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LATE BRONZE AGE BONE CRAFTING IN THE EASTERN BALTIC: STANDARDIZATION OF ARTEFACT TYPES AND INDIVIDUAL INGENUITY¹

The aim of the article is to discuss some exceptional finds among Late Bronze Age bone and antler artefacts in the eastern Baltic. A certain standardization of selected material and shape is characteristic of many bone tool types of discussed period. Some foreign bronze artefacts have been replicated in more easily available local materials – bone and antler. But sometimes an ancient craftsman tried to make some local standardized artefact from some other available substance. Spearheads made from goat/sheep tibiae constitute a very standardized tool type in eastern Lithuania. From Narkūnai a spearhead was found copying the shape of these spearheads, but made from elk antler. Scapular tools with a notched edge are known from Estonian fortified settlements; only one notched-edged tool from Iru has been carved from a rib. The bone pins with round head are characteristic pin type in Kivutkalns, Latvia. Almost all such pins were made from long bones diaphysis but for one pin with similar shape a rib has been chosen. Why did the maker of bone artefact not use the traditional material in some cases? Perhaps the required bone was not available, or unskilled bone-carver picked the other material which was easier to carve. Although such examples are quite few they still attest the ingenuity of individuals who made them.

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Introduction

The Late Bronze Age (about 1300/1100–500 BC) was the time when fortified settlements first appeared as part of the settlement pattern in the eastern Baltic region (Fig. 1). At many of these settlements no traces of significant fortifications have been discovered, but in such cases they have been built in places with natural defensive qualities (Lang 2007a, 55 ff.; 2007b, 39 ff.). The oldest fortified settlements in the Baltic countries come from Lithuania, where they were already established in the last quarter of the 2nd millennium BC; in Latvia they appeared at the end of the 2nd millennium BC (Lang 2007a, 67). The fortified settlements in Estonia date to the first half of the 1st millennium BC (op. cit., 57 ff.).

Fortified settlements are indicators of important social and economic changes that took place in the eastern Baltic region at that time. They were centres of

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authority, as well as of trade and crafts, and played an important role in the organization of bronze circulation (Lang 2007b, 77 ff.). The most important craft was probably bronze casting, witnessed by numerous clay moulds and their fragments found at such settlements (Vasks 1994, pl. XV, XVI; Grigalavičienė 1995, 102 ff.; Sperling 2006, 37 ff.; 2011, 90 ff.). Pottery-making was also of great importance, lots of fragments of both coarse-grained and fine-grained ceramic vessels have been found (Vasks 1994, pl. XVIII ff.; Grigalavičienė 1995, 202 ff., figs 117 ff.; Sperling 2006, 42 ff.; 2011, 157 ff.; Lang 2007a, 125 ff., figs 58 ff.).

Bone and antler artefacts constitute the most numerous find group after ceramic vessels and clay moulds. The large number of bone and antler artefacts among the finds from the Bronze Age sites demonstrates the importance of bone and antler as raw materials in the society of the period. Although simple ad hoc tools are represented among them, a certain standardization of selected material and shape is characteristic of many bone tool types in the period under discussion. Such artefact types were e.g. bone arrow- and spearheads, harpoon heads and hoes or ard points made of antler, awls of goat/sheep metapodials, antler spoons and handles (e.g. Luik & Maldre 2007; Luik 2011; 2013; Luik et al. 2011). Such standardization probably reflects some degree of organization and control in bone and antler-working.

Some foreign bronze artefacts have been replicated in more easily available local materials – bone and antler. For example double buttons imitating Scandinavian bronze double buttons and tutuli were made from antler (Luik & Ots 2007). Bone has been used to make decorative pins in shapes resembling bronze specimens spread across Scandinavia and central Europe. Some of these imitations are carved very skilfully, requiring certain skills and experience from their producer (Lang & Luik in print). People never copy things blindly; copying often involves the idea that the copy gains some power from the thing copied (Hodder 2012, 123). Imitations made in other substances have been regarded as characteristic of periods when important social changes took place in the society (Choyke 2008). Presumably a new social rank arose whose needs such replicated artefacts met and therefore craftspeople with necessary skills were also needed (Luik 2007).



Fig. 1. Fortified settlements in the eastern Baltic region, mentioned in the text. Drawing by Kersti Siitan.

