

# Spool-shaped clay artefacts: an unknown object type of the Boleráz/Baden Cultures

TÜNDE HORVÁTH

## Introduction

The excavation of a Boleráz/Baden settlement at Balatonőszöd-Temetői dűlő, along the planned route of the M7 motorway in 2001–2002, unearthed several typical cylindrical objects with flared ends, made of burnt clay (Tab. 1; Fig. 1). These finds were identified as »spools« (also »bobbin« in English, »spulni« or »guriga« in Hungarian) in accordance with previous Hungarian scholarly interpretations. M. Bondár first suggested that the »spools« were used as solid wheels of model wagons (Bondár 2004, 16)<sup>1</sup>. Subsequently she believed that these objects had non-domestic, unusual, and ritual meanings (Bondár 2009, 288; Bondár 2013).

In a preliminary research paper (Horváth 2008), I tentatively categorised the finds according to their size, degree of finish and craftsmanship, as well as distinctive signs of use-wear, which may help identifying the original function of these items (Fig. 2a). Accordingly, within the framework of this paper, I would like to present and discuss some selected objects of the larger group of this find type.

The scope of the present study does not allow a compilation of a complete catalogue of this object type based on existing scholarly literature. Besides, I think that this method would not lead to reliable results anyway, as most of these finds and their archaeological context are missing from these publications. The reason behind this is, primarily, because specialists did not recognise the importance of these objects, and, secondly, spool-items were not considered as chronologically diagnostic. Thus, their appearance and their links to specific periods or cultures of the Late Copper Age has not been accurately explained. Even the acknowledged data of the former publications on »spools« may direct the reader to misleading conclusions, as the few studies restrict themselves to illustrative material, such as photos or drawings, without precise description. Likewise, in the absence of specific data, such as traces of wear, the original function of these objects cannot be convincingly established.

---

1 This suggestion was made on the basis of the Szi-getszentmárton cart model. I do not believe in this function: the Balatonőszöd finds were not suitable for this purpose (the more delicate ones when in a horizontal orientation would be too short com-

pared with the known width of cart models; the coarser ones are too large and their shape is not sufficiently waisted to provide a rolling motion; Horváth 2013).

Feature	Section	Dating (Němejcová- Pavúková system*)	Description	Size: height (h), diame- ters (d) of the ends; both in mm	Additional finds in the feature
Pit no. 387	58/20, 21–59/16, 17	Early phase (II.A?), Boleráz/Baden	Thin, small, worn-out	h = 63, d = 24/25	Clay spoon
Pit no. 1072–1096	50/12	Phase III, Baden	Broken half- piece	d = 30/22	Fragment of a male face mask
Pit no. 1405	46/10, 11	Characterless	Small, delicate piece, with straight ends	h = 48, d = 28	In superposition with pit no. 1406
Pit no. 1444	44/5	Phase III, Baden	Small, delicate	h = 46, d = 21	Pedestalled beaker, bipartite bowl, stone axe, daubed-painted wattle and daub
Pit no. 1594	48/11	Characterless	Small, delicate	h = 51, d = 30/29	Wagon wheel-model, spindle whorl
Pit no. 2000	55–56/33	Phase II.A, Boleráz/Baden	Two smaller, delicate pieces	h = 40, d = 29; h = 40, d = 31	Intact small jug and pot; in superposition with pit no. 2011 (stone axe)
Pit no. 2298	50/26	Phase I.B–C, Boleráz	Small, delicate	h = 51, d = 29	Beside pits no. 2313 and no. 2297; including a spindle whirl and a stone axe
Pit no. 2313	50/26	Phase I.B–C, Boleráz	Small, delicate, sandglass- shaped	h = 37, d = 40	Beside pit no. 2298
Pit no. 2389	52/34, 35	Phase II.A, Boleráz/Baden	Delicate item, in pieces	h = 50, d = 29	Clay spoon, bone tools
Pit no. 2397	50/31	Early Boleráz	Large, rough	h = 72, d = 41	Beside pit no. 2412
Pit no. 2412	50/31	Characterless	Large, rough	h = 80, d = 48	Beside pit no. 2397, stone axe
Pit no. 2606	47/30, bellow layer no. 1381	Phase I.B–C, Boleráz	Rough, broken at the ends	h = 72, d = 43	Spindle whirl, polished ochre lump
Pit no. 2653	46/26, bellow layer no. 1367	Characterless	Two pieces, rough, with round ends	h = 83, d = 38; h = 81, d = 47	Polished chisel, beside pits no. 2652 and no. 2595 (*pintadera*)

