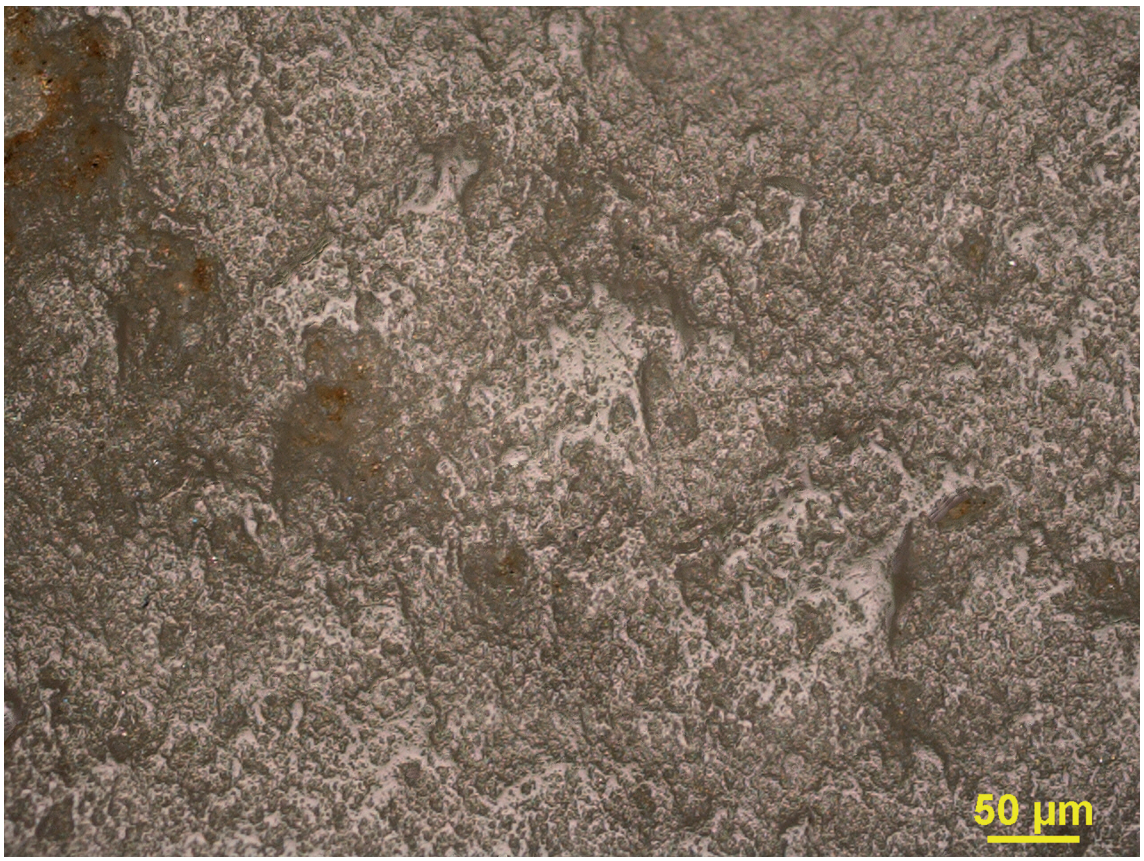

Fig. 7. Microtraces of hafting, Tool 1 (photo by B. Kufel-Diakowska)

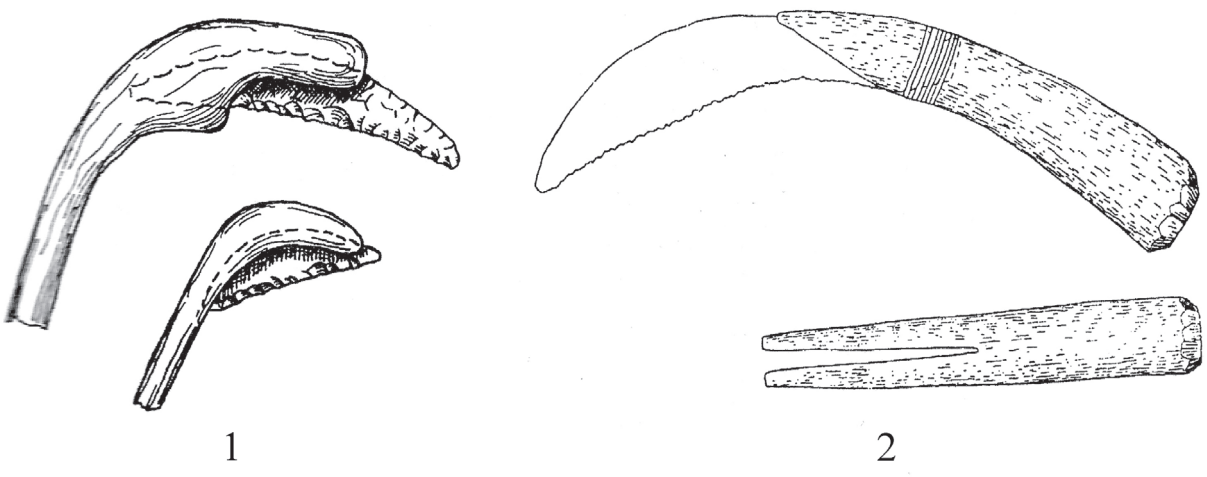

Fig. 8. Reconstruction of hafts of flint sickles: 1 – by G. Behm-Blancke; 2 – by S.S. Berezanska and O.V. Suchobokov (after Libera 2001, fig. 31)

resharpened repeatedly after becoming blunt, since they were meant for long use. Accordingly, the concave edge of Tool 2 shows large negatives that are due to repair of the blade and bear only slight polish. Resharpening of the cutting edge narrowed the top part of the tool.