But sometimes an ancient craftsman tried to make local standardized artefacts from some other available substance. The aim of the article is to discuss some exceptional finds among Late Bronze Age bone and antler artefacts in the eastern Baltic region and to seek an answer to the question of why artisans chose different raw materials.

Standardized artefact, unusual material

Three case studies from the fortified settlement sites in the eastern Baltic region are presented where an artefact that usually has a very standardized shape and material was made from another skeletal element for some reason or other. However, in all these cases a shape similar to usual standardized object was desired.

Spearheads made from sheep/goat tibiae

Spearheads made from sheep/goat tibiae constitute a very standardized tool type in eastern Lithuania. This type of spearhead is found in largest numbers at Lithuanian settlements (Fig. 2; e.g. Nevieriškė, Narkūnai, Sokiškiai, Kereliai,



Fig. 2. Spearheads made from sheep/goat tibiae from Lithuanian fortified settlements Narkūnai and Nevieriškė (AR 594: 208, 220; 597: 420). (Luik & Maldre 2007, fig. 27, republished with the permission of “Archaeologia Lituana” and the Department of Archaeology of Vilnius University.)

Moškėnai; Volkaitė-Kulikauskienė 1986, fig. 32; Grigalavičienė 1986a, fig. 18: 1–4; 1986b: fig. 20: 13–18; 1995, fig. 58; Luik & Maldre 2007, 19 f., figs 26–27). In Latvia such spearheads are found in the fortified settlements in the eastern part of the country, e.g. Brikūli (Vasks 1994, pl. VIII: 3, 4). A few specimens have also been found in Estonia, e.g. from the settlement of Ridala (Luik et al. 2011, fig. 5: 7).

These spearheads are highly standardized in terms of the choice of material. Nearly all spearheads where the raw material could be established, were made of sheep/goat tibiae. The proximal end of bone was as a rule used for the socket of the spearhead, the epiphysis and part of diaphysis were cut off so that medullary cavity formed a socket. Depending on the shape of the bone, the socket and the cavity usually have a triangular cross-section. The blade of a spearhead was shaped by diagonally cutting the distal end of bone and sharpening the tip (Luik & Maldre 2007, 20). A spearhead from Narkūnai has been found copying the shape of these spearheads but made from elk antler (Fig. 3), even though an artefact of different shape could be made from antler (op. cit., 13 f., fig. 13).



Fig. 3. Antler spearhead from Narkūnai, Lithuania, imitates spearheads made from goat/sheep tibiae (AR 594: 230). (Luik & Maldre 2007, fig. 13, republished with the permission of “Archaeologia Lituana” and the Department of Archaeology of Vilnius University.)

Scapular tools with a notched edge

Scapular tools with a notched edge are known from many places in Central Europe, e.g. Germany, Denmark, Poland, Slovakia, the Czech Republic and even in southern Siberia; they mostly date to the Neolithic, but Bronze and Early Iron Age contexts have also been reported (e.g. Lehmann 1931; Gryaznov 1956, pl. XV: 40–44; Hásek 1966; Feustel 1980; Northe 2001; Wetzel 2005, 80, fig. 4). In the eastern Baltic region the scapular tools with notched edge are known from Estonian Late Bronze Age fortified settlements, mostly from Asva and Ridala (Fig. 4; Luik & Lang 2010). The purpose of such tools is unknown although it has been suggested that they were used in the processing of leather, pottery, straps or cords, or even meat (Hásek 1966, 266 ff.; Feustel 1980, 7 ff.; Walter & Möbes 1988, 245; Northe 2001, 179 ff.). It has also been suggested that the scapular tools were used as agricultural implements, e.g. tools for