Feature	Section	Dating (Němejcová- Pavúková system*)	Description	Size: height (h), diame- ters (d) of the ends; both in mm	Additional finds in the feature
Pit no. 2667	50/36, bellow layer no. 1390	Phase I.B–C, Boleráz	Rough, de- formed, signs of slanting wear at the ends	h = 75, d = 41	Under cultural layer no. 1390 from the Boleráz Culture
Pit no. 2684	45/31	Phase I.B–C, Boleráz	Two pieces of delicate, sand- glass shaped objects, the ends are slightly hollow	h = 43, d = 39; h = 45, d = 36	Spindle whorl, stone axe
Pit no. 2704	43/29	Characterless	Rough frag- ments of the ends	d = 54	In superposition with pit no. 2743
Baden cultural layer no. 925	44/7–(45/8)	Phase II.B–III, Baden	Fine, sand- glass-shaped	h = 38, d = 31	Spindle whirl
Baden cultural layer no. 925	48/8	Phase II.B–III, Baden	Fine, sand- glass-shaped	h = 43, d = 31	Spindle whirl, polished bone tool
Baden cultural layer no. 925	48/10	Phase II.B–III, Baden	Small, delicate	h = 47, d = 23	
Boleráz cultural layer no. 1360	48/31–49/32	Phase I.B–C, Boleráz	Fine, small, sandglass- shaped, deformed	h = 34, d = 36/37	
Boleráz cultural layer no. 1390	46/30, 31	Phase I.B–C, Boleráz	Large, rough, widening ends	h = 67, d = 44/48	Sandstone slab, together with pit no. 2667
Stray find			Two pieces, rough, large, slanting, with hollow ends	h = 73, d = 45; h = 76, d = 43	

Tab. 1 List of spool-finds from the Balatonőszöd-Temetői dűlő site (cf. Fig. 1).

Tab. 1 Liste der Spulenfunde vom Fundplatz Balatonőszöd-Temetői dűlő (vgl. Abb. 1).

\* See e. g. Němejcová-Pavúková 1981; Němejcová-Pavúková 1984.



Fig. 1 Balatonőszöd-Temetői dűlő. Features with spool-shaped artefacts: red – spool-finds of the Baden Culture; blue – spool-finds of the Boleráz Culture.

Abb. 1 Balatonőszöd-Temetői dűlő. Befunde mit spulenförmigen Artefakten: rot – Spulenfunde der Badener Kultur; blau – Spulenfunde der Boleráz-Kultur.

This type of objects is completely absent from the famous volumes by V. Němejcová-Pavúková on the ceramic typology of the Boleráz and Baden Cultures (e. g. Němejcová-Pavúková 1981; Němejcová-Pavúková 1984). Although there are some settlement finds in the published material from the Boleráz/Baden Cultures, the attached list cannot present a complete picture of the actual occurrence of these Late Copper Age finds because of the reasons summarised above<sup>2</sup>.

In the following discussion, I will try to identify possible functions of this special finds group. The primary source for analogies will be taken from the excavated material of the Balatonőszöd-Temetői dűlő site. Besides, other archaeological, ethnographical, as well as cultural-anthropological parallels will be presented.

Among the following cited possibilities combinations are probable (cf. chapters 1–2–3), as well as other functional variants (cf. chapters 4–5–6). The question is: can these clay artefacts with minimal changes in form and size be a multifunctional tool type? The answer is: yes.

We can identify many parallels to the clay items among ancient stone artefacts. Most prehistoric stone implements (e.g. chipped stones, grinders, hand-stones, and hammers/adzes/axes) were multifunctional tools. A grinder frequently presents use-wear traces from various actions such as: grinding of cereals; shell-opening; polishing of bone, shell, metal, and stone items; pounding seeds; etc. (Horváth 2004).

## Discussion

### *Archaeological observations at the Balatonőszöd-Temetői dűlő site*

#### *1 Salt-producing apparatus<sup>3</sup>*

As parts of the toolkit for salt production (briquetage) a salt evaporating bowl and pedestals (»Oval-/Zylindersäule« in German) which supported the bowl above the fire during the evaporation process can be mentioned.

Pottery referred to as briquetage was initially described and classified in scientific literature<sup>4</sup> on prehistoric ceramics as so-called Very Coarse Ware (VCW) and various applications were discussed. Later, this type of pottery was associated with salt production and recent publications consequently connect such items with this function (Gibson/Woods 1990, 271).

Description of the finds from Balatonőszöd-Temetői dűlő:

