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Microscopic Re-Examination of an Unique Bone Artefact: The Figure of a Theatrical Actor Found at The Roman Fort Iža/Leányvár (Slovakia)

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Abstract: In 1955, a figure, representing a comic actor, was discovered on a spoil heap in the Roman Fort of Iža. It is a unique find without close parallels in the whole of the Roman Empire, making it difficult to determine from which object it was derived or what was its function. The results of new research are presented here and demonstrate the object is a fragment of a luxury, figural knife handle made from bone rather than ivory. It was probably produced in a provincial workshop under a Mediterranean influence where similar figures, though from different materials, occur throughout the second century.

Keywords: bone figure, knife handle, Roman fort, Slovakia, reinterpretation, ivory, microscopic analysis

1 Introduction

The Roman fort at Iža lies in the location Leányvár, a short distance from the town of Komárno (Figure 1). It is situated on the left bank of the Danube in the foreground of Brigetio and forms part of the defence system *Ripa Pannonica*.

The area between the Váh and the Danube became of huge strategic importance at the time of the Marcomannic wars. Coin finds indicate that the first earth-and-timber fort was built sometime after a truce was agreed upon in AD 175. The disastrous fall of the fort took place between December 178 and Spring 179, when it was burned and abandoned. Eleven barracks made of unfired bricks from the time when the fort existed were unearthed in the southern area of the site. Many of them had been disturbed by the building of the stone fort and other interventions. In place of the destroyed earth-and-timber fort, and likely in short time, the Romans built a stone fort surrounded by V-shaped ditches. It contained baths in the south-eastern corner. Another structure related to the fort was building I, dating from the late second century to the first half of the third century, which was probably destroyed in a Germanic attack during the rule of Emperor Gallienus (AD 253–268), when the fort at Iža was likely damaged. The rebuilding of the stone fort is attested in the fourth century. During the Constantine period, the U-shaped towers were first built onto the northern gate, and the fan-shaped towers were added to both of the northern corners. The last building adjustments in the fort date to the rule of Emperor Valentinian I (364–375) when, for instance, the northern gate was closed. Excavation results have not yet clarified why the stone fort, an important frontier stronghold until the end of Valentinian I's reign, disappeared. But it probably did so after an extensive fire towards the end of his rule. In the first third of the fifth century, the site was settled by groups of immigrated Germanic population (Kuzmová, 2011, pp. 119–129).

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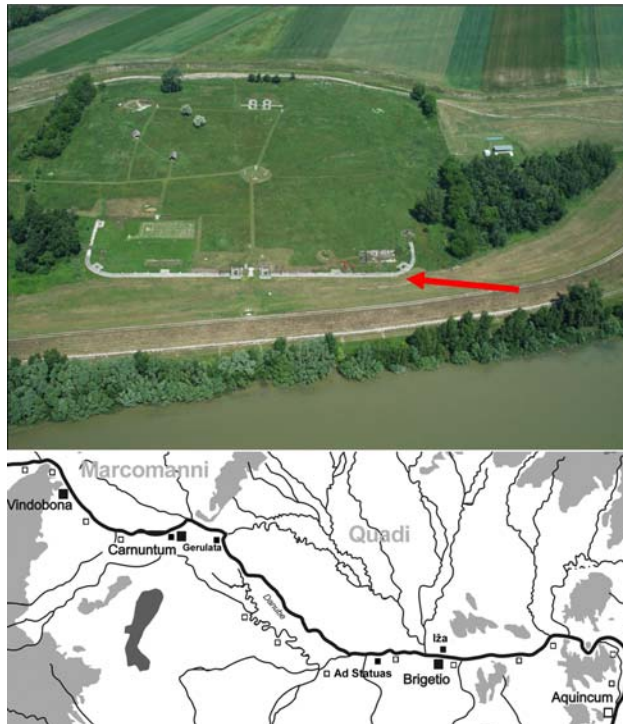


Figure 1: Roman fort at Iža-Leányvár. Red arrow indicates where the bone figure was probably found (Photo: Ivan Kuzma, AU SAV Nitra).