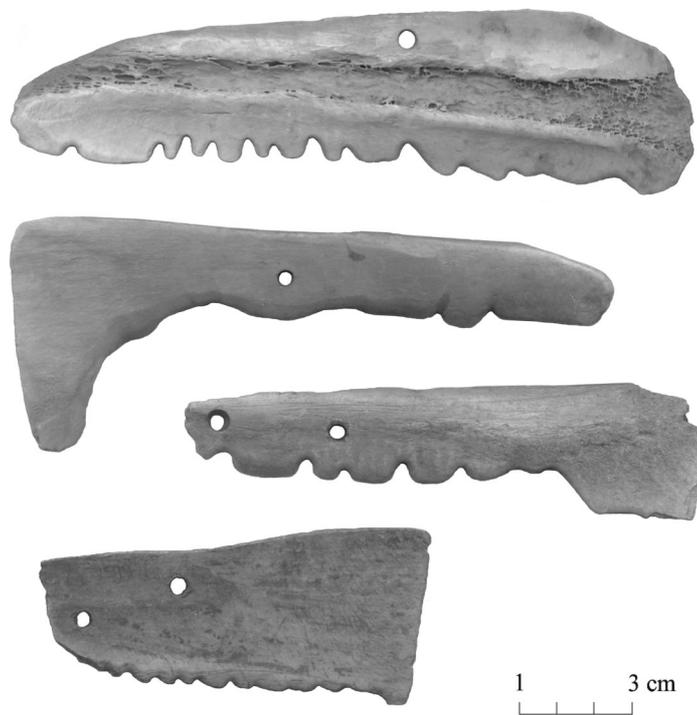


Fig. 4. Scapular tools with a notched edge from Asva, Estonia (AI 4012: 94; 4366: 689, 1391; 3994: 1599). Photos on figs 4–9 by Heidi Luik.

processing flax or sickles for cutting crop (Lehmann 1931, 42; Indreko 1939, 27 f.; Kriiska et al. 2005, 25; Lang 2007a, 109, 111 f., fig. 51; Luik & Lang 2010).

The tools with a notched edge are almost invariably made from scapula. The identifiable specimens among Estonian finds have been made from cattle or elk scapulae (Luik & Lang 2010, 163); from other regions, e.g. Germany, tools

from horse scapula are also known (Wetzel 2005, 80). In Estonia one notched-edged tool from Iru was carved from a rib (Fig. 5). Some, although not too many, tools with notched edges made from ribs and mandibles are also known elsewhere: e.g. ribs – from Basel, Switzerland; Mittelhausen, Germany and Mników, Poland; and mandibles – from Humble, Denmark and Rosiejów, Poland (Hásek 1966, 249, 252, 253, 256, 265, pls I: 3, IV: 5, V: 6–7). One tool made from pig's mandible is found also from Asva, but it is

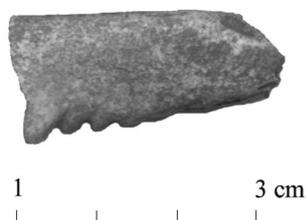


Fig. 5. Notched-edged tool made from rib from Iru, Estonia (AI 3428: 1274).

not a copy of the shape of scapular tools – this sickle-shaped object does not have a notched edge, and perhaps it may have had a different function (Luik & Lang 2010, 166, fig. 8).

Bone pins with round heads

Decorative bone pins were made in various shapes (e.g. Lang & Luik in print). The pins with round heads are a characteristic type in Ķivutkalns, Latvia. They have been found at the fortified settlement (Fig. 6; Graudonis 1989, pls XXIX–XXX) as well as in the graves of the cemetery at the same location (Denisova et al. 1985, figs 33–34). Similar pins with round heads have been found at Lithuanian and Estonian fortified sites as well, although they were not so numerous there (e.g. Grigalavičienė 1995, fig. 98: 7–17; Luik et al. 2011, fig. 14: 12–13). Almost all such pins found at Ķivutkalns were made from long bone diaphyse, except for one pin with a similar shape made from rib (Fig. 7: 1; Lang & Luik in print, fig. 7: 4). Two pins made from a rib have been also found at the fortified settlement of Asva, but these were evidently unfinished (Fig. 7: 2, 3; Lang & Luik in print, fig. 7: 5). It should be mentioned here that not only the pins with round heads, but also pins with different shapes were mostly made from the diaphyse of long bones from large species.