The wear marks caused by reaping, especially their location, intensity and the distinct boundary between gloss and surface without gloss (fig. 6-7), have helped to reconstruct the kind of hafting that was used, or at least the method of mounting the sickles in their hafts.

The polish has formed along the entire concave edges of the artefacts; on their faces and convex sides, it has covered either a half (Tool 1) or only small sections close to the tips (Tool 2), i.e. from 1/3 to 1/2 of the whole surface of the tools. On the bases, areas without the wear gloss bear other marks, resulting from interaction with the hafts. On Tool 2, there is a dull surface with very numerous scars running parallel to the longer sides (fig. 6). The sickle was evidently placed laterally in the haft (fig. 8:1). On Tool 1, there are patches of light gloss caused presumably by plants getting between the sickle and the haft during work (Tool 1: fig. 7). Only the base of the tool seems to have been hafted, while both edges of the flint blade remained available for use (fig. 8:2). Methods of mounting sickles on wooden handles have been reconstructed by S. N. Bibikov for crescent-shaped Volhynian flint sickles from present-day Ukraine, dated at the Eneolithic to the early Iron Ages (Bibikov 1962; Balcer, Schild 1978, fig 3), by G. Behm-Blancke and by S. S. Berezanska and O. V. Suchobokov (after Libera 2001, fig. 31). Depending on functions ascribed to the artefacts, further reconstructions have been proposed (Semenov 1964, fig. 56:2; Bąbel, Budziszowski 1978, fig. 8; Gijn 1988, Plate 1, fig. 3). No hafted crescent-shaped flint sickles have been excavated in Europe to date.

4. Discussion

Tools of that type have been variously interpreted, depending on the accepted criteria. Despite the widespread contemporary use of microscopic methods for determining the functions of artefacts, researchers still prefer to make intuitive appraisals based on morphology and intense gloss discernible macroscopically on the majority of the tools. Consequently, similar artefacts are usually considered as sickles used for harvesting cereals or mowing grass. Microscopic examination of bifacial forms, carried out rather infrequently to date, has confirmed this traditional view (cf. Balcer, Schild 1978). However, progress in research into functions has resulted in other opinions on the ways the tools were employed, e.g. as coulters (Bruyn 1984), tools for cutting sods or reeds (Gijn 1988; 2010, 72), or multifunctional knives for processing plant or animal raw material (Bąbel, Budziszewski 1978). These opinions have been verified experimentally in the last twenty years, and a number of models of use wear have been proposed for comparison (Gijn 1988; Juel Jensen 1994; Korobkova 1999, 126-138), so that interpretations based on cultural damage have now become more reliable.

Analyses of microtraces have helped to establish that the tools served originally as hafted sickles for harvesting grain and that they were intensively used and resharpened.

Crescent-shaped flint sickles, though not infrequent in south-eastern Poland and western Ukraine, tend to be stray single finds, very rarely recovered from compact assemblages (cf. Libera 2001, 92). This is largely due to the fact that the tools were lost in the places where they were used, outside settlements (Gijn 2010, 193). Deposits of flint tools were, until recently, linked mainly to the younger phases of the Stone Age and rather ignored in publications on the later periods (Sommerfield 1994, 200). The data concerning the archaeological context of the two artefacts from Korczowa are, therefore, the more valuable. Both tools come from the fill of one of the pits remaining of a vast open settlement. Their formal traits suggest that the feature should be dated at the late Bronze Age and J. Libera (2001, 98) rules out earlier chronology.

Similar deposits of bifacial forms, containing up to several dozen artefacts (with marked use wear or traces of repair) are known from the Lublin region and Volhynia (Libera 2001, 62-63). Their context of discovery is likewise notable, e.g. in the case of eight or more crescent-shaped flint sickles found together in a rectangular feature, 3 × 1.1 m, in Parczew and being, like the tools from Korczowa, the only movable artefacts recovered from the pit (Libera 2001, 63, n. 49).

Annelou van Gijn (2010, 193) quotes examples of collective finds of sickles in present-day Holland. The best known deposit from Heiloo consisted of one bronze sickle and four flint sickles; their vertical position in the pit indicated that they had originally been stuck in the ground, which means that they were not a mere store of ready tools. The Heiloo find is interesting also because it contained flint tools deposited together with a metal tool. It seems, therefore, to have been a hoard not so much of a valuable material as of a chosen type of artefacts irrespective of what they were made of. Assuming that the sickles were intended for work in the fields, their presence in the settlement may suggest that the context of their use differed from the context of their deposition (for tool deposits, see Bradley 2005, 110; Fontijn 2002, 215). Of course, differences between the two contexts have been attested for the majority of "hoards" of artefacts made of diverse raw materials and dated at various periods (e.g. deposits of weapons in water).

Intentionally deposited tools which, despite their wear traces, were still fit for use, seem to have constituted assemblages of high value. In A. van Gijn's view (2010, 213), a large number of sickles placed in a single feature, e.g. in the assemblage from Trendelbusch, Germany, containing forty-five sickles and an end-scraper, and so their considerable weight, may indicate that the tools were objects of exchange, mass-produced and often transported over long distances (Gijn 2010, 213). With smaller assemblages, we can assume that motives for their deposition varied from temporary storage to intentional ritualized burial of used artefacts (for "miners' hoards", see Bradley 2005, 104). It seems that a similar situation occurred in Korczowa, where the flint sickles, much used but still suitable for reaping, were brought to the settlement and there buried or thrown into one of the pits.

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