The ruins of the Roman fort were recorded as early as the seventeenth century, but it was not until the first quarter of the twentieth century that the fort was excavated, first by the enthusiast J. Tóth-Kurucz. The most significant excavations, however, were conducted by scientists of the Archaeological Institute of the Slovak Academy of Sciences, at first B. Svoboda and later K. Kuzmová and J. Rajtár, who led systematic excavations at this site for several decades (Kuzmová & Rajtár, 2010, pp. 11–32).

During an excavation in 1955, a figure representing a comic actor was found on a mound of earth (Svoboda, 1962, pp. 397–424). The figure (Figure 2) has a mask on the head and a cloak over the shoulder. He rests his folded hands on the belly, which overhangs the belt. An unidentified object is hanging on each side of the belt, which forms figure eight on the actor's back (Figure 3). This tiny statuette was originally part of another object, from which it broke off. It is a unique find without close parallels in the Roman Empire, making it difficult to determine from which object it was derived or what was its function. Since its discovery, it has most often been identified as a fragment of a decorative pin (Kolník, 1979, p. 110). In literary sources, the object is described as one made of ivory (Kolník, 1979, p. 110). In 2018, an opportunity arose to examine the original. This examination allowed us to confirm and correct some of these interpretations.

2 Material

The figurine is 5.54 cm in length, 1.9 cm in width and 148 cm thick (Figure 2). It is not complete but unfortunately freshly broken at the level of the right foot of the figure representing a comic actor (Figure 3). The broken area shows no specific macroscopic pattern. In contrast, at the opposite end, the top of the head displays a very particular relief that characterizes the hairstyle of the figure. In the form of pseudo-parallel oblique lines, it yields a specific pattern that resembles tusk-concentric structure, so that this relief was eventually used in previous studies to emphasize the figurine was made of ivory. Indeed, these lines



Figure 2: The figurine from Iža-Leànyvàn. Front and left views. Scale subdivision, in centimetres (Photo: Éva David).

resemble the slight desiccation fractures of an animal ivory seen in cross section although it is worked (Poplin, 2006, p. 1119f). As dentine, which is the main component of carved objects in Roman ivory figurines (Poplin, 1977, p. 77ff), forms a layer of consistent thickness around the pulp cavity (Espinoza, Mann, Lemay, & Oakes, 1990, p. 81ff), it is expected then the figurine would display the same material structure under optic magnification (Figure 4). Microscopic investigation (up to $\times 150$) allowed us to revisit the previous anatomical identification of the Iža-Leànyvàn figurine from which we conclude the observed relief, as well as the represented comedian, actually indicating the carving of a large mammal bone. Arguably, it may have been the deliberate intention of the craftsman to make the figurine look like ivory.

The pseudo-parallel oblique lines have obviously been organized on purpose while carved into the material. This is displayed, first, by a series of parallel striations constituting each line; this latter forming each lock that constitutes the hairstyle (Figure 5). The locks are organized in parallel, obliquely on the top of the head and continue axially in a row, all reaching down to the shoulders. The incised lines or grooves are themselves composed of a series of regularly displayed lines that follow the general alignment of the locks. Within each of these series, a slight variation in the orientation of the most pronounced striations is observed within. This is due to the fact that the relief has been entirely manufactured, each groove carved one by one. The use of a metallic tool is most likely since it can be observed that the lines display, more or less, similar width, with relatively steep edges on the sides, and crosswise, step-like depressions printed into the material. Eventually, these last ripples have been due to some juddering effects known to form in relation to a particular motion during carving (Dauvois, 1974, p. 80).

Second, on the top of the head is a large area of damage that has occurred in antiquity, where some of the material has split away. Here these grooves disappear, and so only the lower section of them remains. In there, where there is hardly any carving mark, no remarkable feature (the Schreger lines) associable to the ivory structure was noticed. Although the initial surface of the figurine's original material was completely modified by manufacture, indeed it is everywhere carved with a metallic tool by the incising and/or scraping techniques (David, 2016, pp. 51–63); some micro-structural features clearly evoke the osseous material, i.e. an organic tissue made of osteons (Leeson & Leeson, 1976, p. 104). At the level of the chest, for instance, the external aspect of the cortical matter clearly evidences the presence of the Haversian and/or



Figure 3: The figurine from Iža-Leányvàn. Posterior aspect and views from above (up) and below (down). Scale subdivision, in centimetres (Photo: Éva David).