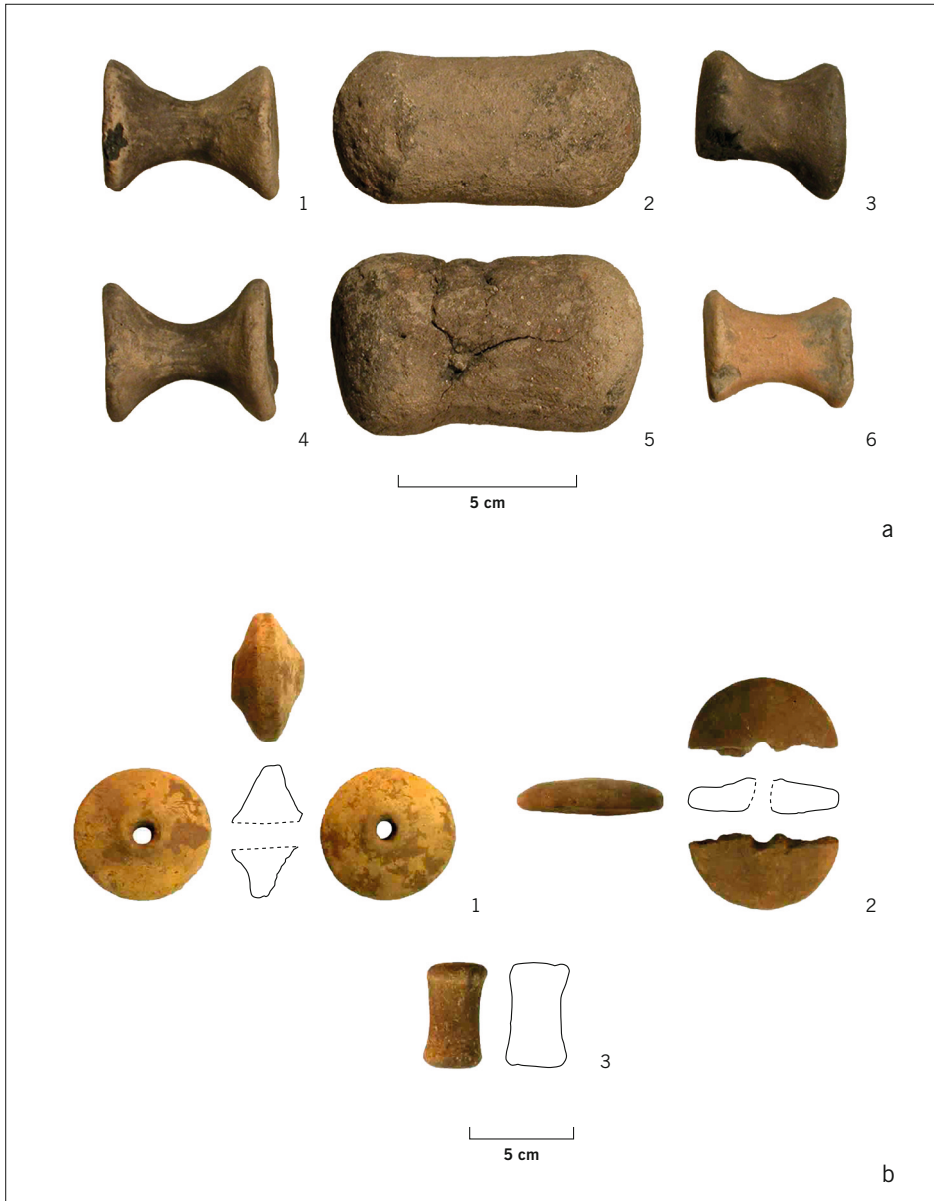
- In the Boleráz pit no. 2348, section 53/32, a nearly intact, subsequently reconstructed vessel, resembling a fish-frying pan was found (briquetage-suitable form, for salt evaporation). Light brown, the inner surface is smoothed, the outer surface is rough. It is tempered with crushed sherds. The form of the vessel is oval, the bottom is flat, slightly concave, the lower part is lightly profiled. The sides are relatively high, wider in the middle part, and slightly raised at the two ends.

2 E. g. Boleráz/Baden settlements: Nevidzany (Němejcová-Pavúková 1974, Abb. 4,2), Malá nad Hronom (Němejcová-Pavúková 1974, Abb. 54,22–23), Žlkovce (Němejcová-Pavúková 1974, Obr. 22,15), Hlinsko (Pavelčík 1982, Obr. 10,7), Brza Vrba (Medović 1976, Pl. 5,19; 11,14), Schwechat (Ruttikay 1973, Abb. 4,6), Mödling-Jennyberg (Ruttikay 1999, Abb. 1,8), Nagykanizsa-Billa (Barna 2003, 113 Fig. 23,13), Budakalász-Luppa

csárda with one broken and four intact from grave no. 403 (Bondár 2009, 288), Nagyút-Göböljárás II (Bondár 2010, 323 Fig. 31,10), and Gomolava (Petrović/Jovanović 2002, 30).

3 Matthias 1976; Harding 2000; Genz 2004; Guerra-Doce et al. 2011.

4 For the history of research see Gibson/Woods 1990, 271.



**Fig. 2** a Various »spools« from the excavated settlement at Balatonószöd-Temetői dűlő (1 Stray find from cultural layer no. 925, fine, Boleráz/Baden; 2 Grube Nr. 2653, rough, Boleráz [?]; 3 Kulturschicht Nr. 1360; 4 Stray find from cultural layer no. 925, fine, Boleráz/Baden; 5 Grube Nr. 2653, rough, Boleráz [?]; 6 Pit no. 2313). b Toolkit from pit no. 1594 (1 Wagenradmodell; 2 Spinnwirtel; 3 geglättete Spule).

**Abb. 2** a Verschiedene »Spulen« der ergrabenen Siedlung bei Balatonószöd-Temetői dűlő (1 Lesefund der Kulturschicht Nr. 925, geglättet, Boleráz/Baden; 2 Grube Nr. 2653, grob gearbeitet, Boleráz [?]; 3 Kulturschicht Nr. 1360; 4 Lesefund der Kulturschicht Nr. 925, geglättet, Boleráz/Baden; 5 Grube Nr. 2653, grob gearbeitet, Boleráz [?]; 6 Grube Nr. 2313). b Gerätesatz aus Grube Nr. 1594 (1 Wagenradmodell; 2 Spinnwirtel; 3 geglättete Spule).

