SCAPULAR ARTEFACTS WITH SERRATED EDGES FROM LATE BRONZE AGE FORTIFIED SETTLEMENTS IN ESTONIA

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Abstract

This study focuses on artefacts with serrated edges made of scapulae occurring in assemblages from Late Bronze Age fortified settlements in Estonia. They have usually been interpreted in Estonia as flax-working tools; but recently some doubts have been raised about this use. The article gives an overview of these finds both in Estonia and elsewhere, and discusses possible areas of their use.

Key words: Estonia, Late Bronze Age, fortified settlements, tools made of scapulae.

Introduction

Find assemblages from Late Bronze Age Estonian fortified settlements contain a small amount of artefacts with serrated edges made of scapulae. Since the 1930s, these artefacts have been interpreted as flax-working tools; however, some doubts have recently been raised about this function. One possible alternative explanation is that they might have been used as sickles for grain harvesting (Kriiska *et al.* 2005; Lang 2007). The idea has not been developed further, however. This article discusses the probable areas of use of these and similar artefacts elsewhere, and, particularly, whether they could have been used for reaping. Tools used either for flax-working or grain harvesting contribute to the further study of the development of subsistence farming in the eastern Baltic region, a topic that has also been a research area of Algirdas Girininkas (Girininkas 1990, p.43ff; 2004; Daugnora, Girininkas 1996; 1998).

The idea for writing this article came from two angles. One of the authors, Valter Lang, has been interested in the artefacts in question from the point of view of the history of farming economy (Lang 2007, pp.108ff, 111ff). Heidi Luik has dealt with these finds in the framework of a grant from the Estonian Science Foundation, which funds the study of bone artefacts in archaeological finds from Bronze Age fortified settlements in the Baltic countries (Luik forthcoming).

The distribution of scapular artefacts in Estonia and beyond

In the Baltic countries, scapular artefacts with serrated edges occur mostly in fortified settlements on the island of Saaremaa in Estonia (Fig. 1). Such artefacts did not occur among the find collections of Lithuanian and Latvian sites, which were inventoried in the framework of the above-mentioned grant project. As for Lithuania, similar items were not discovered even among other published materials. In Latvia, there still are some fragments, one from Ķivutkalns and the other from Klaņģukalns (Graudonis 1989, Plates XXVI.3, XXXI.2), which most likely originate from similar tools. Can we explain the absence of scapular artefacts with serrated edges in fortified settlements in eastern Lithuania and the Daugava basin by the smaller role of agriculture? Or are there some other reasons, which can be explained by different natural conditions, cultural traditions and contacts?

Fig. 1. Sites in Estonia and Latvia where bone artefacts with serrated edges are found (by K. Siitan and H. Luik).

In Estonia, most artefacts with serrated edges come from Asva. According to Vello Lõugas (1970, p.110), their number was 11; but a more thorough inventory of bone assemblages from Asva added two more fragmentary specimens, thus we can list 13 artefacts altogether, which are mostly broken (Figs. 2-4). The excavations at Ridala have yielded three such tools, and another one has been reported from Kaali (Fig. 5.5,1-3,5). There is also a small piece of an artefact with a serrated edge that was found at Iru, and which is regarded as belonging to the group (Fig. 5.4; Vassar 1939, Fig. 46:3; Lõugas 1970, p.110). This artefact, however, was not made from a scapula,[1] and due to its fragmentation we cannot be certain about its original shape. In addition, two scapulae with traces of processing were discovered at Asva, which in all likelihood were intended to be tools with serrated edges (Fig. 6). The artefact published by Indreko (1939, p.27, Fig. 8) was supposedly made from the scapula of an elk; the rest of the finds in Estonia were made from the scapulae of elk or of cattle, as determined by the archaeozoologist Liina Maldre. By comparison, corresponding tools found at Falkenwalde in Germany were made of horse scapulae (Wetzel 2005, p.80), and the majority of those found at Lohberg were made of cattle scapulae (Feustel 1980, p.9).

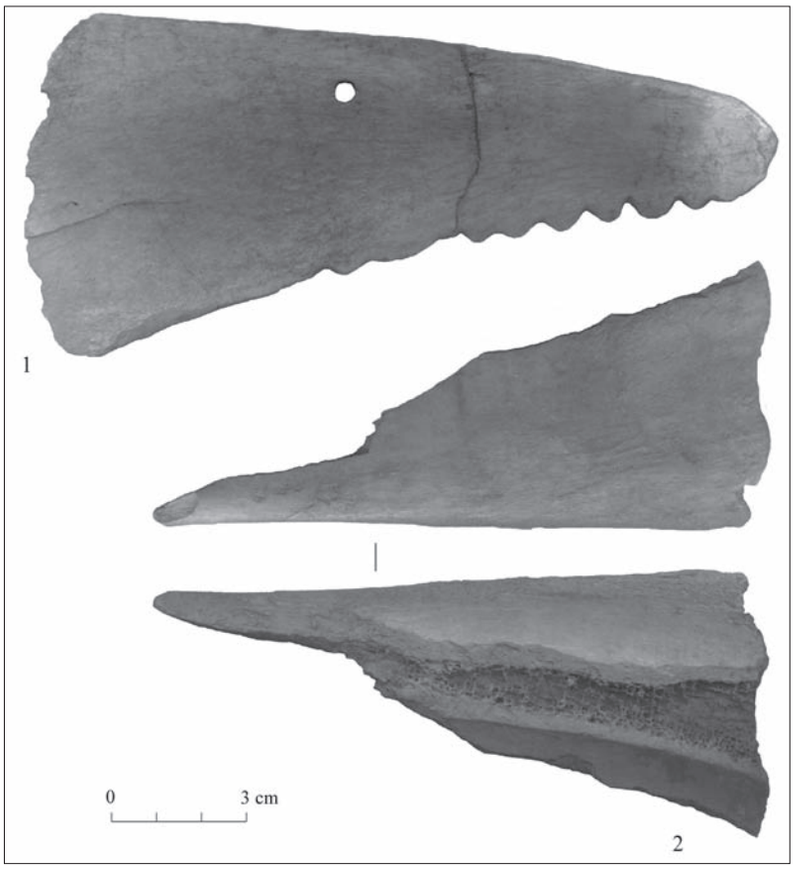

Fig. 2. Scapular tools from Asva, found during excavations conducted by Richard Indreko (AI 3307: 291; 3799: 307) (photograph by H. Luik).

The scapular tools have one straight and even edge, while the other edge has been made sawlike (Figs. 2-5). The serrated edge could be worn and become wavy. On one side of the tool, where the spine of the scapula (*spina scapulae*) has been cut off, we can see porous bone tissue (Figs. 2; 3). The cervical margin (*margo cervicalis*) of the scapula is usually chosen for the back of the tool, at least in Estonia (Fig. 7); elsewhere, the thoracic margin (*margo thoracicus*) is also sometimes used as the back of the tool (cf Lehmann 1931, Fig. 1.10; Feustel 1980, Fig. 1). Some artefacts are rather wide, while others are narrow; the more intact specimens may reach 16.5 to 18.5 centimetres in length and 7.7 centimetres in width. There is usually one hole in the back of the tool, but sometimes there can be two or even three holes.