Volkman's canals, in the form of known natural micro-holes within the matrix (Figure 6). It is not sure whether the bone or the antler material would have been used then, since they both show the same structural features at this microscopic scale (Bouchud, 1974, p. 21ff).

At a macroscopic scale, however, the thickness of the figurine, its strange posture and the specific crosswise inner curvature of the back of the comedian, all point to a limb bone, although no spongy core or trabecular bone remains on the carved surface. By comparing the osteological bone and antler material yielded by the very same archaeological site, which was used as a providential referential that was most appropriate to the analysis, it is quite impressive how far the figurine matches in fact with the proximal of a bovid metatarsal bone, in all profiles and dimensions (Figure 7). The particular anatomical morphology of the bone there, where the dividing line merges with the medial finger, explains the possible presence of a protuberant belly, and that the left leg could be raised compared to the reverse plane formed by the extremely regular posterior of the figurine. The thick medial bone itself constitutes, on its anatomical cranial aspect, the original carved plane for the whole body of the figurine to the point that the peculiar shape, from the external side of the right arm to the outer side of the left leg, fits with the anatomical morphology in transverse cross section (Figure 8). The orientation of the comedian's cape also follows that of the considered anatomy in the lengthwise profile. It is most probable that the bone was initially broken in

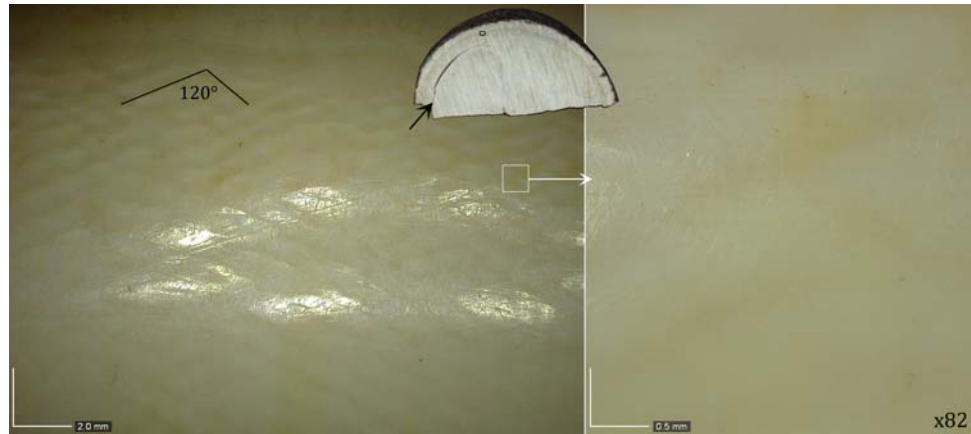


Figure 4: Cross section of a Proboscidian half-tusk (transversally cut with a modern saw) showing the start of a fracture-line between its dentine cones of growth (black arrow) and aspect (and angle) of the Schreger (or cross hatching) lines (magnification $\times 20$, left, and $\times 82$, right) typical to animal ivory (Penniman, 1952). The microscopic structures of the dentine (dentinal tubules) are not visible here while they grow from the central nerve cavity toward the cementum and are 0.8 to 2.2 micrometres in diameter (Espinoza & Mann, 1992) (Photo: Éva David).