Bottom diameter 325 mm; height 120 mm; edge thickness 11 mm; largest edge diameters 325 mm and 226 mm.

Thus, it was inferred that in this area of the site salt water was evaporated in order to produce salt (crystals or powder). Near pit no. 2348, several »spools« were unearthed together with various other objects (pit no. 2000 and no. 2389), some of which could be connected to salt production. The spool-shaped objects are evidently suitable for this purpose, as their hourglass-shape provided a flat support for the evaporating bowl on top. There are both smaller and larger items, created with either fine or rough finishes. There is one crucial criterion, namely that there has to be a paired set of items of matching sizes in order to appropriately support the same bowl (Fig. 3a–b).

I suggest that the items identified as grave-goods at the Budakalász-Luppa csárda cemetery (grave no. 403) served the same purpose. Unfortunately, we do not have exact information about the *in situ* position of these artefacts in the cemeteries<sup>5</sup>. In most settlements where »spools« were found, additional polished stone (pestle, hand-stone, grinder) and bone artefacts were usually discovered, typically also chisels made of cattle's ulnae, small ruminants' metatarsi, or chisels made of bones of larger mammals. These tools can all be obviously connected with salt production (Matthias 1976, 390 f. Abb. 7).

The salt-making toolkit can be further complemented with items suitable for breaking up or pulverising the salt, such as fine-grained polisher/grinder plates, hand-stones, and pestles.

- In the Boleráz cultural layer no. 1390, section 46/30–31, apart from the »spools«, a small, rectangular, fine-grained sandstone slab was discovered. Both sides of the slab were used as working surfaces (there are smooth, worn-out areas on both sides). On one side there is a small depression, which was identified as a pestle-hollow. The diameter of the pestle-hollow on the slab and the diameter and size of the »spool« from pit no. 2667 below this cultural layer no. 1390 are the same (Fig. 3c 1.2).
- In pit no. 2667, which is situated below the Boleráz cultural layer no. 1390, another »spool« was discovered. This object and another stone slab, identified as a grinder set (lower stone and upper burnt clay part), were probably used for multiple purposes, most likely for pulverising softer materials such as salt or pigments, because the grain-size of the stone slab is fine and the upper tool, i. e. the pounder/pestle identified as a »spool«, is of a soft, burnt clay.
- In pit no. 2606, the »spool« was found together with a clod of ochre. In the neighbouring pit no. 2607, a quartzite hand-stone was unearthed, with red paint residues. It is likely that the two objects were involved in the same processes (Fig. 4a–b).

<sup>5</sup> The spool-items lying around the neck, or in one heap in front of the face, between shoulders and hands, turned over – as if they formerly propped something up, but they were never found isolated.

Four, five, and six items typically composed a kit (maybe a kit of pedestals for some kind of vessel or as a head support). Cf. Bondár 2009, 181.





**Fig. 3 (left page)** a Toolkit for salt making from Lützkendorf, Saalekreis county. b Salt evaporating equipment from the Early Bronze Age sites of Uichteritz, Burgenlandkreis county, and Lützkendorf (2300–1600 cal BC, Únětice Culture, Germany). c Finds from Balatonőszöd-Temetői dűlő. Pit no. 2667 (1) and cultural layer no. 1390 (2) of the Boleráz Culture (sandstone-slab and »spool«, used as a pounder; the black arrow marks the imprint of a spool-shaped artefact). Cultural layer no. 1390 and pit no. 2667 under it were located next to pit no. 2348 (3) that bore briquetage. Other »spools« – not in the figure – came from pits no. 2000 and no. 2389.

**Abb. 3 (linke Seite)** a Gerätesatz zum Salzsieden von Lützkendorf, Saalekreis. b Salzsiedegerät von den frühbronzezeitlichen Fundorten Uichteritz, Burgenlandkreis, und Lützkendorf (2300–1600 v. Chr., Aunjetitzer Kultur, Deutschland). c Funde von Balatonőszöd-Temetői dűlő. Grube Nr. 2667 (1) und Kulturschicht Nr. 1390 (2) der Boleráz-Kultur (Sandsteinplatte und »Spule«, hier als Stößel gebraucht; der schwarze Pfeil markiert den Abdruck eines spulenförmigen Artefaktes). Die darunter liegende Kulturschicht Nr. 1390 sowie die Grube Nr. 2667 befanden sich neben der Grube Nr. 2348 (3), die Briquetage hervorbrachte. Andere »Spulen« – nicht abgebildet – kamen aus den Gruben Nr. 2000 und Nr. 2389.

## 2 Pounder/pulveriser or stamp?

»Spools« were also discovered in pit no. 2653 and near pit no. 2595, both from the Boleráz period. In the last mentioned pit the »spool« was found together with a red painted pint-adera (Fig. 4e). In pit no. 2581, close to pit no. 2595, among other finds, another »pint-adera« was discovered with red pigment residues on its surface, and accompanied by a polished ochre lump (Fig. 4d). A further »spool« was also recovered in pit no. 2647.