[1] Determined by Liina Maldre.

Similar scapular artefacts with serrated edges are known from Germany, Denmark, Poland, the Czech Republic, Slovakia, and even southern Siberia. They mostly belong to the Neolithic, though some Bronze and Early Iron Age contexts have also been reported (Lehmann 1931; Griaznov 1956, Plate XV.40-44; Hásek 1966; Feustel 1980; Bąk 1985, Fig. 2: 1-11; Furmanek *et al.* 1991, Fig. 39:19,20; Northe 2001; Wetzel 2005, p.80, Fig. 4). In Central Europe, such artefacts have also been found in some fortified settlements of Lusatian culture (Hásek 1966, pp.250, 257, 258, Plates I: 5, X: 1, 5, 6; Hensel 1980, Fig. 207).

Flax combs and swingles?

Richard Indreko (1939, p.27ff, Fig. 8) was the first person in Estonia to briefly analyse the artefacts with serrated edges, of which only two were known at the time. Following Ernst Lehmann (1931, p.42), he supposed that the Asva artefacts were used in flax processing. He interpreted the intact specimen with a serrated edge as a flax comb. The other artefact without a serrated edge he labelled as a swingle (a so-called flax sword). Later researchers who studied the site at Asva (Vassar

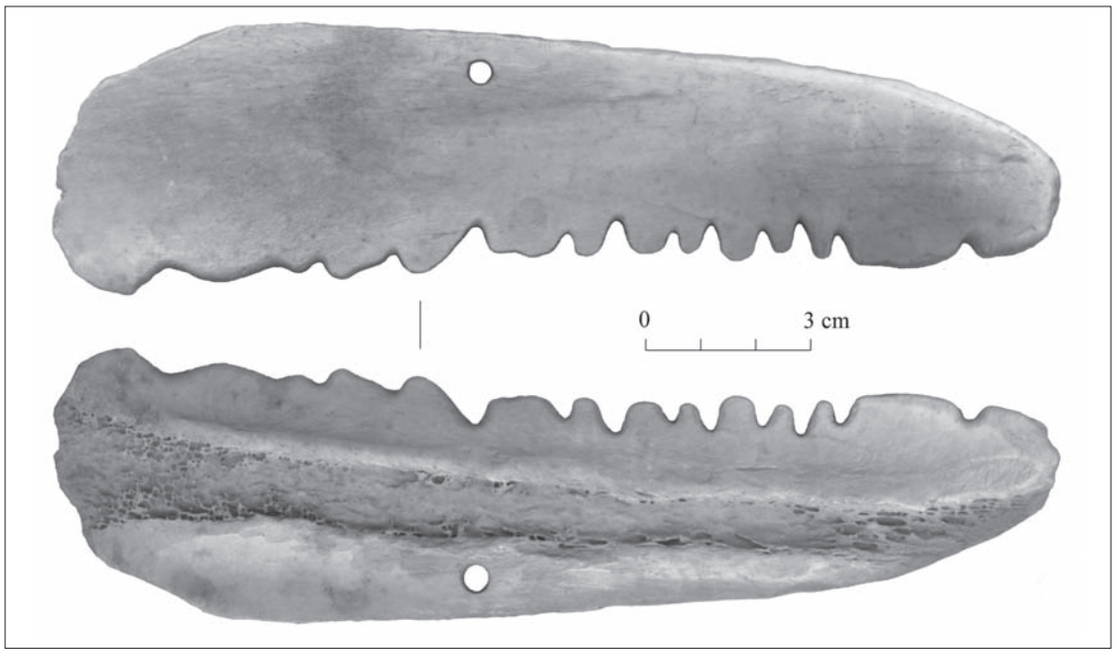

Fig. 3. A scapular tool from Asva: the side of the tool, where the spine of the scapula has been cut off, reveals porous bone tissue (AI 4012: 94) (photograph by H. Luik).

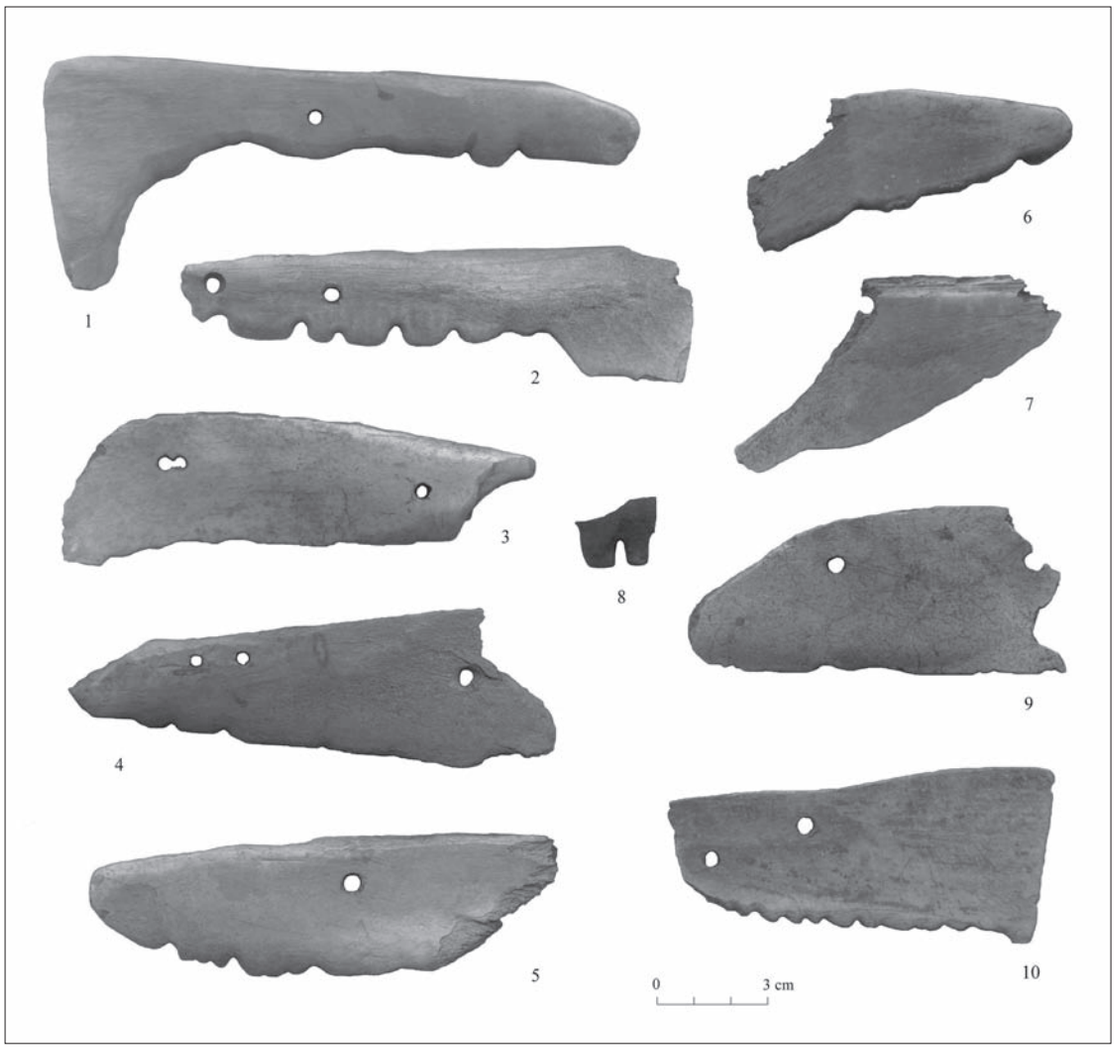

Fig. 4. Scapular tools from Asva (AI 4366: 689, 1391, 1608, 840, 709; 4012: 103; 4366: 1944, 508, 517; 3994: 1599) (photograph by H. Luik).

