ARROWHEADS, PALISADES AND AN ATTACK SCENARIO. RIDALA BRONZE AGE HILL-FORT REVISITED

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Abstract

The fortification character of the double-ring palisade-structure of Ridala is discussed here. A crucial factor is the legend of the decline and desertion of the site, due to an outside attack. Bone arrowheads as possible explanations for this attack theory are examined, and the events behind the palisade-structure and inhabitation (formation, duration and break-up) are reconsidered. In the end, the function and purpose of the palisades are regarded as being of a symbolic character (religious and political) rather than sanctioned by military threats.

Key words: Bronze Age, warfare, hill-forts, fortification, palisades, arrowheads.

Warfare and military ideology were omnipresent during the Bronze Age, as is manifested archaeologically in grave goods, hoards and rock carvings of that time. Other archaeological sources such as settlements, particularly those with fortifications, show warlike actions and conflicts as integral parts of the Bronze Age reality. The existence of battle signs, such as weapons, body injuries and destruction-layers at settlements, are so significant that the critical events during the Bronze Age can only imply historical dimensions (Falkenstein 2006/2007).

The reasons for these major defensive strategies, during the final stage of the Bronze Age in particular, are seen in the enormous demographic pressure, in the diminishing of hierarchies in favour of more dynamic societies, and in the intensified use of resources, evoking mercantile competition.

Unlike in the Nordic, Lusatian or Late Urnfield cultures of the European Bronze Age, weapons made of metal, stone or bone make up only a minor find category in the eastern Baltic find repertoire of that time. The few known graves and hoards contain mostly ornaments and tools. But the new forms of residential sites, hill-forts or fortified settlements, certainly imply a warrior ideology and military activity. There are indeed indications that the life of Bronze Age people in the eastern Baltic was not always quiet and peaceful (Čivilytė 2007; Vasks 2007).

About a hundred hill-forts are known from eastern Baltic territory; of these, around three quarters are in the Latvian part of the Daugava basin. A simultaneous fortification phenomenon could be observed in Central Europe during the Late Urnfield-Hallstatt period (Ha C-D/Montelius V–VI). Ridala, on the island of Saaremaa (Fig. 1), is one of the few Estonian fortified sites where the defensive work represents an enormous joint effort by its residents. The traditional explanation for this action is the urgent requirement for protection and safety, eventually leading to the idea that the hill-fort was attacked and destroyed.

The site has been investigated only to a minor extent. Therefore, a closer examination of the construction, duration and reasons for the decline of the fort is needed. Why the need for double-ring palisades? What do we know about the domestic remains on the site? Do we have reliable evidence for the violent decline of Ridala?

Ridala: the hill-fort

The *Linnamägi* (a 'hill-fort' in the oral tradition) near the village of Ridala is situated on a morainic ridge in the coastal zone of the island of Saaremaa. Now lying several kilometres inland, the entire site (approximately 4,500 sq. m) was once surrounded by the sea. Two sub-areas in three summers (1961, 1962, 1963) were excavated by Aita Kustin and Artur Vassar, up to a total extent of 435 square metres (Figs. 1; 2). That forms only a small part (one tenth) of the settlement. The results of the investigations were never published; there are only manuscript reports on their archaeological work in the archives of the Institute of History of Tallinn University.

Harri Moora (1967) remarked first on the particular importance of the Ridala hill-fort to east Baltic prehistory. Formerly, only two prominent residential sites

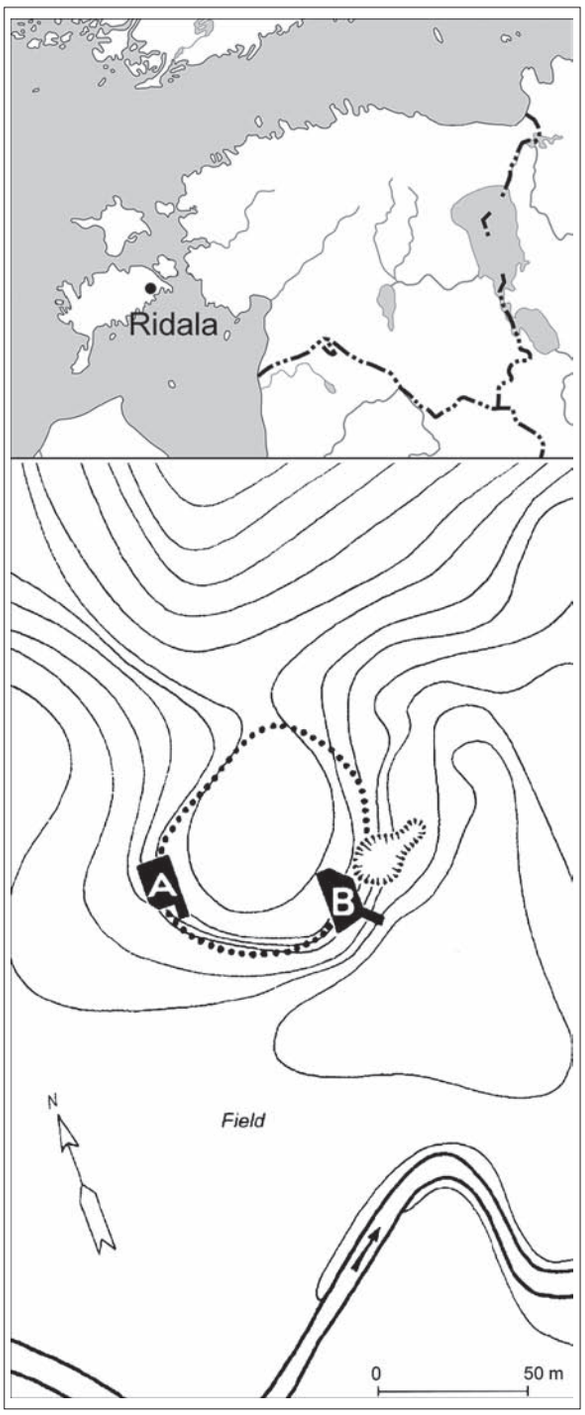

Fig. 1. Ridala hill-fort: the excavation areas (map by K. Siitan, plan with excavation areas after Jaanits *et al*. 1982, Fig. 101).

from the Late Bronze Age period were known in Estonia: at Asva (Saaremaa), and Iru (near Tallinn). They both show a similar defensive strategy, as is seen on their location on higher morainic plateaux in the direct vicinity of the coast. But so far, palisades are a significant feature only of Ridala. The intensity and the technical degree of local metal production, bone manufacturing and pottery-making at these sites were advanced and complex compared to other settlements in the northeast Baltic area. They all existed more or less simultaneously, and are dated between Montelius periods V–VI (950-550 BC).

There has never been any doubt about the true fortification disposition of the Ridala settlement, or the existence of insecure warlike times either. In the literature, the security aspect is explained as a reasonable consequence of the adventurous activity and efforts in trade and in seafaring of Bronze Age people at Saaremaa. Thus, it was all about securing and controlling the resources and in-site production. Accordingly, this could have involved steady threats from outsiders, and it could even have caused tribal conflicts (Jaanits *et al.* 1982, p.159).