Those spool-shaped tools in particular are suitable for a grinding/pounding action because they are rougher and larger in size compared with the finer and smaller ones e. g. from the Baden cultural layer no. 925. They also retain peck marks on their edges and their surface has been obliquely worn-out which hollowed the tools' top and bottom ends.

At Vučedol-Streim/Vineyard site, during the excavation of pit no. 6, in grave 3, next to the human remains one »spool« was also discovered that dates to the very early Vučedol Culture<sup>6</sup>.

## Other possible applications on the basis of archaeological observations

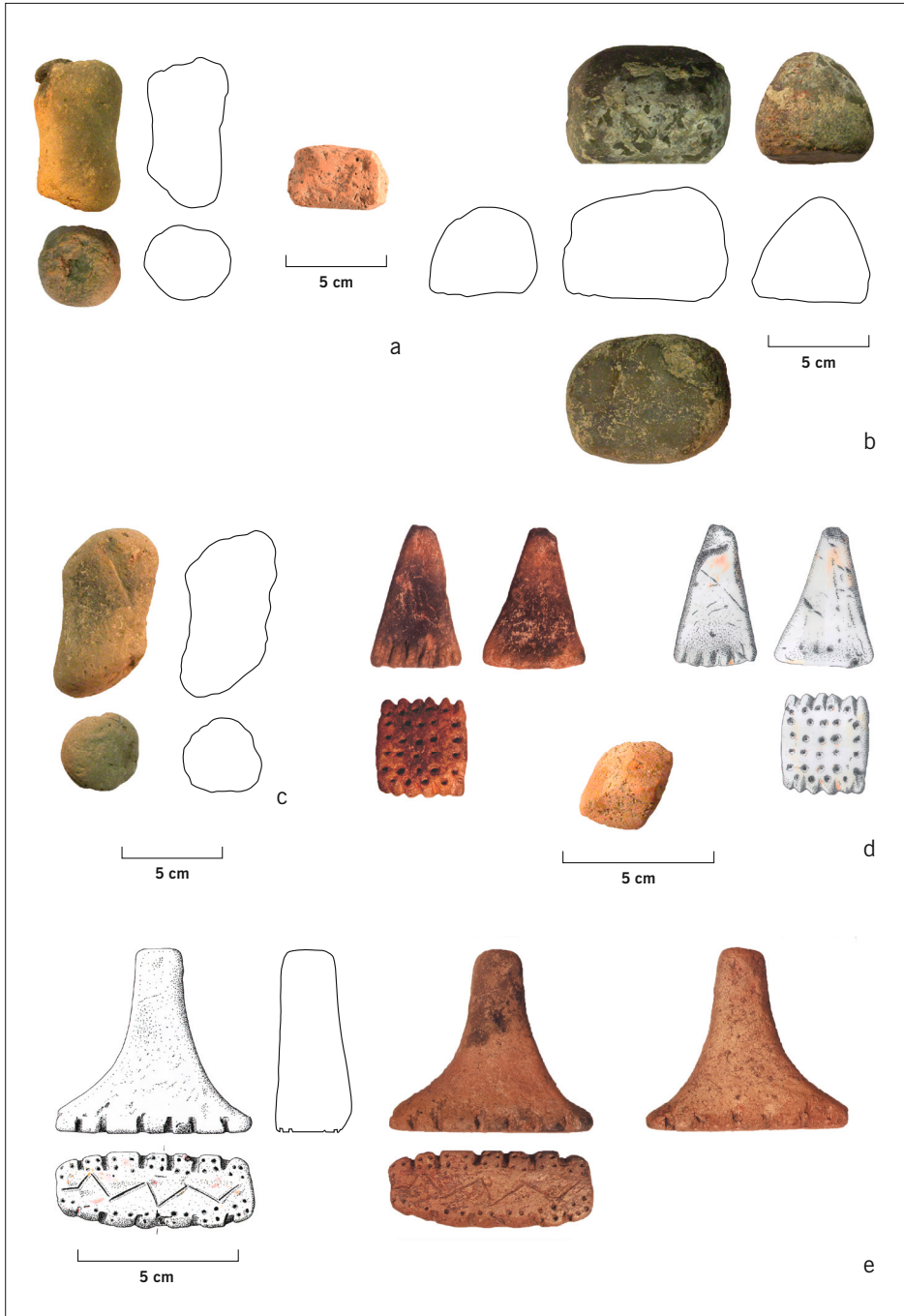
### 3 Cooking – spacer or prop during firing of pottery

The processes for these possibilities can be closely linked to the above-presented option of salt-water evaporating.

The Early Bronze Age/Bell Beaker settlement at Nola in Italy was destroyed by the eruption of the Vesuvius (Albore-Livadie 2002). Near Nola, at the foot of the Vesuvius, volcanic ash preserved settlement features and objects which, due to the decomposition of organic materials, are completely missing from ordinary excavation sites (for example the roof structure of houses, food in pots, human bodies). In one of the houses, food was being prepared at the moment of the eruption. One of the pots stood on a spool-like stand in front of the decorated oven no. 4 (Comune di Nola 2013).