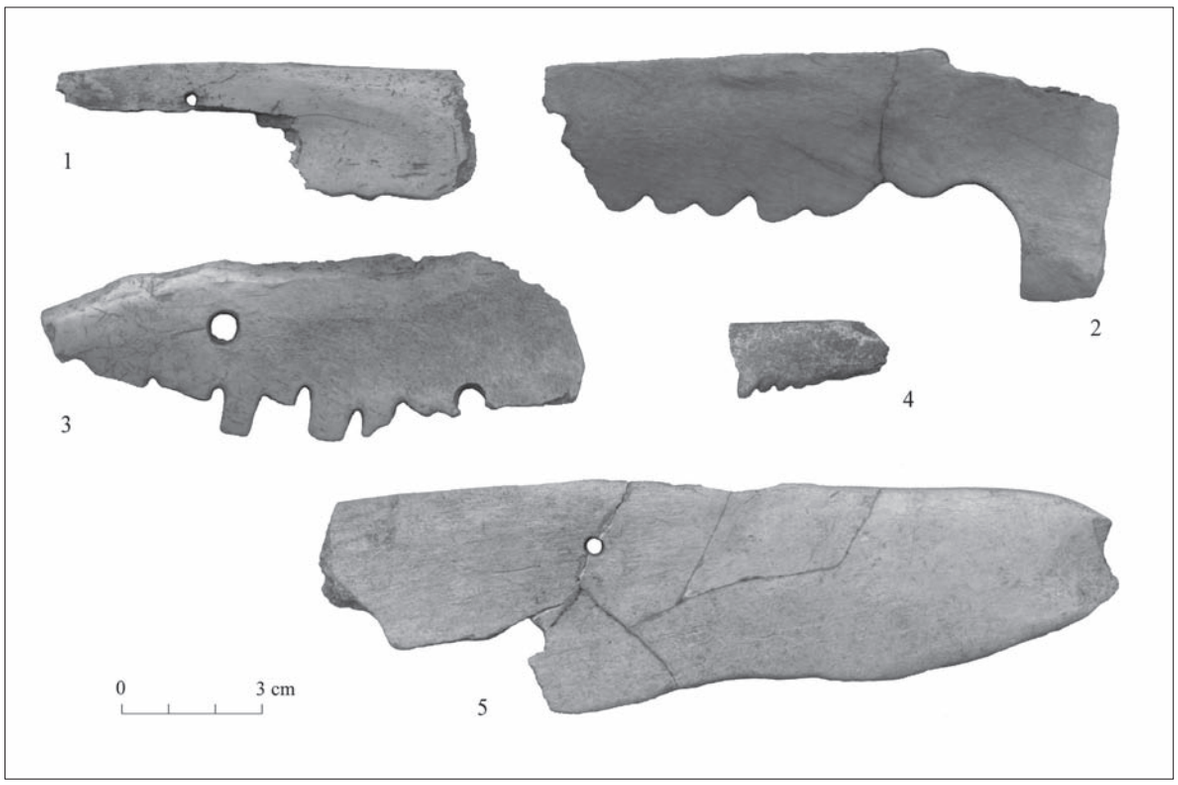

Fig. 5. Bone artefacts from Ridala (1-3), Iru (4), and Kaali (5) (AI 4261: 57, 473, 184; 3428: 1274; 4900: 22) (photograph by H. Luik).

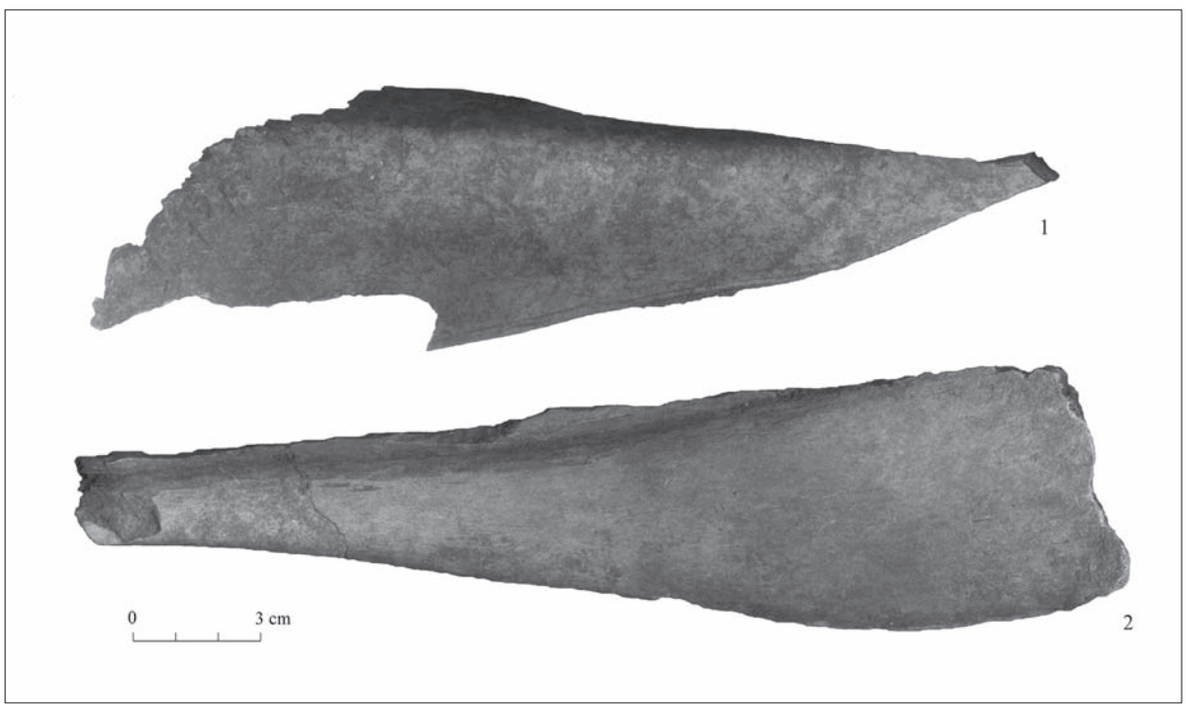

Fig. 6. Scapulae with working traces from Asva (AI 3658: 608; 3799: 239) (photograph by H. Luik).