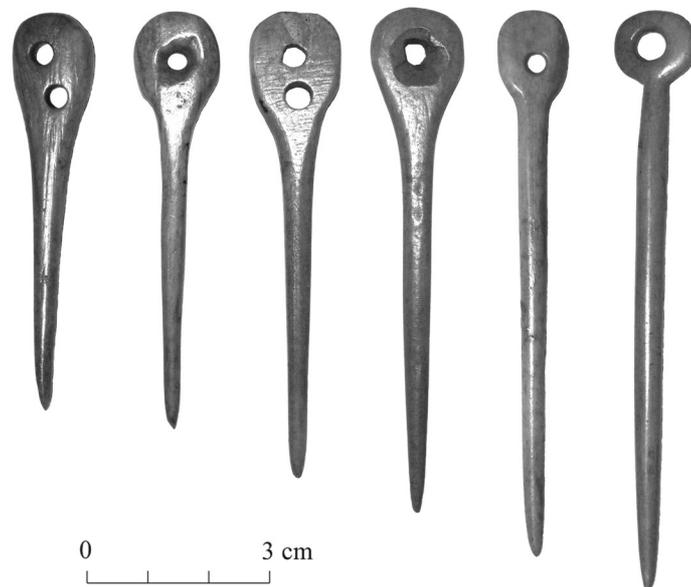


Fig. 6. Bone pins with a round head from Ķivutkalns, Latvia. Such pins are almost always made from long bone diaphysis (LVM A VI 120: 1589, 367, 2329, 2123, 2165, 2212).

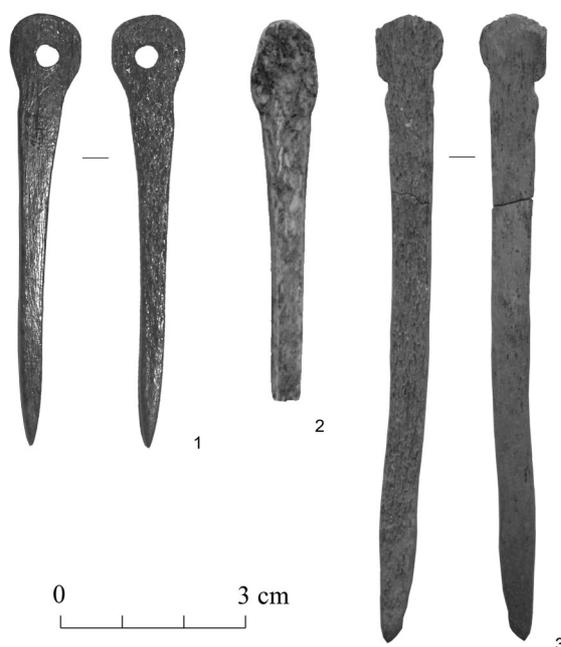


Fig. 7. Bone pins made from rib from Ķivutkalns, Latvia (1) and Asva, Estonia (2, 3) (LVM A VI 120: 1667; AI 3994: 536; 3307: 206).

Discussion: why did the bone worker choose an unusual material?

In ancient societies traditions existed concerning the suitability of a bone of certain species or from certain skeletal part for making a certain tool or artefact (Choyke 1997, 66 f.; Luik 2009, 48; 2011, 33, and references therein). But why did the maker of bone artefact not use the traditional material in some cases?

Probably the traditional material was not available at that moment. Animals were most likely butchered at certain times of the year and this could have affected the availability of the required bone (e.g. Russell 2001, 244). Of course, antler need not always have been available either, since the provision of antlers also depended on the season (Ling 1981, 10 ff.; Luik 2011, 36). Therefore the maker of the artefact sometimes had to demonstrate ingenuity and use some other material or reuse material. The unavailability of needed material could be one reason why some bone tools were sharpened repeatedly (e.g. Russell 2001, 244; Luik 2009, 52). Antler tools were sometimes reused, for example antler tools with spiral use wear (Fig. 8: 1–3) – which, in fact, were nearly whole tines – could be used to make some other artefact. This is indicated by a find of a tine tip with characteristic spiral use wear, which has been cut off the rest of the tine – probably the tine was used secondarily as raw material for making some other