The theory of decline due to attacks

It was Vello Lõugas (†1998) who in the 1960s came up with new ideas and interpretations for the fortified settlement phenomenon in present-day Estonia. Lõugas conducted several expeditions and excavations on archaeological sites from the Bronze Age and Iron Age, including his effective fieldwork at Asva and Kaali (meteorite crater). He published several articles on his archaeological domain, the Early Metal Ages. In his comprehensive dissertation (V. Lõugas 1970), the main part concerns the two Asva and Ridala settlements, focusing on chronological and socio-economic issues. V. Lõugas also knew how to attract public attention by a catchy hypothesis: convinced of the defensive disposition of Ridala, he claimed that the site bears testimony to violent actions and battles over the hill-fort. First the layers of burning indicate a very sudden breakdown, and then the abundance of bone arrowheads from Ridala let us assume an outside attack or siege. Thus, most of the arrowheads recovered from the wall or fence area, some of the scattered fragments, fit together (V. Lõugas 1970, p.38 and p.354). Later on, V. Lõugas explained this very same decline scenario: arrowheads were fired from the outside against the wall. There, they cracked, the pieces fell down, and eventually they remained under the ruins of the collapsed fences (Jaanits *et al.* 1982, p.146; Lõugas, Selirand 1989, p.202).

Not mentioned by Lõugas, but corresponding with a possible attack theory, are some scattered finds of human bones (*cranium, pelvis, femur*) in the sub-area A (Vassar 1962, p.20; Maldre 2008, p.264, Table 1). Besides arrowheads, there is also a socketed bronze axe, found at Ridala B right beneath the ploughed surface (Moora 1967, p.68, Fig. 4.4). Other finds implying a certain military activity are absent.

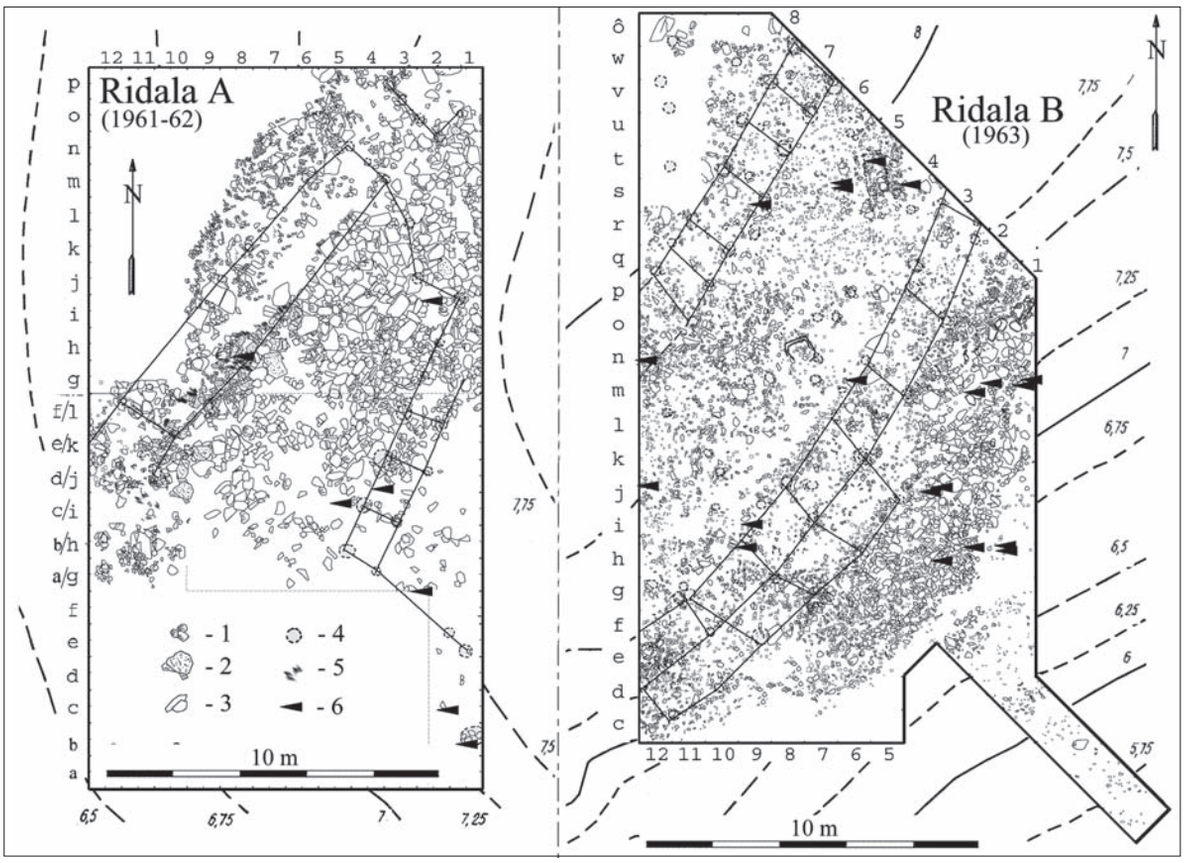

Fig. 2. Ridala A and B. The distribution of arrowheads in the excavated areas with features of stones and postholes (interlinking showing rectangular placement of palisade-foundation): 1 granite; 2 burned limestone plates; 3 limestone; 4 posthole; 5 charcoal, soot; 6 arrowheads (drawing by U. Sperling).

The Scythian raid: another inspiring *topos*?

Thinking of V. Lõugas' scenario of archer attacks, we are reminded of similar events discussed in archaeology. The debate of the 'Scythian raid' that was very popular among European archaeologists at that time, especially since the early 1960s, should be mentioned in this respect. The issue was about several destroyed and abruptly abandoned Hallstatt-period hill-forts northeast of the Alps. This phenomenon was explained for a long time by the attacks on the settlements of the Scythians, eastern tribes with a Pontic-Caspian origin, in particular because of the huge amounts of arrowheads and other 'Scythian' weaponry left in these hill-forts, the only remains bearing witness to this foreign 'intruding' element. Some hill-fort and ring-fort settlements in the southern areas of Late Lusatian culture show clear traces of a sudden decline and desertion, for some of them violent warlike actions have been proved. Anyhow, it has long been a matter of fascination, in Polish and German literature also, and might have influenced V. Lõugas' interpretation (Sulimirski 1961; Kołodziejski 1971; Bukowski 1977).

In the meantime, chronological-comparative studies on the issue have dated these raids to the seventh and sixth centuries BC, which means at least 100 years earlier than what their historical dating has long been believed to be. Thus, the invasion of Europe by the Scythians, according to Greek sources, cannot always be associated with the destruction layers of the hill-forts (Parzinger, Stegmann-Rajtar 1988). However, what remains is the interesting debate over the actual events at these sites, especially regarding the issue of Scythian weapons, like the two and trefoil winged bronze arrowheads. Hundreds of these projectile points have been found in destruction layers in the settlements, but are missing in local material cultures. One very prominent example is the Slovakian hill-fort of Smolenice-Molpír, investigated in the 1960s and 1970s. In and around its collapsed walls, around 400 intact and broken arrowheads of the Scythian type were found. The remains of a dozen killed people were recovered from the ramparts, evidently buried by the ruins of the fort. However, it is particularly interesting that on the issue of the arrowheads and the killings, there are still different points of view regarding the question whether the arrowheads belonged to the defending residents or to the foreign intruders (Parzinger, Stegmann-Rajtar

1988, p.175; Hellmuth 2006, p.194ff). Without going into detail, it is remarkable that the differing opinions also consider the find of a casting-mould of such an arrowhead type from Smolenice.