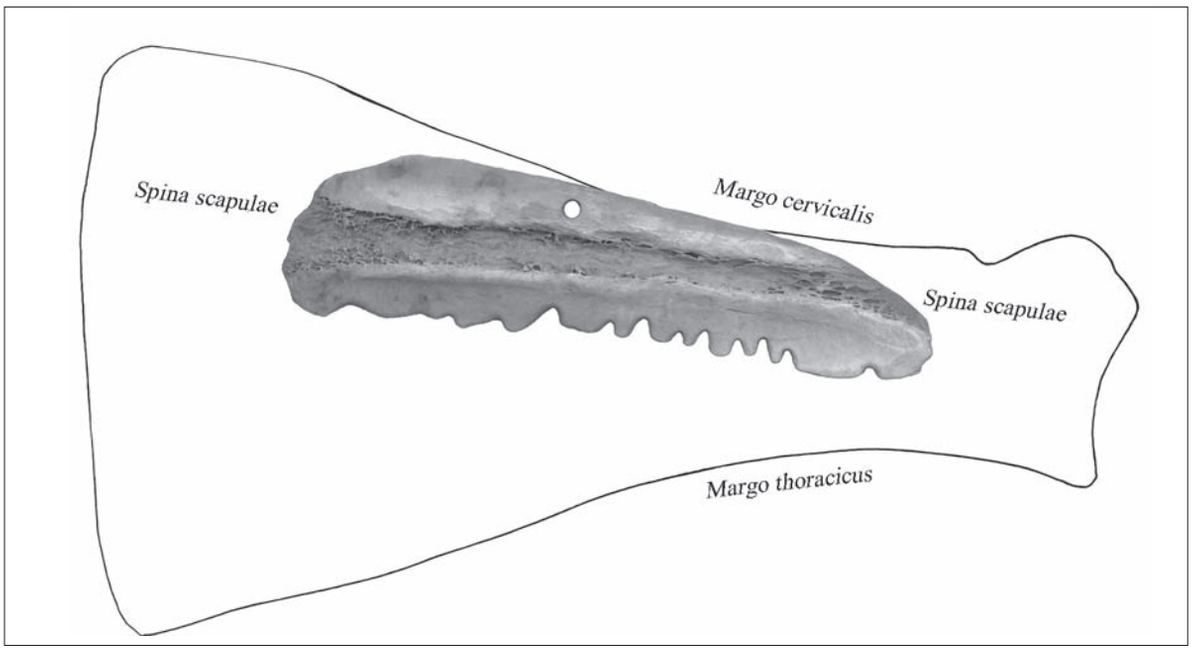

Fig. 7. The cervical margin (*margo cervicalis*) of a scapula is usually used as the back of a tool (AI 4012: 94) (photograph and drawing by H. Luik).

1955; Lõugas 1970; Jaanits *et al.* 1982) accepted these interpretations, and similarly grouped the scapular artefacts into two: serrated flax combs, and swingles with a straight edge. However, Uwe Sperling (2006, p.110) has recently questioned this interpretation, by claiming that wood is a much more suitable material for making flax-working tools. It has also been supposed that scapular artefacts were used as sickles for reaping (Kriiska *et al.* 2005, p.25; Lang 2007, pp.109, 111-112). It should also be added that an artefact made from a pig mandible[2] was found at Asva; it has been interpreted as a bone sickle (Fig. 8; Vassar 1955, p.120, Plate XXIII.3; Lang 2007, p.109).

Fig. 8. A pig mandible bone sickle from Asva (AI 3994: 802) (photograph by H. Luik).

Indreko also considered textile-impressed ceramics as proof of flax growing in the Late Bronze Age (1939, p.29), because at that time it was thought that textile impressions were made with linen cloth. Recent research into textile-impressed pottery (Kriiska *et al.* 2005, p.23ff) has shown, however, that such impressions could also have been made with materials of either plant fibres (nettle or hemp) or wool. It has been suggested that the beginning of flax growing in this area was more recent. The oldest linen fragments in Estonia come from the Pilistvere hoard of the sixth century AD (*ibid*). As for an estimation of the start of flax growing, we have to consider that flax pollen does not spread easily, and therefore we cannot draw any conclusions on the basis of pollen diagrams. The earliest data on flax pollen in neighbouring southern Finland and northern Sweden come from the fifth century AD, despite the fact that some linen fragments were found

[2] Determined by Liina Maldre.

at Finnish settlement sites of the Late Roman Iron Age (Lempiäinen 2003, p.330; Kriiska *et al.* 2005, p.23ff). In Denmark and Sweden, however, flax was known at the end of the Bronze Age at the latest (Henriksen 2009; Henriksen, Runge 2009; Viklund 2009). Thus, at present it is not certain whether flax was grown on the island of Saaremaa in the Late Bronze Age or not.

One or two types of artefact?

Before discussing the probable functions of scapular artefacts, we have to decide whether we are dealing with one or two different types of artefact. The initial division into two types was made by Indreko on the basis of two artefacts only (Fig. 2), one of which was broken. The one that Indreko called a 'blunt edge' is simply the back edge of the tool, while the side of the cutting edge is broken. On closer inspection, we can observe uneven cutting traces on the edges of the porous part on the back (Fig. 2.2). It is likely that the artefact may have been broken already in the course of processing, and it was therefore never used as a ready-made tool. However, when new artefacts were later unearthed, they were 'adapted' to the existing 'typology'. It seems that Indreko followed the examples published by Lehmann (1931, Fig. 1, Plate 4) where artefacts with both serrated and straight edges were presented. And scapular artefacts with straight edges are indeed known in Germany (Feustel 1980, Plates I-II; Walter, Möbes 1988, Plates 34-35). It is difficult to decide on the basis of photographs only whether these artefacts also reveal traces of wear, and yet, according to Rudolf Feustel (1980, p.15), they do. The finds in question do not constitute a uniform group or 'type', however, but represent different artefacts. Some of them have slightly wavy cutting edges (*op. cit.*, Plate II.1-2) while others have notches on their edges (*op. cit.*, Plate II.3, 5).

When comparing the available Estonian material, it seems that we are not dealing with two different types, but instead with specimens of the same type, which are worn to a different extent (Fig. 9). According to Hásek (1966, p.266), the working edge of the tool was worn first wavy, and then 'serrated'. On the basis of the Estonian finds, however, we can suppose the opposite development: during work, the serrated edge of the artefact was worn more and more even, and afterwards it was cut serrated again, worn even again, and made suitable for working again (compare the shape and wearing extent of teeth on the edges of different artefacts: Fig. 10). In this way, mostly the tips of the teeth were worn, and not the intermediate spaces between them. Long-term use resulted in a rather narrow tool.

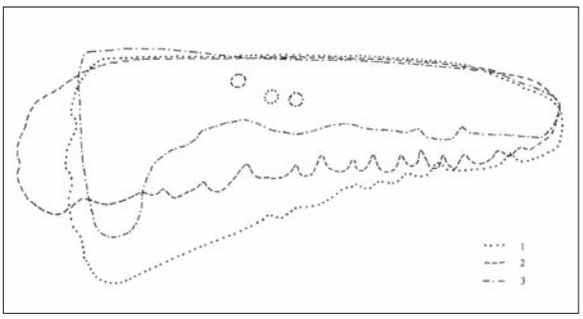

Fig. 9. Tools from Asva revealing various degrees of wear (1 – AI 3307: 291; 2 – 4012: 94; 3 – 4366: 689) (drawing by H. Luik).