Similar objects were used in the Roman period during the firing of Samian ware. Such items were put between ceramic pots so that contact was prevented during firing

<sup>6</sup> It was published as two-based stamp-seal by Durman 2000, 43–46.



**Fig. 4 (left page)** Balatonőszöd-Temetői dűlő. a »Spool« and polished ochre lump from pit no. 2606. b Quarzite hammerstone with red pigment residues from pit no. 2607. c »Spool« from pit no. 2647. d »Pintadera« with polished ochre lump from pit no. 2581. e »Pintadera« with red pigment residues from pit no. 2595.

**Abb. 4 (linke Seite)** Balatonőszöd-Temetői dűlő. a »Spule« und geglätteter Ocker-Klumpen aus Grube Nr. 2606. b Quarzit-Hammerstein mit roten Pigmentresten aus Grube Nr. 2607. c »Spule« aus Grube Nr. 2647. d »Pintadera« mit geglättetem Ocker-Klumpen aus Grube Nr. 2581. e »Pintadera« mit roten Pigmentresten aus Grube Nr. 2595.

(Kellner 1973, Abb. 36). Accordingly, the Neolithic »spools« discussed here might have been similarly used as a spacer or prop during pottery production and firing.

#### 4 Weaving and spinning

In Ezerovo II (Bulgaria, Black Sea Coast, near lake Varna; Early Bronze Age; Tončeva 1981, 57 Fig. 24) hourglass-shaped perforated »spools« were excavated and are listed as remains of textile craft (»bobine« in French, »bobbin« in English, »Spule« in German). On one of the items (no. 21), a carbonised woollen thread was still wound around it (Fig. 5a). It is likely that the southern, i. e. the Balkan spool-finds were the basis for the Central European terminology and also for the definition of their function (see the Hungarian name »spulni«). Beyond this geographical region, without doubt, this assigned function is also most frequently associated with textile craft. Still, compared to the finds of the Baden Culture, there is a crucial difference, namely that the »spools« from the Balkans are typically perforated longitudinally, which is not characteristic of the majority of the Baden finds. There is only one published »spool« for the Boleráz/Baden Cultures which is centrally perforated (Nitriánský Hrádok-Vysoký breh, blok 21/54; Němejcová-Pavúková 1964, 215 Abb. 25,5)<sup>7</sup>. In many cases »spools« were found together with spindle-whorls at the Balatonőszöd-Temetői dűlő site (pits no. 1594, 2298, 2606, 2684; Baden cultural layer no. 925; Fig. 2b). Thus, it is possible that some of the »spools« were used for or associated with textile working in the Boleráz/Baden Cultures. Some particular finds can be identified as a bobbin on the basis of the use-wear traces of the threads (e. g. Hlinsko).

#### 5 Braid-clasp

The basis for this analogy is a unique anthropomorphic figurine from Răucești in Romania, dated to the Cucuteni Culture, phase B (Cucoș 1999, 284 Fig. 66,4). The complex connections between the Cucuteni-Tripolje Culture and the Boleráz/Baden Cultures have been demonstrated in various cases (Mantu 1998; Videiko 2004). From the cited female figurine only the torso is preserved, representing the upper part of the human body: the head is schematic, the eyes and the line of the nose are superficially portrayed. At the

7 The typically perforated items are characteristic in the Balkans for later periods, i. e. Bronze and Iron Age, and were used as spindle-whorls (see e. g.

Mauel 2009, 67 Abb. 18,10–19) or as weights for the warp-weighted loom in unperforated form (see e. g. Mauel 2009, 111 Abb. 38,9; 118 Abb. 41–42).

back part of the head, there are two holes, one below the other, on both sides. From the occiput downwards to the middle of the back spine there is a long »line« – which most probably represent a plaited hairstyle – with a »spool« at its end (Fig. 5b).

In my opinion those »spools« are suitable for this function, which are small and delicately crafted. In this case those pieces have to be emphasised which are richly ornamented, to mark either their magic/religious status or the status of the owner. These Copper Age finds are usually described in publications as »pintaderas« or idols<sup>8</sup>. Interestingly, the tattoo-like motifs on the leg of a massive clay anthropomorphic figurine found at the tell of Sudievo (Kuncheva 2003, 109–111) resemble the pattern of a »stamp« excavated at the same site.

### *Additional potential analogues from cultural anthropological studies*

#### *6 Head support/seating support*

M. Mauss gave a famous lecture on the techniques of the human body in 1934 (Mauss 2000, 425–449). In his work Mauss presented the sequence of conscious and unconscious practices connected to the human body, which vary depending on geographical as well as cultural regions. The bodily behaviours have their characteristic features in every human society. Mauss argues that these habits are closely related to physical exercise public agreement, fashion, and authority, and they are acquired by imitation and teaching. Since the body is the earliest and primary »tool« of humankind, the techniques of the body are represented in everyday and ritual aspects to the same degree.

Among the techniques of the body, I would like to reflect here on some aspects of sleeping practices (Mauss 2000, 438). Among those communities, who sleep on the ground (first of all in Central Africa around 150 latitude, in the tribal civilizations' zone; but the list could be started with the ancient Egyptians) various forms of head supports exist, which are mostly used to prevent creeping insects and bugs from getting in contact with the people while sleeping.