V. Lõugas' statement concerning the attacks on the Ridala settlement has never been disputed in literature. Neither have the arrowheads ever been examined from the point of view of being evidence of attacks or battles. Only the defensive character of the Ridala site, the purpose and function of the palisades, was an issue of a recent discussion (Lang 2007; see below).

The bone arrowheads

Thirty-one fragments of bone arrowheads have been found at the Ridala fortified settlement site (Figs. 2-4). Similar arrowheads are known from other Late Bronze Age sites in Estonia as well. At Asva, more than 30 bone arrowheads and pieces of them have been discovered, including some blanks and unfinished objects (Luik 2006, p.133, Figs. 2-5; Sperling 2006, p.112ff, Plates LI.1-2, LIV). Only three arrowheads and pieces of them dating from the Bronze Age have been found at Iru; a couple of bone pieces are also known which may have been blanks for making bone arrowheads. One arrowhead was found at Kaali, and another one at Peedu in southeast Estonia (Luik 2006, p.133, Figs. 2.7, 4; Moora 1939, Fig. 70). Similar arrowheads are also numerous among archaeological finds at fortified settlements in Latvia (Graudonis 1989, p.34ff, Plates XVI-XVIII) and Lithuania (Grigalavičienė 1995, p.113ff, Fig. 62). Bone arrowheads from the Bronze Age also occur in other countries around the Baltic, in Poland, Sweden, Finland and Russia (Durczewski 1985, Plate 55.1-29; Harding *et al.* 2004, Plate 31.1-11, 18; Ikäheimo *et al*. 2004, pp.8-10, Fig. 3; Sperling 2006, p.114; Luik 2006, p.134).

The overwhelming majority of Late Bronze Age arrowheads in the eastern Baltic region are made from the diaphysis of long bones. A cross-section of an arrowhead blade is either triangular, lozenge-shaped or lenticular; barbed specimens occur alongside plain ones. An arrowhead tang was cut in a specific tapering triangular shape, which was inserted into a slit cut into the shaft of the arrow (Luik 2006, p.136ff, Figs. 2, 4). The lengths of arrowheads vary greatly. The arrowheads from Ridala are so fragmentary that only two of them could be measured: one small triangular arrowhead is 5.1 centimetres long, and the length of an almost complete specimen without barbs is 8.2 centimetres (Fig. 4.15,19). Measurable arrowheads from Asva have a length from 5.2 centimetres to 16.5 centimetres (Luik 2006, p.137).

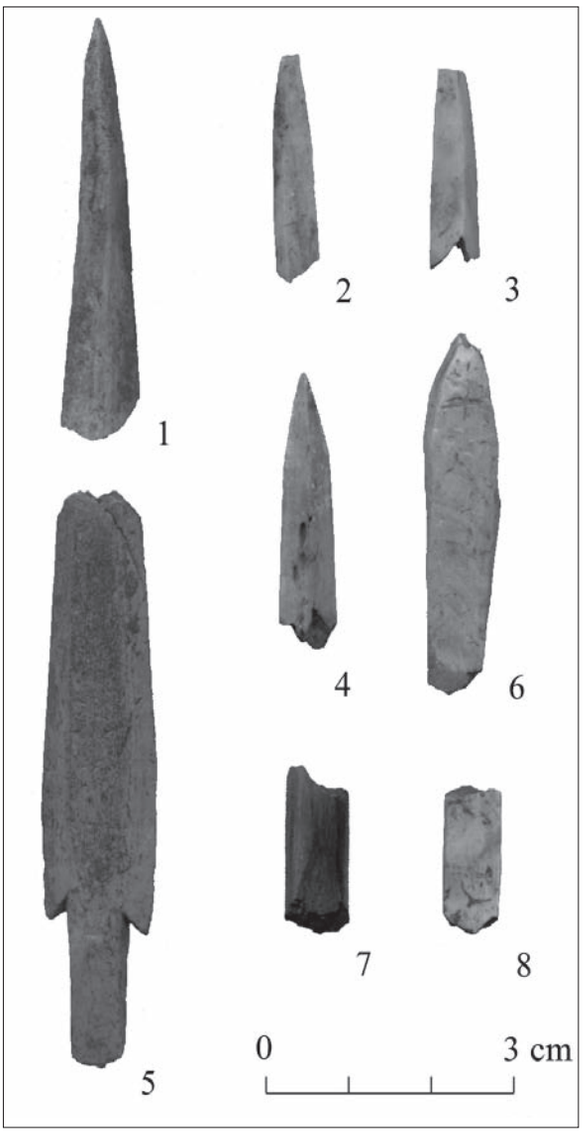

Fig. 3. Fragments of arrowheads from excavation area A (AI 4261): 1 - 102; 2 - 135; 3 - 520; 4 - 688; 5 - 214; 6 - 2; 7 - 9; 8 - 516 (photograph by H. Luik).

Were such arrowheads meant for hunting, or for warfare? Richard Indreko (1939, p.24) and Artur Vassar (Vassar 1955, p.118) regard bone arrowheads as hunting tools. It is also possible that although they were primarily hunting tools, they may have also been used for warfare (Sperling 2006, p.120).

The majority of faunal remains from the eastern Baltic region from the Bronze Age consist of the bones of domestic animals; hunted game is less represented among faunal remains (Graudonis 1989, p.101; L. Lõugas 1994; Vasks 1994, p.118, Tables 7–9; Grigalavičienė 1995, p.268; Sperling 2006, p.125ff; Maldre 2008). In Asva and Ridala, which were located on the coast, seals prevail among the bones of game; antler harpoon heads were probably used for seal hunting (L. Lõugas 1994, p.90; Sperling 2006, p.127 and p.128; Maldre 2008). In Ridala, seal bones make up 19%, and the bones of oth-