In this context, we can refer to serrated scapular tools (scapular saws) made by North American Indians, which, according to Norm Kidder (1995), had rather wide blades at the beginning. After the teeth were worn or broken, new ones were cut in, whereas the tools became sickle-like in the course of long-term use, and this is the shape many of the prehistoric tools in question really have. We return to Kidder's experiments for making and using such tools below.

There are also holes in the scapular tools, which were supposedly useful either for furnishing a tool with a handle (Indreko 1939, p.27; Northe 2001, p.181) or for strapping it to the belt or around the wrist, which made it easy to let the tool loose for a while and then take it up afterwards again (Lehmann 1931, p.42; Griaznov 1956, p.76; Northe 2001, p.181). While the Estonian artefacts have the hole in the middle section of the back, the German and Polish specimens have it in the handle part. Some of them have no holes at all; the latter usually have one longer end without teeth, which could have been used as the handle (Lehmann 1931; Feustel 1980; Bąk 1985, Fig. 2.1-11). Some artefacts have only a single hole; others have two or even three holes. It is interesting to note that more intact specimens have one hole, while more fragmentary tools may have more. We can suppose that the second hole was made when the artefact broke down, which means that boring the second hole enabled the user to use the tool again. We can claim the same with regard to German, Czech and Polish artefacts with two holes: they are usually fragmentary (Lehmann 1931, Fig. 1.9; Hásek 1966, Plate X; Northe 2001, Fig. 4). The existence of several holes is interpreted as being necessary for fixing a handle to a broken tool in order to use it again (Northe 2001, p.181). It seems that the handle was also purposeful for intact tools that did not have a longer toothless handle part, and therefore even a single hole was probably used for furnishing it with a handle (Fig. 11).

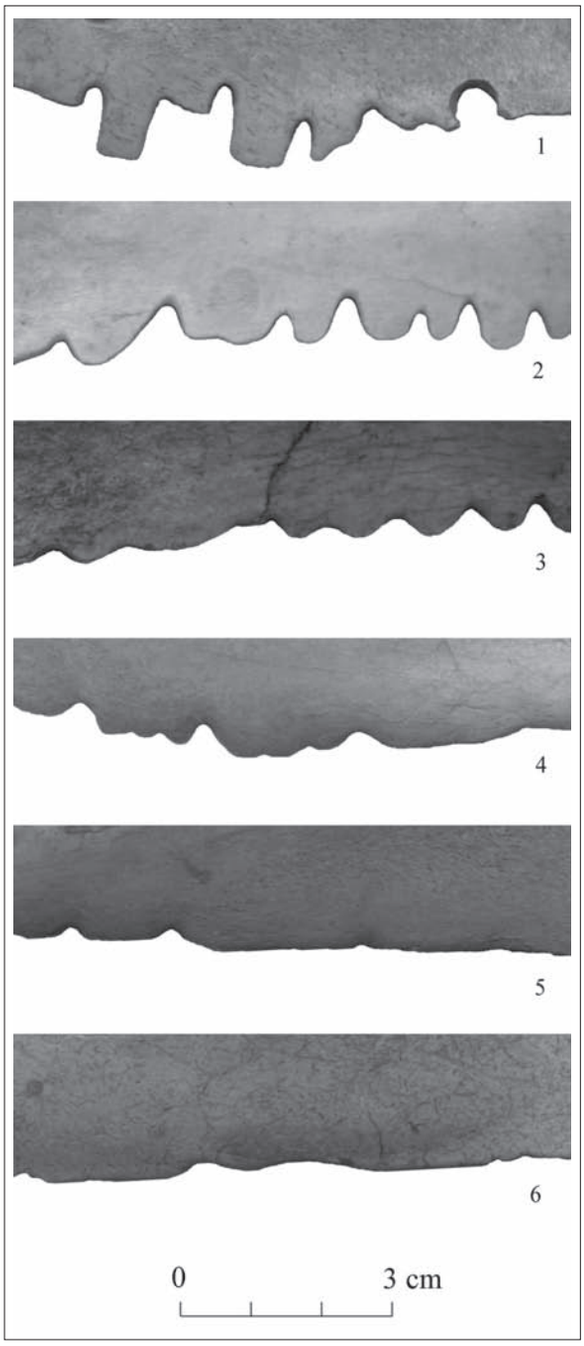

Fig. 10. Various degrees of wear revealed by teeth on the edges of artefacts (AI 4261: 184; 4012: 94; 3307: 291; 4366: 709, 940, 517) (photograph by H. Luik).

Probable areas of use

More thorough analyses of scapular artefacts include articles by Ivan Hásek (1966), Rudolf Feustel (1980) and Andreas Northe (2001). In addition to scapular artefacts, they also studied tools made from other flat bones, such as costal bones and jaws, which most likely had a similar shape and function. As for scapular artefacts, they were, generally speaking, rather similar in different regions, though some specific features may differ: for example, the location of holes, the presence (or absence) of a handle, a preference for scapulae of certain species, and the shape of the teeth. There are also discussions about how such tools were made, and attempts to group them according to the shape of their edges, the location of the holes, the existence of handles, etc. (Hásek 1966, pp.227ff, 265, Fig. 1, Plate Iff; Feustel 1980, p.9ff, Fig. 1, Plate Iff; Northe 2001, p.180ff, Fig. 1ff).

The articles mentioned include overviews of probable spheres of use for these artefacts. Unlike Estonia, where they have been labelled until recently as flax combs and swingles, some other areas of use have been suggested too. The earliest finds discovered in Europe in the early 20th century were dated to the Neolithic, and considered as meat knives and saws. As is mentioned above, Ernst Lehmann (1931, p.42) was the first researcher to connect these finds with flax-working. Like Richard Indreko, many other researchers in Germany accepted this interpretation. It was also supposed that these artefacts were used in the processing of leather, pottery, straps or cords, and meat (Hásek 1966, p.266ff; Feustel 1980, p.7ff; Walter, Möbes 1988, p.245; Northe 2001, p.179ff, and the literature cited therein).

Perhaps the most widely accepted idea is the one that connects these artefacts with working leather, particularly fur. According to both Feustel (1980, p.14ff) and Northe (2001, p.181), the traces of wear on the artefacts in question refer to touching with some kind of soft material. We can also find comparisons with ethnographic parallels of tools used by North American

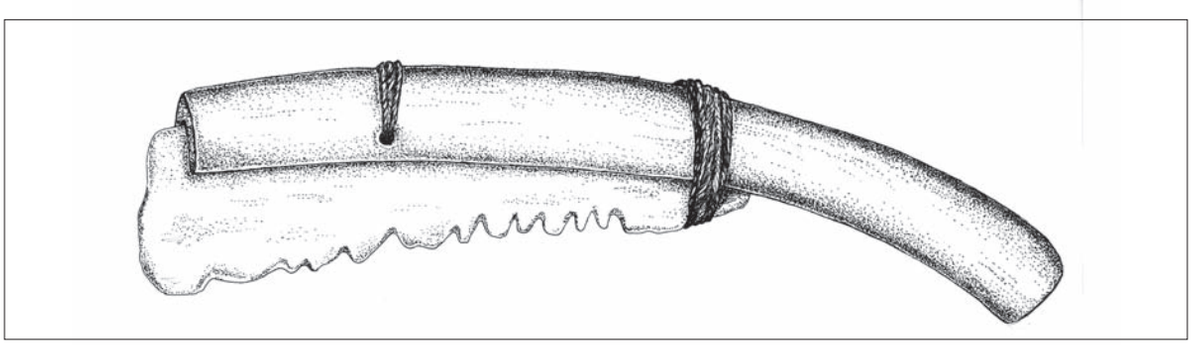

Fig. 11. A possible way of attaching the handle to a scapular tool (reconstruction by H. Luik).