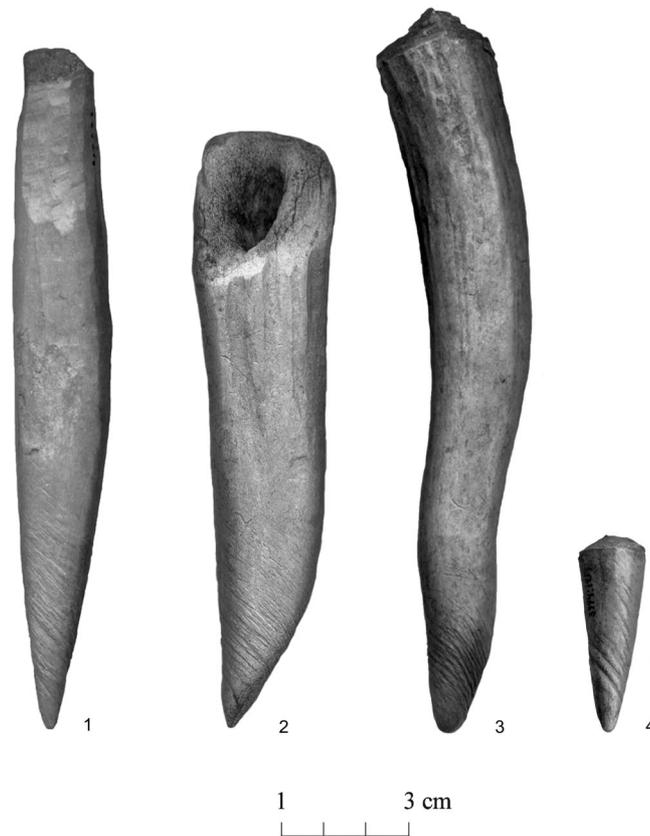


Fig. 8. Antler tines with spiral use wear from Asva, Estonia (AI 4366: 1883, 1772, 1823, 1217).

artefacts and the remaining tip is just refuse (Figs 8: 4, 9; Luik 2010, 258, fig. 7). A spearhead with similar spiral use wear on its tip has been found at the Lusatian culture settlement site of Smuszewo, Poland (Durczewski 1985, pl. 56: 8). Probably this antler tine was originally used like the tines with spiral wear from Asva² and was only later manufactured into a spearhead. The other possibility is that the object, initially made into spearhead was later used for another purpose. An antler cheek-piece from a horse harness from Asva also has spiral use wear at its tip. Kristiina Paavel who has investigated the use wear on this object using high power microscope suggests that the original cheek-piece was probably later used in a manner that left spiral wear on it (Paavel 2012, 18 f., 56 ff.).

² The function of such antler tines is not known, but probably the spiral wear has been abraded into the antler in the course of working some kind of fibres (Luik 2010, 258 ff.). This hypothesis is also supported by the experimental and high power microscope studies recently made by Kristiina Paavel (Paavel 2012).

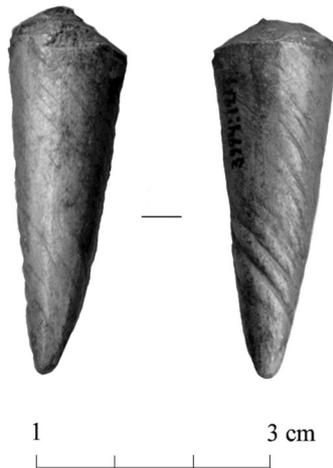


Fig. 9. One tine tip with spiral wear has been cut off – probably the rest of the tine was used to make some other artefact (AI 4366: 1217).

Thus, different materials could be available in different seasons. The antler spearhead found at Narkūnai was probably manufactured in a season when sheep and goat were not butchered and because of this the needed bone was not available. Nevertheless, evidently a certain opinion or preference existed as to how these artefacts should look and what they had to be made from. Therefore, the maker of this antler spearhead tried to imitate the shape of bone spearheads as precisely as possible and so give an impression that it was made from the customary material.

Material for making notched-edged tools has also been standardized, and almost invariably scapulae were chosen for this purpose. The animal species, on the other hand, was not so important in this case and bones of various large ungulates were used. In most cases, the makers attempted to shape the tools from the “wrong” material into a form as close as possible to the customary tools (Hásek 1966, pls I: 3, IV: 5, V: 6–7). Presumably the reason here was also the unavailability of the right raw material. Scapulae, like the other flat bones, come from the fleshy parts of the carcass, which were certainly used for food (Fig. 10). That could be the reason why such bone was not always available when needed – it was important to plan beforehand the use of such bones so that they would not be broken during butchering or cooking process. The bone worker was evidently familiar with the properties of various bones and, if the required bone was unavailable, chose some other flat bone – rib or mandible – which has similar properties to the traditionally used scapula that is also a flat bone. All these bones are flat – as already their name suggests – and so it is easy to shape a long thin and sharp blade from them. But since the exact use of these tools is not known, we cannot preclude the possibility that notched-edged tools of different materials were used for different purposes.