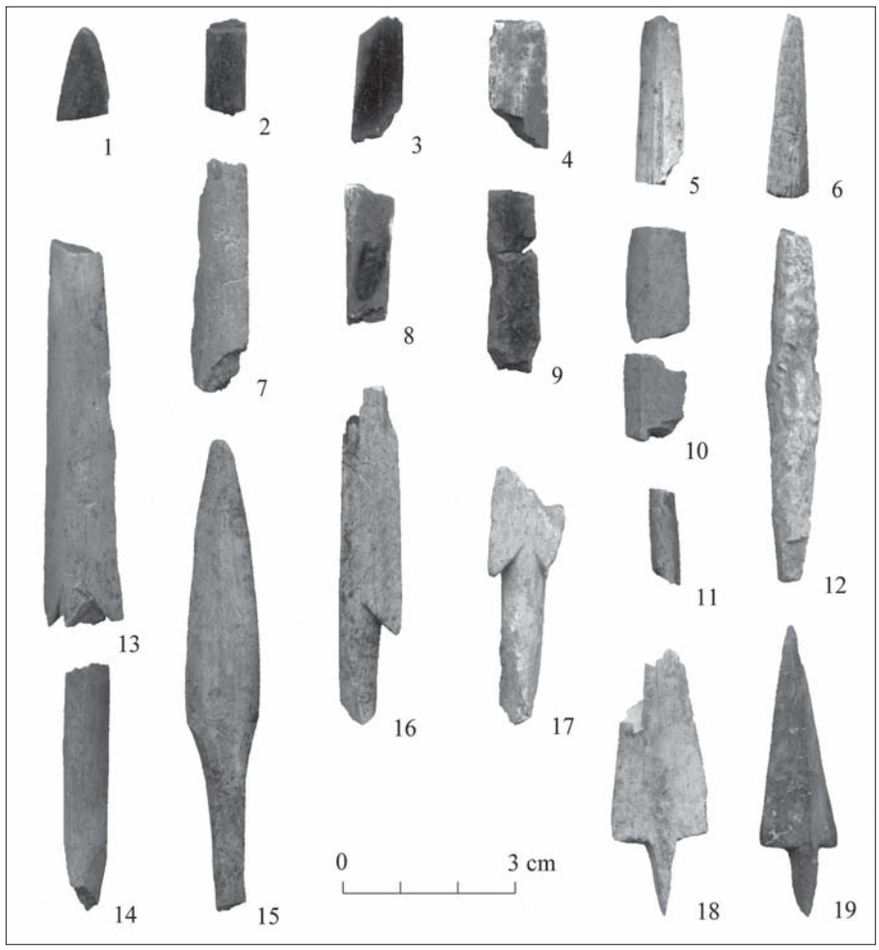

Fig. 4. Fragments of arrowheads from excavation area B (AI 4329): 1 - 159; 2 - 10; 3 - 706; 4 - 634; 5 - 114; 6 - 256 (2 fragments glued together); 7 - 837; 8 - 707; 9 - 493 (2 fragments glued together); 10 - 651 (2 fragments); 11 - 84; 12 - 846; 13 - 804; 14 - 729; 15 - 856; 16 - 626 (2 fragments glued together); 17 - 853; 18 - 844; 19 - 822 (photograph by H. Luik).

er game animals only 3% of the faunal remains. Most of the bones of wild animals come from elk. Nearly a third of elk skeletal parts are antler fragments, which do not necessarily indicate hunting, because they may have come from shed antlers as well. Besides antler fragments, a few cranial bones and teeth, and bones from distal parts of extremities, were identified. Some bones belong to beaver, wild boar, squirrel and hedgehog. Hence, according to the archaeozoological data, there was little hunting on land (Maldre 2008, p.271).

Jaak Mäll (in a personal communication), the researcher into prehistoric and medieval weaponry, believes that the long and slender barbed arrowheads from the Bronze Age in Estonia were used as weapons. Missile weapons in military conflicts are usually aimed at the thorax, where a long and sharp arrowhead was most likely to hit the internal organs. On the basis of the shape of the tang, it can be said that arrowheads were hafted so that on an attempt to remove the arrow from the wound, the arrowhead would be detached and, due to the barbs, it would remain stuck in the wound. The wound need not be fatal, but the removal of the arrowhead would take time, and the pain would immobilise the enemy. On the other hand, arrowheads with a shorter, wider and thinner blade, causing heavy bleeding, would be more suitable for hunting. A hunting arrowhead should also be firmly hafted: movement by the animal would move it, thus enlarging the wound and causing pain (Luik 2006, p.142). But there are also opinions that stone arrowheads were better suited for warfare, and bone arrowheads for hunting (Ikäheimo *et al.* 2004, p.15). Of course, it is possible that hunting arrowheads could be used in battles, and vice versa, although some shapes or materials were more suitable for hunting, and some for military purposes (Mäesalu 1989, p.28; Luik 2006, p.241ff).

The occurrence of bone arrowheads primarily in Bronze Age fortified settlements, their standardisation, and the greater skill required for their manufacture compared to most contemporaneous bone artefacts, indicate their essential place, significance and meaning in the society of the eastern Baltic in the Late Bronze

Age (Luik 2006, p.144). Considering the shape and properties of bone arrowheads, as well as the absence or scarcity of arrowheads made from other material at these sites, it is probable that the carefully elaborated bone arrowheads were used for warfare (Luik 2006, p.143).

It is a feature of bone arrowheads from Ridala that most of them are preserved fragmentarily, only some specimens are almost complete (Figs. 3; 4). Seven pieces bear traces of burning (Figs. 3.7; 4.1-5,8). Eight fragments were found in excavation area A, and 23 pieces in excavation area B. According to V. Lõugas, several compatible fragments of bone arrowheads were found beneath the remains of what is presumed to be a stone wall (V. Lõugas 1970, p.354; Jaanits *et al.* 1982, p.146). In two cases, two fragments were very strictly fitted together; these pieces were glued, and have the same find number (Fig. 4.6, 9, 16). Two other fragments (Fig. 4.10) which could belong to one specimen also have a common find number, but these do not have a fitting fracture. A few other pieces could be fragments of one arrowhead, but neither in these cases is it possible to fit the fractures (Figs. 3.1, 5; 4.13, 14, in both cases these fragments were found quite close to each other; Fig. 4.3, 8, these fragments are both burnt and were found at the edge of the same hearth). Eight arrowheads from excavation area A were located sparsely over the whole area; in excavation area B, the arrowheads were also located in different places (Fig. 2). Ten fragments of arrowheads were found in a stony area, believed to be a collapsed stone wall; two of these have the same find number and are glued together (Fig. 4.9), and two others could belong to one arrowhead (Fig. 4.13, 14).

As has already been mentioned, most of the arrowheads are preserved fragmentarily. Six of them are longer or shorter pieces of the tip part of an arrowhead (Figs. 3.1-4; 4.1, 6), nine fragments are from the blades of arrowheads (Fig. 4.3-5, 7, 9-11), and seven are from the tangs (Figs. 3.6-8; 4.2, 8, 12, 14). Seven arrowheads are preserved more completely. One arrowhead without barbs has a blade with a lenticular cross-section, the blade is preserved complete, but a small part of the tang is broken (Fig. 4.15). Two arrowheads are small triangular specimens with a short tang, one of them has only a very small fragment missing at the edge of the tip (Fig. 4.19). The other has the entire tip broken (Fig. 4.18), but on the basis of the fresh fracture, it seems that this arrowhead was broken only during excavations or even later. Two arrowheads have a barbed blade with a lozenge cross-section; both have the tip and the tang missing (Figs. 3.5; 4.13). Most of the tip and blade fragments probably also belong to similar arrowheads. Two arrowheads have a triangular cross-section; they also have barbed blades and their tips and tangs are both broken (Fig. 4.16, 17). One of them is split longitudinally, the pieces are glued together (Fig. 4.16). In this case, some doubt also arises that it could have been broken during the excavations; but since the pieces are glued together, it is not possible to ascertain whether this arrowhead was broken recently or not. One burnt blade fragment also belongs to an arrowhead with a triangular coss-section (Fig. 4.3).