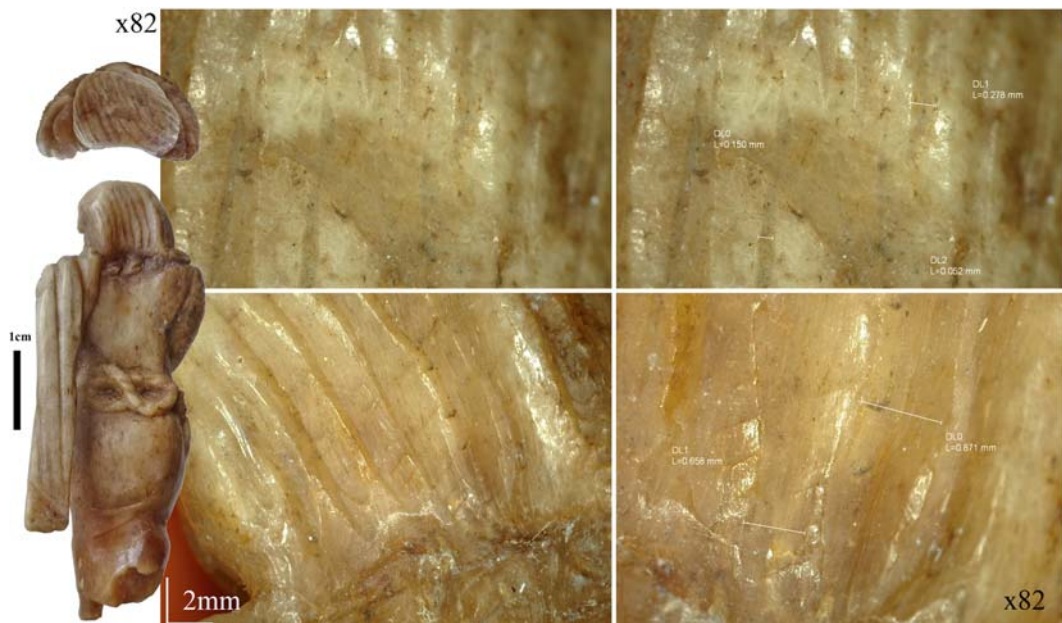


Figure 5: Posterior aspect of the hairstyle viewed from above and close to the shoulders (bottom). Scale of the figurine, 1 cm (Photo: Éva David).

such a way that the craftsman would not have needed to carve too much there, between the arm and where the cape falls (on the medial side of the metapodial). In the same vein, the craftsman utilized a medullary canal of the bone for making rounded profile of the back of the comedian. The head is placed at the junction area between the diaphysis and the proximal articular end, which is most likely to take advantage of the morphology of the bone itself.

In addition, motifs displayed on both arms in the form of regular criss-cross lines not only suggest specific ornaments worn by the comedian, but also the Schreger lines seem exaggerated to imitate the appearance of ivory. That the placement of their axial lines is in the exact prolongation of the grooves evoked above for the head suggests the craftsman was keen to search for a visual effect materialized by



Figure 6: Front view of the upper part of the figurine showing natural micro-holes developed within the cortical matrix that evidence the presence of the Haversian/Volkman's canals (photos, left), and manufacturing marks related to the incising/scraping techniques with a metallic tool (right). Scale of the figurine, 1 cm (Photo: Éva David).

carving patterns in the most homogeneous way, regardless of which part of the figurine is observed. So the lines cover the whole figurine as a single unique pattern when viewed from above. For the drape of the cape, the same lines were similarly carved axially (Figure 9).

Although these could only evoke the form of clothing, as if it were falling down naturally, the fact that the lines are unparallel at one side gives the impression as the craftsman was aware of the specific shape of the ivory in the lengthwise profile. That all these lines constitute, with those from the head and the arms, a homogeneous pattern covering the entire figurine, suggests this piece was unique to the craftsman. If it is hard to demonstrate that they wanted to create a figurine that looks like ivory, one cannot exclude here that he was not aware of the value of this precious or exotic raw material. As far as the distribution of the worked ivory may be used further to interpret the change in craft and/or networks in Roman technology, it is important to reinvestigate classic assemblages, and the so-called ivory items from the northern hemisphere shall be revisited. So far, in addition to the evidence inferred from the micro-structural patterns, it is with the organization of the figurine compared to the bone's discrete characters in three dimensions (Dauvois, 1977, p. 269; Poplin, 1974, p. 15ff) that enabled here the successful revision of the initial anatomical identification.