Why did the pin-maker choose a rib instead of a long bone? Certainly the reason here could also be just the absence of the needed bone, but there could be some other reasons as well. Maybe someone lacking sufficient skill and experience tried to make a pin. I have tried myself, as an experiment, to make some bone artefacts, and thus been in the role of an inexperienced bone-worker. I have used a long bone – a bovine femur – as well as a rib (Luik 2005, 42–44, 98 f.; Luik & Maldre in print, fig. 5). My experience was that a rib boiled immediately before working appeared to be very soft and therefore easy to carve. Long bone was much harder and it was considerably more complicated to carve it into the required shape. So it is possible that the inexperienced bone-worker

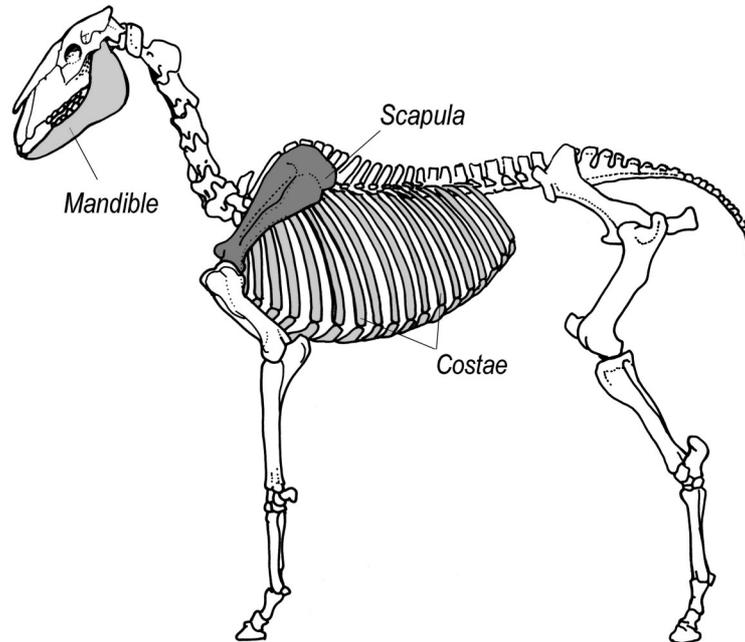


Fig. 10. Horse skeleton. Mostly scapulae have been used for making tools with a notched edge, but sometimes some other flat bones – mandibles and ribs – have been also used. Drawing by Kersti Siitan.

was resourceful and chose the material that was easier to process. The result was a pin with a front similar to traditional pins made from long bone; the difference lay in the spongiosa on the rear side. In addition, the pin made from a rib is flat and thin, not with a round cross-section like those made from long bones. Both rib pins found from Asva were probably unfinished. One of them perhaps because it broke in the course of working, possibly owing to the lack of experience of the maker. For instance, in my experiments of bone working the first rib I used was so unexpectedly soft after boiling that it broke up totally when I tried to split it (Luik & Maldre in print). Another possibility is that the shape of the rib pin did not seem quite right for the maker and so he/she did not finish it.

Summary

Among bone and antler artefacts from the Late Bronze Age fortified settlements of the eastern Baltic region, artefact types occur for which the choice of material, and consequently also their shape, were highly standardized. Nevertheless, few artefacts can be found that have been made from some other material. The reasons for this may vary. Perhaps the required bone was not available, or an unskilled

bone-carver picked another material which was easier to carve. The manufacturer of such an artefact was both conservative and creative at the same time, trying to obtain the traditional shape of the object but finding possibilities to make it from a different raw material. Although such examples are quite few they still attest to the ingenuity of the individuals who made them.

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NOOREMA PRONKSIAJA LUUTÖÖTLEMISEST LÄÄNEMERE IDAKALDAL: ESEMETÜÜPIDE STANDARDISEERUMINE JA LUUTÖÖTLEJA LEIDLIKKUS

Resümee

Balti mere idakalda noorema pronksiaja kindlustatud asulate (joon 1) leiumaterjal on keraamika järel arvukaimaks leiurühmaks luu- ja sarvesemed. Paljudele selleaegsetele esemetüüpidele on iseloomulik teatud standardiseeritus nii materjali valikus kui ka valmisesemete kujus. Mõnede esemete puhul tuleb ette välismaiste eeskujude kopeerimist kohapeal hõlpsamalt kättesaadavas materjalis: nii on luus ja sarves kopeeritud Skandinaavias ning Kesk-Euroopas levinud pronksist ehtenõelu ja kaksiknööpe. Kuid lisaks sellele saab tuua üksikuid näiteid sellest, kuidas eseme valmistaja on püüdnud mingit standardiseeritud kujuga eset valmistada mingit teisest parajasti käepärast olnud materjalist.