This function of the »spool« as a head support might be an interpretation based on the only *in situ* observation at Budakalász-Luppa csárda, grave no. 403 (Bondár 2009, 181). However, the find was derived from an old excavation from the 1950's, with many problems of the original documentation of finds, and the items could have supported other objects within the grave, e.g. vessels, made from organic material, that left no visible traces.

Such very simple, spool-like supports were documented in the pastoral, cattle-breeding societies of Central Africa. The given example (Fig. 5c) was documented by P. Jahoda in 1998 in north-western Uganda, in the territory of the Karamojong tribe (Jahoda 2002, 60). The photograph has been taken in the main street of Namalu, the central place of the community. During daytime inhabitants usually carry such items with them, using them as

8 The group of the idols comprises two bases stamp seals from the following sites: Kapitan Dimitriev, Slatina (Dzhanfezova 2003, 97–108); Russeva, Sudievo, Karanovo VI, Stoil Vojvoda,

Bikovo, Drama (Kuncheva 2003, 109–111). The only example from the Boleráz-Baden conundrum is Cernavodă III (Roman 2001, 45 Taf. 3,1).

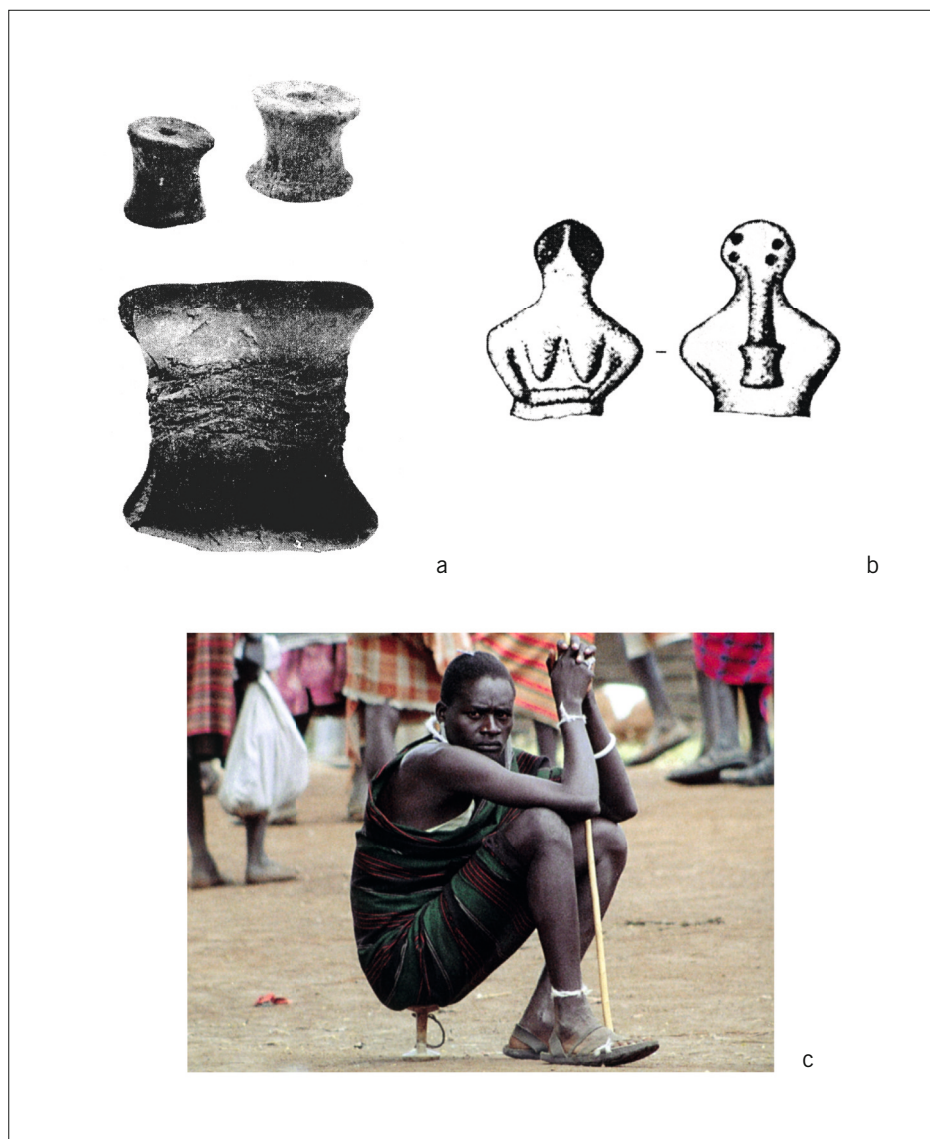


Fig. 5 a Ezerovo II, Bulgaria; settlement site; thread-bearing bobbin. b Răucești, Romania; upper part of a female torso. c Traditional head support, here used as sitting-support by a member of the Karamojong group in north-western Uganda. a–b no scale.