3 Function

A detailed examination of the figure will reveal that not only the legs are broken off but also are broken the bottom of the cloak, which originally reached down to the feet or lower. The figure was attached to the rest of the object by the cloak and feet, which means that the base must have been wider so as to support both. The original shape of the base can also be reconstructed from the position of the actor's legs, with the back



Figure 7: Proposed anatomical location of the figurine from Iža-Leányvàn on the proximal of a medial–cranial side of a right (gnawed) metatarsal bone from bovid *sp.* also found on the same archaeological site. Scale subdivision, in centimetres (Photo: Éva David).

leg bent and projecting out. It may be assumed that the figure originally stood on a wider, cubic or oval base with dimensions of at least 1.2×2.0 cm.

Pins decorated with a head in the form of a figure are known from various parts of the Roman Empire (Humer, 2010, p. 335). However, they are usually smaller, with the shaft tapering towards the neck or the head seamlessly merging with the shaft. If the studied bone figure had adorned a pin head, it would have been a comparably large piece; this is unlikely but cannot be ruled out with certainty. Statuettes shaped as human figures also occur on distaffs. They have been studied by a number of authors who have also examined finds from Pannonia, e.g. Bíró (1994, pp. 195–229) or most recently Vass (2013, pp. 59–70).



Figure 8: The figurine from Iža-Leányvàn matches the cranial side of the medial finger, at the proximal of the diaphysis, of a right metatarsal bone from bovid *sp.*, with the thickness of its head (0.8–1 cm) and its curvature in all profiles. Scale, 1 cm (Photo: Éva David).



Figure 9: Left view of the figurine from Iža-Leányvàn. The lines of the cape have been crafted with a tool, as displayed by the regular axial striations (black arrows) covering the bottom of the magnified groove, in a similar way as for the lines from the comedian's head. Scale of the figurine, 1 cm (Photo: Éva David).

The results of these analyses show that an overwhelming majority of examples is decorated with female rather than male figures. Since the back part of the studied fragment is carefully modelled, the artefact will not have served as the decorative inlay of furniture nor as a *kliné* (lounger without backrest).

The most likely option appears to be that the figure of the comic actor adorned a knife handle. Figural handles are found on knives or folding knives throughout the Roman Empire (Bartus, 2012, pp. 27–49; von

Mercklin, 1940, pp. 339–352; Mikler, 1997, Table 45). They include examples decorated with both simple and more intricate compositions. Many of them have survived in their entirety, but many are often broken off at the legs. Ends of handles with broken off legs come, for instance, from Colchester (Crummy, 1979, Figure 87:2160), and one specimen is also deposited in the Landesmuseum in Mainz (Mikler, 1997, Abb. 45:4). A figure broken at the legs has been found in a villa at Bondorf (Gaubatz-Sattler, 1994, Table 57:F2) or Mursa (Kovač, 2019, p. 107). Decorative knife handles seem to have been produced despite the relatively big risk of being damaged, as they were very fragile. The figure from Iža is rather small, measuring only 5.3 cm, which is not uncommon in these knives. Figural handles of a similar height are known for instance from Bondorf (Gaubatz-Sattler, 1994, Table 57:F2) and Trier (Fries, 2008, pp. 24–38). They are usually folding knives, but zoomorphic and anthropomorphic figures also appear on handles firmly attached to the blade (e.g. Mikler, 1997, Table 46). As noted earlier, the comic actor statuette from Iža is the only one of its kind from the territory of the Roman Empire to date. As regards the motif of an actor wrapped in a cloak, the only analogical handle comes from the cemetery of Pontarion in France (Lintz, 2001, p. 29). Like the find from Iža, it measures 5 cm, but unlike it, the actor is presumably seated.

4 Conclusion

All the earlier mentioned parallels are from bone, and manufacturing tiny figures from bone was very common in the Roman environment. Submitted analysis showed that old interpretations of the finds from Iža were not correct. According to the new results, the object is made from bone not from ivory; and it is a fragment of a luxury, figural knife handle, which was most likely used to cut meat at the table. Analysis of the decorative elements showed that the craftsman tried to imitate ivory, which was rarer and more expensive. It was probably produced in a provincial workshop under a Mediterranean influence, where similar figures, though from different materials, occur throughout the second century. This knife was probably used by leading representatives – commanders of the forts in Iža – Leányvár.

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