Üheks väga standardiseeritud leiurühmaks Ida-Leedu kindlustatud asulates on kitse/lamba sääreluust odaotsad, mille kuju tuleneb kasutatud luu kujust (joon 2). Üksikuid selliseid odaotsi leidub ka Läti ja Eesti kindlustatud asulates. Narkūnai linnamäelt on leitud odaots, mille kuju püüab kopeerida kitse-/lambaluust odaotste kuju, kuid ese on valmistatud hoopis põdrasarvest (joon 3). Eesti kindlustatud asulates leidub hambulise servaga tööriistu, mis on kõik tehtud abaluust (joon 4). Iru asulast on aga teada hambulise servaga tööriist, mille materjaliks on valitud roie (joon 5). Luust ehtenõelte puhul on Lätis asuva Ķivutkalnsi linnamäe ja kalmistu leiumaterjalis iseloomulikuks ümara peaosaga nõelatüüp (joon 6). Peaaegu kõik sellised nõelad on tehtud suurte toruluude seinast. Kuid Ķivutkalnsi nõelte hulgas leidub ka üks erandlik nõel, mille valmistaja on kasutanud hoopis roiet (joon 7: 1). Kaks roidest nõela on leitud Asvast (joon 7: 2, 3).

Miks on luutöötaja eseme valmistamiseks mõnikord ebatraditsioonilise materjali valinud? Võimalik, et traditsioonilist materjali polnud käepärast. Loomi tapeti tavaliselt kindlatel aegadel aastas ja see võis mõjutada luu kättesaadavust. Ka sarvede kättesaadavus sõltus aastaajast. Sarvesemeid – näiteks spiraalsete kasutusjälgedega sarveharusid – on mõnikord, tõenäoliselt vajaliku toormaterjali puudumise korral, kasutatud mõne teise eseme valmistamiseks (joon 8, 9).

Niisiis võisid erinevad materjalid olla saadaval erineval ajal. Narkūnaist leitud sarvest odaots on arvatavasti valmistatud aastaajal, mil kitsi/lambaid ei tapetud, ja seetõttu polnud võimalik vajalikku luud hankida. Siiski on sarvest odaotsa valmistaja püüdnud luust odaotste kuju võimalikult täpselt järele teha ja seeläbi jätta muljet, nagu oleks see tehtud tavapärasest materjalist.

Abaluust hambulise servaga tööriistade puhul on oluliseks peetud skeletiosa, loomaliik pole olnud sedavõrd oluline. Abaluud, nagu ka teised lameluud (joon 10), paiknevad liharohketes kerepiirkondades, mida tarvitati toiduks. See võiski olla põhjuseks, miks selliseid luud parajasti saada polnud: nende puhul oli vaja kindlasti ette planeerida, et luud tahetakse mingi eseme valmistamiseks kasutada, ja neid ei tohtinud lihunikutöö või toiduvalmistamise käigus purustada. Luutöötaja oli ilmselt luude omadustega tuttav ja vajaliku luu puudumisel oskas ta valida sarnaste omadustega luu. Nagu juba luude nimetuski ütleb, on kõik need luud kujult lamedad ja nende puhul saab hõlpsasti kujundada pika, õhukese ning terava lõikeserva.

Ka roide valimisel nõela valmistamiseks võib põhjus peituda lihtsalt vajaliku luu puudumises, kuid on ka teisi võimalusi. Võib-olla valis kogemusteta luutöötaja roide sellepärast, et see on kergemini töödeldav kui toruluu. Selle tulemusena valminud nõela esikülg sarnaneb traditsioonilise nõelaga, erinev on tagaküljel nähtav poorne luukude.

Põhjused, miks eseme valmistamiseks on valitud mingi muu materjal, võivad olla erinevad. Võimalik, et vajalik luu ei olnud kättesaadav või valis kogemusteta luutöötaja sellise materjali, mida oli kergem töödelda. Sellise eseme valmistaja oli nii konservatiivne kui ka loominguiline, püüdes küll säilitada eseme traditsioonilist kuju, kuid leides võimaluse valmistada see mingist muust materjalist. Kuigi tegu on vaid üksikute näidetega, on need ometi tõendiks nende esemete valmistajate leidlikkusest.