Indians and Eskimos. Thus, a figure (Feustel 1980, p.17, Fig. 2) shows a leatherworking tool of the Pueblo Indians, which has a serrated edge (cf similar finds from North Dakota: Griffitts 2007, p.98ff, Figs. 6-7) but is made of a long bone and resembles some Mesolithic serrated artefacts made either of antler or long bone in Europe, which have also been interpreted as leatherworking tools (Van Gijn 2005, pp.51, 56ff, Figs. 5, 11). The serrated working part of these tools is not long, as in the case of scapular artefacts, but rather narrow and located crosswise on the cut edge of the bone. In addition, Feustel notes that tools with serrated edges are less suitable for leatherwork than tools with straight and sharp edges.[3] He claims that tools with serrated edges represent a cultural choice characteristic of particular cultural groups (Feustel 1980, p.17). Of course, such a possibility cannot be excluded (cf Lemonnier 1993, p.3).

As is pointed out by Ivan Hásek (1966, p.267), it is likely that the artefacts with serrated edges (he has published rather different artefacts made not only of scapulae but also of costal and jawbones) need not have a single narrowly specified function; being distributed rather widely in both time and space, they could have been put to different uses.

Neolithic and Bronze Age sickles in Estonia and neighbouring regions

It is assumed that the sickle was the main tool for reaping crops. Neolithic sickles were made either from wood inset with stone blades, or they were made completely of flint. In the Metal Age, bronze and iron were used. Thousands of flint or bronze sickles are known from Scandinavia that date from either the Neolithic or the Bronze Age. At the same time, sickles are extremely rare in the eastern Baltic region and Finland until the Early Iron Age (Lang 2007, p.108ff). Neolithic flint sickles are completely absent in Estonia, and there is only one bronze sickle from the Early Bronze Age (Kivisaare: Manninen 1933, Fig. 59; Lang 2007, Fig. 13) and one from the Late Bronze Age (Raasiku: Lang 2007, Fig. 49). They are also rare in Pre-Roman Iron Age material (only one Late Pre-Roman Iron Age iron sickle from Poanse: Mandel 1978, Plate VI.2). A few sickles, sickle-knives, and scythe-knives that can be used to reap crops appear in grave finds and hoards only at the very end of the Pre-Roman Iron Age and in the Roman Iron Age (Laul, Tõnisson 1991). The situation is similar in Latvia, where only two bronze sickles from the fortified settlement of Daugmale are known (LSV 2001, Fig. 19; Andrejs Vasks personal communication). In Lithuania, two bronze sickles from period V have been reported (Grigalavičienė 1995, p.162, Fig. 91.10-11). They seem to be absent in Finland until the Late Pre-Roman Iron Age (Meinander 1954).

One reason for the rarity of sickles east of the Baltic Sea in the Neolithic and Early Metal Age is that they were not used as grave goods or placed in hoards. In that respect, the countries on the eastern coast of the Baltic Sea contrast with Scandinavia and many other places in Europe (including the southeast coast of the Baltic), where Bronze Age sickles have been recovered from either hoards or graves. As both graves and hoards are directly linked to religious beliefs, the final reason for the differences in question could be explained by prehistoric religion.[4]

It is clear, however, that when fields were cultivated and crops were milled (numerous grinding stones testify to this: see Lang 2007, p.109ff, Fig. 50), the crops had to be reaped somehow. Were only the ears of grain picked, or were the cornstalks pulled manually? Or were the common bronze/iron or bone knives used for this purpose? Or could scapular artefacts with serrated edges have served as reaping tools?

Could scapular artefacts be used as sickles?

One possible argument why the scapular artefacts could have been used as sickles rather than flax combs or swingles is, as stated above, that there is no good reason for making a tool from bone if it is much easier to make it of wood and in a more suitable shape and proportions (Sperling 2006, p.110). Bone-working takes much more time and work, because bone is harder and more difficult to process than wood; moreover, it is also necessary to clear it of soft tissue.[5] But the effort

[3] It is worth mentioning that some knife-shaped artefacts with straight edges made of costal bones have been found at Asva and Iru, the probable function of which could have been to dehair hides in leatherwork. However, as similar finds can usually be discovered in Viking Age contexts in Estonia (Luik, Maldre 2005, p.265, Figs. 3-4), we could claim also that the corresponding artefacts from Asva and Iru originate from the later fortification phases rather than from the Bronze Age.

[4] As for comparisons of bronze sickles, we can add that in Germany there are at least two finds with more than one scapular artefact. Thus, in addition to a conical spindle whorl, a potsherd and a fragment of a stone axe, nine scapular artefacts (both with serrated and straight edges) were also found together in one pit, which was located close to the Baalbergen culture burials at Erfurt (Lehmann 1931, p.37ff). Several scapular artefacts, together with three stone axes, other bone artefacts and skulls of dogs and cattle, were also unearthed from a stone setting at Falkenwalde, dated to circa 3000 BC (Wetzel 2005, p.80).

[5] It has to be stressed, however, that this kind of logic is not always valid, and there can be a number of cultural

to make such a tool could be worth it if the tool makes work much easier. Although the use of wooden sickles has also been assumed (Harding 2000, p.130), bone as a material results in a harder tool with a sharper blade, which most likely offered some advantages. Later, still harder and sharper metal tools were preferred.

Supposing that scapular artefacts were used as sickles, we have to make a reference to an overview by Mikhail Griaznov (1956, pp.45, 76ff, Plate XV. 40-44) of scapular artefacts found at the seventh to sixth-century BC settlement site in Blizhnie Elbany, in the region of the upper reaches of the River Ob in southern Siberia. While Griaznov labels these tools as swingles, which were used in the processing of plant fibres, he stresses the similarity between these artefacts and bronze sickles (Tallgren 1926, Figs. 88.4-5; 96). He claims that there were also bronze sickles with wavy blades that are similarly worn and polished as scapular artefacts, which might have been caused by the circumstance that the former, due to the rarity of bronze, were used not only for reaping crops but also for processing staples. The adoption of bone swingles was probably connected with the wish not to waste bronze sickles on this work (Griaznov 1956, p.77).[6] It could also be that many sickles were made of bone due to the scarcity of bronze sickles.