Comparing arrowheads from Ridala with specimens found at the approximately contemporaneous Asva fortified settlement site, we can observe that arrowheads from Ridala are much more fragmentary. Does the fragmentariness of these finds indicate that they were broken during an attack on the site? Several experiments have been carried out using copies of stone, bone and antler arrowheads, and spearheads from different periods (Tyzzer 1936; Arndt, Newcomer 1986; Odell, Cowan 1986; Titmus, Woods 1986; Knecht 1997; Pokines 1998; Ikäheimo *et al.* 2004). Although the projectile points used in these experiments were of different shapes and sizes compared to the Late Bronze Age arrowheads from Ridala, and usually the aim of experiments has been to ascertain how the projectile points break on hitting the target animal, certain conclusions can be drawn about the hardness and the durability of different materials. Experiments have proved that, as bone and antler are rather resilient and durable materials, bone and antler arrowheads break less frequently than arrowheads made of stone; antler is even more durable than bone (Arndt, Newcomer 1986, p.166; Knecht 1997, p.206). The results of experiments indicate that arrowheads of bone and antler would not always break, even when hitting a stone (Knecht 1997, p.203). The most frequent damage is the breaking of the tip (Tyzzer 1936, p.267; Arndt, Newcomer 1986, p.167; Pokines 1998, p.877ff); the other weak point is immediately outside the bound haft (Barton *et al.* 2009, p.1709). Presumably, the damage to the arrowheads from Ridala was not caused by hitting a stone wall; but their fragmentariness must have other causes, including post-depositional processes. In some cases, an arrowhead could have been broken during excavations, or even later. It should be mentioned here that the other finds in Ridala are also preserved more fragmentarily than, for example, in Asva. The number of arrowheads also seems too small to interpret them as evidence of any particular military attack (cf Mercer 1999, Fig. 3), although their occurence at the site probably indicates the possibility of military conflicts. Undoubtedly, their finding context should be regarded as more important than the number of arrowheads (Lõhmus *et al.* 2010).

The palisades

The former existence of palisades is indicated by postholes only. No beams or planks could be detected that could possibly have belonged to palisade structures. Nevertheless, the number and placing of the posts is clear-cut. More than 80 postholes are located all over the two excavated settlement areas (Fig. 2). The posts formed linear rows that seem to surround the settlement. Some of them are difficult to relate to this presumed structure; obviously, these belonged to houses. A very regular arrangement of posts can be observed at Ridala B. Here, the majority of about 53 posts are in five parallel lines. Most are placed in pairs, with a regular span of about two metres, placed one after the other at more or less regular intervals (2 to 4 m). Apparently, wooden poles or logs were erected with a certain connection to each other, probably to form a base for some kind of palisade. They all go in the same direction, northeastwards, along the edge of the settlement plateau. At Ridala B, two of these circle-like palisade structures can be seen, separated by a gap of about six metres. The diameter of the pits varies between 20 and 40 centimetres. Some postholes (7/i NW; 8/j) in the outer palisade are in a sloping profile position; they are described as bending inwards, in a northwest direction (Vassar 1963, p.28). One documented profile on the northeast side of Ridala B depicts a palisade-section with two postholes (with a 2 m span) that are dug up to 50 centimetres under the brownish humus level into the morainic ground (Fig. 5). Contrary to expectations, no burnt layer or trace of fire was found here.

In Ridala A, the settings of the posts (about 28) differ only slightly from this in the eastern sub-area. Again, some posts are placed in two rows, running in a northeast-southwest direction. An outer, rectangular and linear palisade-like structure can tentatively be reconstructed by only approximately ten posts. The intervals or sections between the crossbeams were probably larger, or some posts may have remained undetected. What is remarkable is the dense placement of the two post rows (3 by 4) in the northeastern section of Ridala A, both running crosswise to the palisade in a northwest-southeast direction. Behind this setting of postholes, there must have been a functional explanation, perhaps indicating a passage or a gateway through the rampart. In order to stabilise the wall and angles at this narrow part, the posts obviously had to be placed closer. The structure leaves the impression that the two palisades approached one another, forming an angle at the gateway. Perhaps they constituted a special defensive element, which was meant to hinder the attacker by forcing him to approach the fort with his unprotected side towards it. This interesting feature could determine the true fortification character of the palisade construction, but it is only hypothetical, due to the fact that its main part extends outside the investigated area.

All things considered, the site must have been surrounded by two parallel palisades deriving from a ring-fort construction, an endeavour that was planned and carried out systematically. But what about the double palisades? Were they built contemporaneously, both being part of the same rampart concept? How were they constructed?

The construction and setting of the palisades

H. Moora (1967) was the first to mention two fences that surrounded the settlement. There is no comment on their possible purpose, or on the way they were constructed. Interestingly, Moora avoided the term 'palisade' by speaking of 'walls' or 'fences' (*Wände*), probably because of the rather modest dimensions of the supposed woodwork. In speaking of fortified settlements like Asva and Iru that are located on higher terrain, exploiting good natural defensive positions, he admitted that during the Bronze Age the effort in building defences in Estonia was generally moderate, judging by their height and size (Moora 1967, p.65ff). V. Lõugas described the fence construction in greater detail. Not only did he mention two parallel walls, and pointed to the remarkable distance of six metres between them, he also noted a fifth row of smaller postholes placed at about one metre to the south. He suggested that the post settings derived from a wooden fence construction, and of house remains too (V. Lõugas 1970, p.351ff). He also mentioned the stone heaps outside the fence barrier, which could derive from the filling of the rampart (V. Lõugas 1970, p.353), an opinion that he later exchanged for the idea that it could have been a separate stone wall to complement or to reinforce the (cracked?) palisade. This gave rise to a simplified idea of a rampart construction of vertical wooden poles, forming sections of interlinked rectangles that were filled up with earth, stones or rubble. Valter Lang has explained this lately as a palisade type that consisted of horizontal crossbeams, linking each pair of posts, and thus forming consecutive wooden chambers or cassettes that may have been filled with stone material that was scattered in the vicinity of the collapsed wall (2007, pp.64ff, 68ff, Fig. 26).

This question concerning the building technique remains unclear, but there is an interesting analogy to the Ridala palisade from the Late Bronze Age/Pre-Roman Iron Age ring-fort at Havor on Gotland. The fortification consisted of a palisade and a stone wall. The

postholes, their size, their intervals and even their rectangular placement correspond remarkably to Ridala (Nylén *et al.* 2005, p.102ff, Fig. 4). Like Ridala, the only rationale for the existence of the palisade construction there was the placement of postholes. Only a few wood samples were preserved in the postholes. At Ridala, stone constituted one of the most likely building materials. Here, local limestone slabs and granite were used for paving and for supporting the poles of the palisade. Considering the huge amount of stones within the two sub-areas, it seems likely that at least some of them had also been used in the stonework of the walls that surrounded the settlement. While the postholes functioned as vertical cores, as palisade poles, the gap between the walls needed to be filled either with earth or stones (or both). We know defensive walls made of stonework filling of the Celtic type, the so-called *Pfostenschlitzmauer* (post-slot wall), that was used for several Central European hill-forts from the Early La Tène period onwards. In the east Baltic, there is no definite evidence of this type of fortification from the Bronze Age/Early Iron Age. From the Late Bronze Age/Early Iron Age contexts, Lusatian fortifications from East Germany are known that were apparently built in two-row palisades similar to that at Ridala. There, the wooden chambers built of truss-beams were filled with either wooden planks and/or soil. The outside walls were formed of horizontal planks (Podrosche-settlement; Buck 1982, p.98, Fig. 1. D-F). The height of the rampart construction at Ridala probably reached two to three metres, and maybe even supported a guardwalk (Lang 2007, p.68).