Similarities can also be found between the scapular artefacts and ethnographic so-called blunt sickles used on the island of Saaremaa as recently as the early 20th century. Blunt sickles were used to uproot summer crops, such as barley and oats (Manninen 1933, p.80ff; Kriiska *et al.* 2005, p.25; Lang 2007, p.109). Some ethnographic iron sickles may also have had blades with serrated edges (Manninen 1933, p.81; Viires 2000, p.268; Pärdi 2008, p.87). In northern Europe, bronze sickles with serrated cutting edges were rather common in the Bronze Age, though their teeth are much narrower and located more densely than those on bone tools (which is possible in the case of metal, and senseless on fragile bone artefacts) (Montelius 1906, Figs. 186-187; Gubanov 2009, Fig. 13). In principle, serrated edges were also characteristic of the bone or wooden sickles with flint flakes placed in their inner cavity that have been common since the Eneolithic (Skakun 1999, Figs. 21.15-20; Harding 2000, Fig. 4.3: 2; Whittaker 1994, p.40, Figs. 3.12, 3.13; Endlicher, Tillmann 1997, p.334, Fig. 1). We can add that even in Early Neolithic Peiligang culture in China (circa 6000 uncal. BC), stone sickles with serrated edges were common. They are assumed to have been rather effective reaping tools (Wang Xing-Guang 1995, Figs. 13-14).

One more argument in favour of using these tools as sickles comes from the circumstance mentioned by Feustel (1980, p.15): the most worn part of the artefact is rather short (Lehmann 1931, Plate IV; Feustel 1980, Plate IV). According to Northe (2001, p.181), this refers to the possibility that these tools may have been used for cleaning, stretching and smoothing tendons and guts (Walter, Möbes 1988). However, even when reaping crops with a sickle, one part of the blade, the one in contact with the cornstalks gathered into the hand, will be more worn than the others (Bradley 2005, Fig. 5.1).

As has been noted, there have been attempts to use ethnographic evidence from North American Indians to prove that the artefacts in question served as tools for leatherwork. Scapular artefacts with serrated edges have been found in various places in North America, and different opinions with regard to their probable function have been voiced; among them are suggestions about processing animal skins and plant fibres. Some experiments have also been carried out, which have led to the viewpoint that the traces of wear on these artefacts can be linked to the processing of plants (such as yucca and agave fibres) rather than animal skins (Griffits 2001, p.190, Figs. 9-10).

We have mentioned previously the experiments by Norm Kidder (1995) which were intended to find out how scapular saws were made and used. Kidder describes the processing of scapular artefacts with tools that could have been used by prehistoric people, such as sharp-edged chert and quartz flakes, and pieces of sandstone. He tried to use different methods: first he incised a line with a sharp-edged stone flake, where the bone had to be broken, but it was time-consuming and did not always guarantee the breakage of the bone at the expected place. It turned out to be easier to remove dispensable parts of the bone with a stone anvil of a suitable shape and a hammer, and then to make the required shape by smoothing the artefact with a sandstone. He observed, however, that in problematic places it is safer to incise a sharp line at the intended place of breakage. A serrated edge could be achieved by cutting with a sharp-edged quartz flake, or sawing with a thin sandstone plate. It took 30 to 40 minutes to make such a tool (Kidder 1995). Two scapulae and a piece of an artefact found at Asva reveal incised lines and a groove, which most likely helped to break the bones in a suitable way (Figs. 4.7; 6). It seems that

reasons why certain artefacts were made in certain ways and from special materials when some other material or method could have been better (Lemonnier 1993; McGhee 1977).

[6] Griaznov, however, mentions that bronze sickles in the processing of plant fibres and the adoption of bone tools for the same purpose were not widely known. Previously, various swingles made from cattle and horse mandibles were used in the Ob and the Dnieper regions (*ibid.*).

less worn teeth on the edges of some artefacts were sawn with a sandstone plate (Fig. 5.3). The same method was most likely used, for instance, when making the barbs of bone arrowheads in the Bronze Age (Luik 2006, p.141).

The ready-made tool was then used for various activities, such as cutting wood, meat, grass or plants (tules and cattails), as well as for combing hair and gutting fish. Experiments showed that this kind of saw cut tule reeds and soft plants well, and was the best and most effective tool among the available tools in that region for cutting these plants. It was particularly suitable, as it tears rather than cuts the tule stems, and therefore does not split them. Kidder (1995) observed that the traces of wear formed by cutting tule stems resembled those on prehistoric artefacts. Native Americans used tule for building their houses, boats, mats, and so on.

Clubrush and reed are materials that usually do not leave traces in archaeological evidence; however, they were certainly used, especially in coastal areas, where all the fortified settlements in Estonia are located. The same can be said about sites on the lower reaches of the River Daugava. It is likely that the roofs of houses were made from these materials. Ethnographic evidence reveals tools with serrated surfaces for making reed roofs in order to comb the reed bunches and level the roof outside, but the shape of these tools is different (Manninen 1933, Figs. 297-298, 325). It has also been suggested that sickle-like bronze tools were used in coastal areas of Sussex to cut clubrush and sedge in the Late Bronze Age (Waller, Schofield 2007, p.379). It is also possible that in the coastal settlements of Saaremaa, where livestock rearing was prevalent, clubrush and sedge were collected for fodder, and perhaps serrated scapular tools were used for this purpose. The same tools could have been used for harvesting where the crop was pulled out by the roots. Therefore, we can assume that they were multi-functional artefacts for reaping crops, clubrush, reed, and so on, and also for doing some other jobs.

The distribution of scapular artefacts with serrated edges in the eastern Baltic region (mostly on the island of Saaremaa, and, perhaps, on the lower reaches of the River Daugava) is intriguing. As for artefact assemblages from these fortified sites, it has already been argued long ago that there were cultural contacts with Central European Lusatian culture (Indreko 1939; Lõugas 1970), the tribes of which also made use of scapular tools with serrated edges. These artefacts thus refer to such connections. This might also be one of the reasons why the tools in question are unknown in Lithuanian and other Latvian fortified settlements, because these sites have not yielded much evidence of contacts with Central Europe. Although the scapular artefacts with serrated edges are mostly dated to the Neolithic in Central Europe, there are also numerous artefacts that have been dated to the Bronze Age. It is likely that the abundance of more effective bronze sickles in Central Europe may have overruled the corresponding bone tools in the Bronze Age. Scapular artefacts with serrated edges are absent in Estonian Neolithic assemblages. Therefore, we can assume that we are dealing with an artefact type borrowed from Central Europe during the Late Bronze Age, rather than a locally developed type.

Conclusion

Although we have questioned the assumption that scapular artefacts may have been used as tools for flax-working, which until recently was a widely accepted view in Estonia, it is still unclear what their real function was. We cannot exclude the possibility that we are dealing with multi-functional artefacts used for different jobs. It is evident that the tools in question were suitable for cutting plants, such as crops, reeds and clubrush. The shape and qualities of scapulae have been considered suitable for making these tools at different times and in different regions (Europe, Siberia and North America). It is likely that the inhabitants of the fortified settlements on the island of Saaremaa may have adopted this type of tool following Central European Lusatian culture.

Acknowledgements

This study was funded by the Estonian Ministry of Education and Research (SF0130012s08 and SF0180150s08), the Estonian Science Foundation (grant no. 6898), and the European Regional Development Fund of the European Union (Centre of Excellence in Cultural Theory). The authors would also like to thank Liina Maldre for determining bone material, and Enn Veldi for revising the English.