As has already been mentioned, there are a few scattered postholes at Ridala A and B that do not relate to the palisades, but to supposed buildings. But the heaps and stone paving do not fit with the palisade foundations (see Ridala A). Summing this up, both V. Lõugas and V. Lang wondered about habitation complexes both in and outside the two palisades, as indicated by several fireplaces and findings there (ceramics, bone artefacts). The understanding that the fortification area between the palisade rings could actually have been covered with buildings seemed difficult to accept. So it was explained by different periods of habitation and fortification (V. Lõugas 1970, p.353). Lang suggests rectangular houses, one with limestone paving (Ridala A) that was located on the interior of the palisade, and another, two-aisled longhouse beside the outer palisade (at Ridala B). Therefore, it seems possible that one of the two concentric circles is of a younger date, but due to the small excavated area, this must be treated with caution (Lang 2007, p.64). Nevertheless, Lang mentions other double-ringed enclosures on Saaremaa (from Iron Age periods). Concerning the palisades and the dwellings at Ridala, a different interpretation for the events around the fortification is possible.

The palisades and the houses: two different periods?

The peculiar disparity between the palisade rows and the rectangular stone paving becomes evident already at Ridala A, where during the excavations most of the posts did not become visible before the larger stone plates of the house had been removed. Neither the stone plates nor the underlying posts were placed at random. But the rectangular stone paving was apparently oriented in the opposite direction to the palisade posts. They even seem to cross each other diagonally. On the previous excavation plan shown by Moora, this detail is not presented accurately. This may be because Ridala was always considered to be a single-phase settlement (Moora 1967, p.67). Apparently, most of the southern palisade rows at Ridala A were covered by the stone paving, a fact that was actually mentioned and documented in the excavation files (Vassar 1962, p.23, Plates 5-6, levels 80-100 cm).

How the palisades and the dwellings possibly relate to each other is demonstrated by the most numerous settlement finds, the ceramics. Both from Ridala A and B (435 sq. m), a total of around 4,200 pieces of ceramics were recovered, mostly small and fragmentary, with a total weight of only 25 kilograms (Fig. 6). That is in contrast to Asva, where from around 572 square metres, 413 kilograms of ceramics (up to 30,000 pieces) were collected. Judging by the shape and stylistic features, the pottery indeed represents one single period only. The Ridala ceramics contain both the coarse storage ware type and the fine-grained pottery that are known from the Asva and Iru settlements, attesting to the simultaneity between these sites (Moora 1967, p.69, Figs. 4.5-6, 7-9; Lang 2007, p.127ff, Figs. 58, 59). Particularly burnished and profiled bowls are new and outstanding among the local pottery repertoire, representing Central European eating and drinking habits that are absent in other east Baltic settlements from that period.

In spite of the fact that the upper surface layer of the settlement has been ploughed, the distribution pattern of the ceramics is distinct. At Ridala A, they cover in particular the zone of the inner palisade, and seem to contour the house feature with the stone paving. It seems that the ceramics accumulated along the house walls, obviously because the centre of the living rooms was mostly kept free of waste. In conclusion, this fits with the missing relation between the dwelling and the palisade.

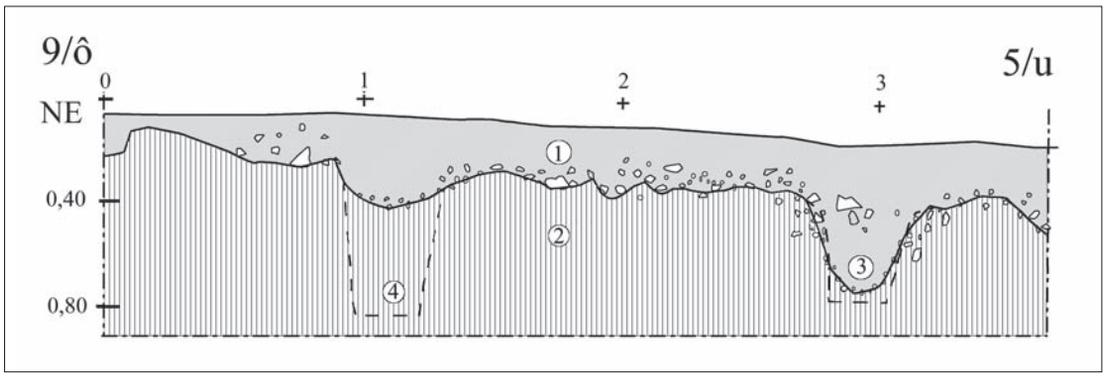

Fig. 5. A profile of the palisade-section: 1 cultural layer; 2 natural moraine soil; 3 contours of trapezoidal pit with brownish humus-like soil; 4 margin contours of trapezoidal pit (drawing by U. Sperling, after Vassar 1963, Plate 13).

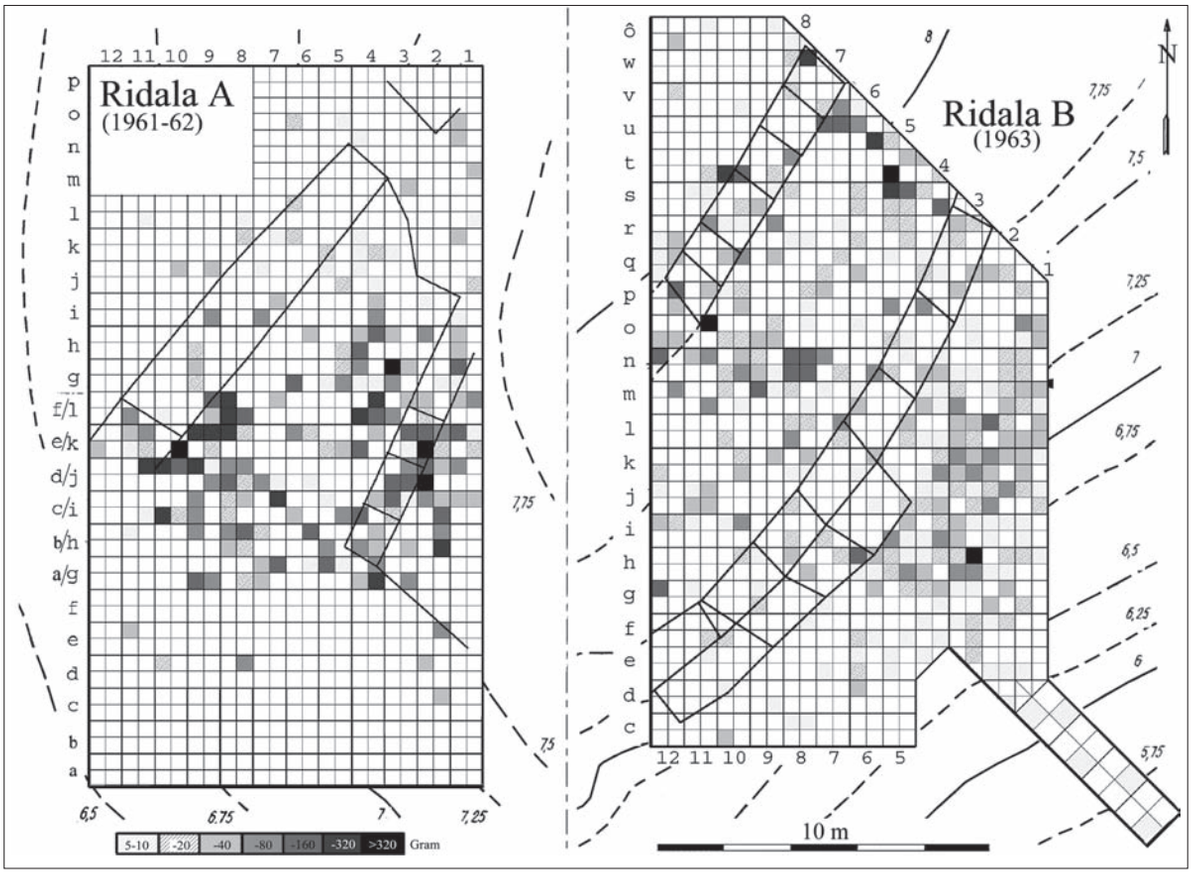

Fig. 6. The weight distribution of ceramics at Ridala and the interlinked palisade-poles (drawing by U. Sperling).