Translated by Valter Lang
English revised by Enn Veldi

Abbreviation

AI – Archaeological collections of the Institute of History, Tallinn University.

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Received: 8 April 2010; Revised: 28 April 2010;
Accepted: 22 June 2010.

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II

PEOPLE AT THE CROSSROADS OF SPACE AND TIME

MENTIKAULIO DIRBINIAI SU DANTUKAIS PAKRAŠTYJE, RASTI ESTIJOS VĖLYVOJO BRONZOS AMŽIAUS ĮTVIRTINTOSE GYVENVIETĖSE

HEIDI LUIK, VALTER LANG

Santrauka

Tarp vėlyvojo Estijos bronzos amžiaus įtvirtintose gyvenvietėse randamų dirbinių grupių yra įrankių su dantukais pakraštyje, pagamintų iš mentikaulio (1 pav.). Latvijoje (Ķivutkalns ir Klaņģukalns) taip pat rasti dviejų panašių dirbinių fragmentai, kurie, matyt, yra tokių pačių įrankių dalys. Estijoje dauguma dirbinių su dantukais pakraštyje (iš viso 13) buvo rasta Asva gyvenvietėje (2–4 pav.). Trys įrankiai su dantukais pakraštyje rasti Ridala ir vienas – Kaali gyvenvietėje (5: 1–3, 5 pav.). Dar vienas tokio dirbinio su dantukais

pakraštyje fragmentas buvo rastas Iru gyvenvietėje, bet šis dirbinys pagamintas ne iš mentikaulio (5: 4 pav.). Du mentikauliai su apdirbimo žymėmis, rasti Asva gyvenvietėje, greičiausiai taip pat yra šių įrankių ruošiniai (6 pav.). Įrankiai su dantukais pakraštyje turi vieną tiesią briauną, kita briauna buvo naudota kaip pjūklas (2–5 pav.). Paprastai mentikaulio cervikalinis pakraštys buvo atvirkščioje įrankio pusėje (7 pav.). Dirbant tokiu įrankiu dantytas pakraštys buvo naudotas tolygiai; paskui susidėvėję įrankio danteliai buvo atnaujinami, ir įrankis buvo naudojamas toliau (9; 10 pav.). Šiuose dirbiniuose yra skylutės, manoma, kad jos buvo reikalingos įtverti įrankiui rankeną (11 pav.).

Mentikaulio dirbiniai su dantukais pakraštyje yra žinomi Vokietijoje, Danijoje, Lenkijoje, Čekijoje, Slovakijoje ir net Sibire. Sprendžiant iš konteksto, kuriame jie minimi, matyt, tokie dirbiniai priklauso neolito ir bronzos bei ankstyvajam geležies amžiui. Vidurio Europoje tokių dirbinių taip pat buvo rasta įtvirtintose Lužitėnų kultūros gyvenvietėse.

E. Lehmann ir R. Indreko nuomone, šie įrankiai buvo naudoti linų apdirbimui. Tačiau šiame tyrinėjimų lygmenyje nėra aišku, ar vėlyvajame bronzos amžiuje linai Saremos saloje buvo auginami ar ne. Taip pat yra kitų nuomonių, kam šie mentikaulio įrankiai su dantukais pakraštyje buvo naudojami, pavyzdžiui, odos ar kailio, diržų ar virvių, puodų gamyboje ar mėsos pjaustymui. Šiuo metu manoma, kad įrankiai su dantukais pakraštyje galėjo būti naudojami kaip pjautuvėliai derliaus nuėmimui.

Skandinavijoje žinoma tūkstančiai neolito ar bronzos amžiaus titnaginių ar bronzinių pjautuvų. Iki pat ankstyvojo geležies amžiaus titnaginiai ar metaliniai pjautuvai buvo labai reti rytiniame Baltijos jūros regione ir Suomijoje. Viena iš priežasčių, nulėmusių mažą titnaginių ir metalinių pjautuvų radinių skaičių rytiniame Baltijos jūros regione, buvo ta, kad čia jie nebuvo dedami į kapus kaip įkapės, jų nerandama ir šio laikotarpio lobiuose. Panašių mentikaulio įrankių su dantukais žinoma Saremos etnografinėje medžiagoje, kur dar XX a. pradžioje buvo naudojami vadinamieji buki (neaštrūs) pjautuvai. Tokie buki pjautuvai buvo naudojami nuimti vasarojų, pavyzdžiui, miežius ir avižas. Kai kurie geležiniai pjautuvai taip pat yra su bukais dantytais pakraščiais. Šiaurės Europoje bronzos amžiuje bronziniai pjautuvai su dantukais yra gana gerai žinomi. Iš esmės iki neolito dantyti pakraščiai taip pat yra būdingi kauliniams ir mediniams pjautuvams su įstatytais mažais titnaginiais ašmenėliais.

Buvo atliekami eksperimentai siekiant nustatyti, kaip Amerikos čiabuviai gamino ir naudojo iš mentikaulio pagamintus pjūklus. Eksperimento metu buvo nustatyta, kad pjūklai gerai kerta nendres ir minkštus augalus: kertant nendres ant pjūklų dirbamojo paviršiaus atsirado žymės, primenančios randamas ant priešistorinių laikų radinių. Amerikos čiabuviai naudojo nendres namų statybai, laivams, dembliams ir t. t. Meldai ir nendrės tikrai buvo naudojami Estijos pakrančių įtvirtintų gyvenviečių gyventojų. Tikėtina, kad šiais pakrančių augalais buvo dengiami namų stogai. Taip pat įmanoma, kad pakrančių gyvenvietėse meldai bei viksvos buvo naudojami pašarui, ir, matyt, mentikaulio įrankiai su dantukais buvo naudojami jiems pjauti. Šie įrankiai turėjo būti naudoti javams nuimti, matyt, išraunant augalus su šaknimis.

Įrankių su dantukais pakraštyje paplitimas rytiniame Baltijos jūros regione yra intriguojantis. Jau anksčiau buvo manoma, kad buvo kultūrinių kontaktų su Lužitėnų kultūra Vidurio Europoje. Vienas iš šiuos kontaktus pagrindžiančių duomenų yra įrankiai su dantukais pakraštyje. Latvijos ir Lietuvos įtvirtintose gyvenvietėse praktiškai tokių įrankių nerandama, matyt, todėl, kad nebuvo daug kontaktų su Vidurio Europa.

Net jei ir aptarėme prielaidą, kad įrankiai su dantukais pakraštyje galėjo būti naudojami linams apdirbti, iki šiol neaiški tikroji šių įrankių paskirtis. Negalima atmesti ir prielaidos, kad tai daugiafunkcinės paskirties dirbiniais, kurie buvo naudojami įvairiems darbams. Akivaizdu, kad šie dirbiniai buvo tinkami naudoti augalams nukirsti. Tikėtina, kad Saremos salos įtvirtintų gyvenviečių gyventojai pritaikė šiuos įrankius sekdami Vidurio Europos Lužitėnų kultūra.

Vertė Audronė Bliujienė