The eastern sub-area offers another interesting detail. Here, the concentration of ceramic finds is notable in the southeast part, beyond the palisade lines, where they cover the linear stone heap. As has been mentioned above, this part outside the fences is thought to have belonged to the palisade construction, whether as stone filling or its reinforcement. It was A. Vassar who remarked in his notes that the linear stone heap was stuffed with ceramics and casting debris and located directly by the slope, a feature that reminded him of a 'terrace' (Vassar 1963, p.11). This interesting comment has been ignored so far, but could imply a meaningful explanation for this feature. Does it not seem reasonable to believe that these stone heaps were used for terrain gradation, in order to stabilise and level the surface? Do they not remind us of a pathway or an access road along the palisade, rather than a collapsed stone wall? The very similar archaeological situation known from the Late Bronze Age hill-fort at Vīnakalns in Latvia confirms this interpretation. The slope that surrounded the entire site was reinforced by a chain of stones that was covered by a broad strip (up to 5 m) of

rubble and clay. Their purpose is explained in the same way, in terms of terracing the frontier (Graudonis 1989, p.58, Figs. 35 and 38). Given the dense concentration of ceramics and other finds, the stone bed mentioned at Ridala B was presumably placed at the beginning and during the period of the palisades. That applies to the interpretation of the bone arrowheads found here, as well. This feature obviously has nothing to do with the remains of a collapsed wall, as has been supposed. The finds simply gathered outside the palisades and dwellings, together with the settlement's other waste and rubbish.

The stratigraphical record suggests different periods of fortification and (open) habitation. The palisades were removed for unknown reasons, and the settlement continued to be used. Regarding the mentioned burnt layers at Ridala and some fire-damaged finds, the arrowheads for instance, there seems to be another discrepancy. So far, the burning is said to have caused the collapse of the walls or palisades, which supports the attack theory. It has already become clear that definite evidence of carbonised palisades or planks is absent. Instead, the sooty layers originate from the burnt-down dwellings. There are only a few postholes known with traces of charcoal-soot, although they do not belong to the palisade foundations. Vassar already noted for Ridala A that an extensive burning layer, from one or two to three or four centimetres thick, partly covers the area of the house feature where some stones were burnt, too. Taking this fact into consideration, he supposed that the remains of the collapsed wooden walls belong to an old house, while other charcoal-rich spots in the southwest part (10-8/c-e) were the remains of a bronze-casting complex (Vassar 1962, pp.7ff, 11, 15ff, 18, 24). At Ridala B, the traces of charcoal or soot were modest, appearing only where they could be associated with former fireplaces or hearths. No indications of the burning-down of a palisade could be detected here.

In speaking of two different periods of habitation at Ridala, it appears strange that both the fortification and the open settlement existed for a relatively short time. The chronological criteria for the local ceramic material and bronze work indicate that the settlement was built and abandoned during period VI (after Montelius; approximately 750 to 550 BC). That includes the initial settlement phase with ramparts, followed by the dwellings (including stone paving, and so on), and their later desertion due to fire. Not only did the palisades exist for a short time, but neither is there any indication on previous occupation. Vassar remarked that ceramics and bone artefacts, an awl, for instance, came to light from postholes that were dug deep into the base moraine. He suggested that the finds fell into the pits during or after the posts were removed. Other postholes, he states, have been stuffed with stone material, perhaps due to the same course of events (Vassar 1963, p.19).

Conclusion

The investigation has given us some new insights into the formation process of the Ridala hill-fort and the character of its fortification. But due to the insufficient excavation methods and documentation, there is still some uncertainty concerning events and circumstances around the settlement. Undoubtedly, the suggestion of the decline of Ridala due to outside attacks may be disproved. There is no trace of a destruction layer indicating burning and the violent breaking-down of the fences. It seems, rather, that posts and beams were removed voluntarily, as is indicated by finds of ceramics and bone artefacts from postholes of the palisade foundation. The sporadically recorded charcoal-sooty layers that partly cover the palisade area relate to the walls and postholes of houses.

A closer study of the bone arrowheads from Ridala does not support the attack theory. The suggestion that they were found under the ruins of collapsed fences or stone walls does not hold true, either. Also, the fragmentation patterns of the points do not suggest cracking due to the collapse of walls. Comparisons with results from experimental archaeology suggest other ways of breaking arrowheads, for instance post-depositional processes. Bone arrowheads are indeed a unique category of find from Ridala that seem to represent not only the warrior but also the defensive strategy of this residential site. In the end, the number of about 30 specimens, their find contexts and their recorded state of preservation cannot be taken as direct evidence of military conflict.

Concerning the question of the significance of the palisade construction, some doubt remains in explaining the events at Ridala. Looking at the short-term use of the palisades, the idea of the requirement for urgent protection, causing a defence strategy, loses its plausibility. The situation here somehow resembles two sites known from Gotland, and Havor and Vistad in east central Sweden. The Havor site is mentioned because of its analogy in the distinct placement of postholes. The entire place at Havor was surrounded by a two-row palisade erected some time between the Late Bronze Age and the Pre-Roman Iron Age (Nylén *et al.* 2005). In Late Bronze Age Vistad, one single-row palisade encircled the site, and another crossed the inner, central part and divided the settlement into different sections. Both sites are considered exceptional, not only because fortifications were rare in southern Scandinavia at that

time. What is remarkable is that the pottery from both places resembles a southern origin, from the Lusatian Culture area. It is even assumed that both places could occasionally have been visited (and fortified) by people from the south of the Baltic Sea (Nylén *et al.* 2005, p.138; Larsson, Hulthén 2004, p.52). Interestingly, military threats as reasons for erecting palisades are not considered at all. Their purpose and function are seen rather as economic and political matters: first by explaining enclosures as a basic necessity for local husbandry (horse and cattle rearing, Havor) and for special metalwork activities ('secret' iron processing, Vistad); then as an administrative procedure, in forming a place for meetings and religious events (Nylén *et al.* 2005, p.138; Larsson, Hulthén 2004, p.54ff).

Thus, there is a consensus that transformations both in the interregional-cultural and in the socio-political sector led to the erection of the settlement enclosures we know on the island of Saaremaa. According to Andrejs Vasks (2007), east Baltic hill-forts should not necessarily be judged solely from a military point of view, but the psychological-symbolic aspects (as powerful and/or religious centres) should also be considered. This certainly applies to Ridala, too.

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Abbreviation

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

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STRĖLIŲ ANTGALIAI, STATINIŲ TVOROS IR UŽPUOLIMO SCENARIJAI. DAR KARTĄ PERŽIŪRĖJUS RIDALA BRONZOS AMŽIAUS PILIAKALNIO MEDŽIAGĄ

UWE SPERLING, HEIDI LUIK

Santrauka

Ridala Saremos (Saaremaa) salos (Estija) gyvenvietė buvo atrasta XX a. 7-ojo dešimtmečio pradžioje. Anksčiau ši vieta (apie 4500 m^2) buvo visiškai apjuosta jūros, o dabar Ridala yra keli kilometrai nuo kranto. Per 3 vasaras (1961–1963) Aita Kustin ir Artur Vassar ištyrė iš viso 435 m^2 plotą (1–2 pav.). Tyrinėjimų rezultatai ir ataskaitos niekad nebuvo skelbti, o ir pati medžiaga nebuvo kruopščiai peržiūrėta.

Gyvenvietė atskleidė įdomią statinių tvoros struktūrą, didžiulį dvigubo žiedo gynybinį įtvirtinimą. Tokie piliakalniai kaip Ridala yra būdingi vėlyvojo bronzos amžiaus Rytų Baltijos arealui ir siejami su kultūriniais pokyčiais, kuriuos lėmė vėlyvųjų laidojimų laukų ir Lužitėnų kultūros. Bronzos amžiaus žmonių konfliktai ir būtinybė gintis yra rizikingos prekybos ir jūreivystės vystymosi padarinys. Auganti žaliavos šaltinių svarba ir žemdirbyste paremtos ekonomikos vystymasis, metalo ir kaulo apdirbimo bei puodininkystės tobulėjimas tikriausiai darė įtaką prekybai, konkurencijai ir poreikiui užtikrinti saugumą. Saremos Ridala ir Asva

piliakalnių pagrindine paskirtimi visada buvo laikoma gynyba nuo įsibrovėlių ar gentinių konfliktų.

Vello Lõugas, estų archeologas ir Rytų Baltijos priešistorės tyrinėjimų specialistas, visą laiką gynė smurtinio ir staigaus Ridala piliakalnio žlugimo idėją. Pasak jo, gyvenvietė nukentėjo ir krito nuo išorinio puolimo. Ši teorija buvo grindžiama nugriautomis sienomis, degėsių sluoksniais ir gausiais kaulinių strėlių antgalių prie gynybinių sienų radiniais. Pasak Lõugas, strėlių kotai buvo padegti, kad sunaikintų statinių tvoras ir/ar akmens įtvirtinimų medines konstrukcijas, ir dėl to išliko po pylimo likučiais. Lankininkų atakos ir pražūtingo gyvenvietės žlugimo teorija paplito plačiai, bet niekada nebuvo įrodyta ar patvirtinta faktais.

Nesenoje diskusijoje apie tikrą statinių tvoros paskirtį Valter Lang iškėlė kai kuriuos klausimus. Kodėl gyvenvietė apsupta dviguba dviejų eilių statinių tvora ir kodėl būstai buvo statomi tarp jų? Ar tai įvyko dėl skirtingų įtvirtinimų įrengimo laikotarpių? Norint patikrinti Lõugas pasiūlytą užpuolimo scenarijų, Ridala gyvenvietės medžiaga buvo iš naujo peržiūrėta. Ypač daug dėmesio buvo skirta piliakalnio formavimo procesui ir statinių tvoros bei pastatų stratigrafijai ir jų sugriovimui. Taip pat didelis dėmesys buvo skirtas visų piliakalnio statinių ir jų sugriovimo aprašymui ir pažymėjimui tyrimų ataskaitose (2 pav.).

Kalbant apie strėlių antgalius, Ridala jų rasta iš viso 31, daugiausia tik fragmentai (3–4 pav.). Didžioji jų dalis rasta vakarinėje tirto ploto dalyje (B), kur ant piliakalnio pakraščio gulintys akmenys buvo palaikyti sugriautos sienos likučiais. Dauguma strėlių antgalių iškart buvo priskirti ginklams, net nesvarstant jų panaudojimo medžioklei galimybės. Kaip potencialus kario atributas strėlių antgaliai nediskutuojant buvo susieti su gynybine gyvenvietės paskirtimi. Tačiau dėl palyginti mažo jų kiekio, ne iki galo ištirtų radimo aplinkybių ir blogos būklės šių strėlių antgalių negalima vertinti kaip karinio konflikto įrodymų. Tokie pavyzdžiai kaip Halštato piliakalnių griuvėsių sluoksniuose rasti šimtai skitų strėlių antgalių tik dar kartą atskleidžia skirtingus karinių konfliktų ir lankininkų atakų mastus. Kaulo skilimo pobūdis taip pat nepatvirtina minties apie skilimą dėl smūgio į sieną. Eksperimentinės archeologijos rezultatai taip pat nesiderina su žlugimo scenarijumi. Atrodo, kad Ridala strėlių antgalių būklę labiausiai bus paveikusios saugojimo sąlygos.

Apie statinių tvoras galima spręsti tik iš stulpaviečių liekanų: apie 80 jų rasta abiejuose tirtuose plotuose (1; 6 pav.). Stulpavietės išdėstytos skirtinga tvarka; dvi gyvenvietę juosiančias statinių tvoras galima atskirti nuo stulpų struktūrų, besijungiančių į tvarkingus stačiakampius. Reikia pabrėžti, kad tyrimų metu nerasta nei lentų, nei sijų, nei rąstų, tik medžio anglies prisotinti sluoksniai, kurie buvo susieti su sunaikintomis būstų sienomis. Atidesnis žvilgsnis į statinių tvoros struktūrą, akmenų sankaupą ir pastatus aptvaro vidinėje pusėje atskleidžia skirtingus apgyvendinimo etapus. Tyrimų ataskaita ir stulpų įkasimo į moreninį (5 pav.) pagrindą liekanos rodo, kad statinių tvora buvo pašalinta. Kai kurios ankstesnių tvorų dalys buvo uždengtos vėlesnių namų akmeniniu grindiniu (žr. Ridala A; 2 pav.) ar vėliau sunaikintos, įrengiant židinius ir ugniavietes (plotas B). Keramikos (6 pav.), rastos abiejuose plotuose, paplitimas įgalina lengvaiu suvokti šį gyvenamosios vietos pakeitimą. Pietvakarinio pakraščio sluoksnių kaita (plotas B) buvo klaidingai interpretuojama kaip akmeninės sienos griuvėsiai.

Nors užpuolimo scenarijus yra paneigtas, kai kurie kiti dalykai lieka neaiškūs. Ridalos radinių (metalai, keramika) chronologija apima trumpą laikotarpį, visa gyvenvietė (įskaitant gynybinius įtvirtinimus) tikriausiai gyvavo tik VI periode (pagal Montelijų: apie 750–550 m. pr. Kr.). Piliakalnio pobūdis ir funkcija, kaip ir trumpalaikis statinių tvoros naudojimas, lieka iki galo neaiškūs. Kita vertus, Ridala piliakalnio statinių tvoros struktūra primena kitus žiedo pavidalo įtvirtinimus (Vistad, Havor). Statinių tvoros, kurių liekanos daugiausia yra stulpavietės, vargu ar gali būti siejamos tik su ilgalaike gyvenviete; radiniai skurdūs ir jų nedaug, kartais nežinomos kilmės ar paskirties. Todėl konfliktai ir užpuolimai ne visada gali būti vienintelės tokių konstrukcijų atsiradimo priežastys. Tokie kaip Ridala dvigubo žiedo įtvirtinimai gali rodyti ekonomines (žemdirbystė, metalo apdirbimas) ir/ar politines administracines funkcijas (susirinkimai, religinės apeigos ir t. t.).

Vertė Audronė Bliujienė