Abb. 5 a Ezerovo II, Bulgarien; Siedlung; Spule mit Faden. b Răucești, Rumänien; oberer Teil eines weiblichen Torsos. c Traditionelle Kopfstütze, hier als Sitz gebraucht von einem Angehörigen der Karamojong in Nordwest-Uganda. a–b o.M.

seats, whereas they rest their heads on them during sleeping. The Boleráz-Baden communities similarly were cattle and sheep farmers with martial connotations (Horváth 2009).

## Conclusions

In this study various or, in some cases, combinable usage-forms of the Boleráz/Baden »spool«-find group were presented, as inferable from archaeological and anthropological analogies. It is likely that this object type was a multifunctional tool<sup>9</sup> whose diverse functions can be separated on the basis of specific wear marks. There are examples ranging from mundane to religious (idol, »pintadera«) applications of the object.

Based on chronologic-functional differences, I assume that the »spools« had basically different uses in the Boleráz and Baden Cultures. It seems that the »spool« was a robust, multifunctional, secular object in the Boleráz Culture, used mostly as a pedestals/pounder/pestle. Over time, the object type became a delicate, personal, and maybe prestigious item by the Baden Culture. At the same time »spools« also took over the function of the decorated »pintaderas« of the Boleráz Culture, whose earlier forms are missing from the record of the Baden Culture (Horváth 2010, 107–112). This transformed function can be traced into the so-called post-Baden period as well<sup>10</sup>.

The object and its original function most probably arrived during the formation period of the Boleráz Culture from the north-eastern communities of the Funnel Beaker Culture (»durchlochte Tonwalzen in Garnspulen-Form«; Kirsch 1994, 106 Abb. 51), which is known to be one of its main former cultural bases<sup>11</sup>.

The earliest usage of the »spool« was detected in the Central German territories (around Halle [Saale]) within its archaeological context – and from the earliest appearances it was connected with the evaporation of salt. The production of salt developed to an industrial scale during the Early Bronze Age Únětice Culture and, being a strategic export article, it became the most important economic resource of the culture under discussion (e. g. Matthias 1976; Genz 2004).

It seems that the purpose of the object is completely different further south and south-east. L. Rahmstorf collected such finds in the Middle East and the Aegean dating between 2500 BC and 2000 BC (Rahmstorf 2006, 73–79). He also recorded the functions attached to »spools« there. A. Sherratt linked them to metalworking crafts such as refinement and polishing (Sherratt 2000, 175 after Rahmstorf 2006, 74), whereas J. Thimme associated them with the shaping of Kykladian idols (Thimme 1975, 15 after Rahmstorf 2006, 74). Rahmstorf argued that in this period a new pottery-type (the so-called Depas-forms) was

9 Similar occasions are known from prehistory. Widely distributed object groups, such as the so-called cheek-pieces or horn hoes, were found across different cultures and proved to have been different tools for different functions. Once their finds' circumstances had been analysed (Dietz 1992; Kuzmina 2008, 31 f.).

10 Vučedol Streim-Vineyard, pit no. 6 and grave no. 3 (Durman 2000, 43–46); Sarvaš, tell-settlement (Balén 2005, Tab. 57,219; 58,220–222). From

Podolie (Bošáca Group) a complete salt-producing apparatus is known with pedestal, grinder, and briquetage vessels; but it was published as a metal-producing apparatus (Šuteková 2010, 479 Abb. 7).

11 Wrocław, Kraków-Pleszów (Kirsch 1994, 106); Moravičany, Jevišovice C2 (Houšťová 1960, Taf. VII,8; XIV,9). For more details about the cultural connections see Horváth 2009.

introduced, which may have been the result of new eating and drinking habits in the investigated regions. The »new« drink was marketed in the Depas-type vessels which were sealed with such cylindrical objects. According to Rahmstorf (2006), this type of object was also involved in the development of the copper-zinc trade, as components of various weight units or sets within a unified measure-system. This time period correlates with the survival of the Baden Culture into the Early Bronze Age in Hungary (Horváth 2011; Horváth 2012).

Moreover, I think that objects of this type can be connected to the churning of butter; still their exact role in the process is not clear. There is a female figurine find from Gilat (Fig. 6a; the so-called »Fertility Goddess«; Seipel 1998, Kat.-No. 19), who is holding a churn pot on the top of her head, while there is a pestle-like »spool« object under her left arm. The transformation in diet of using milk and its products which originated on the Sinai Peninsula in the nomadic Ghassulien Culture<sup>12</sup>, can also be traced in some parts of Europe, and according to Sherratt these changes are often referred to as »The Secondary Exploitation of Animals« and the »Secondary Products Revolution« (Sherratt 1983; Sherratt 2004). There is also a pottery-type suitable for churning in the Boleráz/Baden Cultures, namely the so-called fish-barque-shaped vessel (Fig. 6b; »fischbutförmiges Gefäß« in German; cf. Banner 1956, 146). Besides, the more delicately ornamented variants of this pottery type are even more widely used as the original churn pots themselves (Fig. 6c; Horváth 2009, 115; Horváth 2011, 26–28; Horváth 2012, 36 f.).

The completely different functions of the discussed object type, appearing in both the Boleráz and the Baden Culture, further strengthen the opinion of those scholars who argue that the Boleráz and the Baden societies should be interpreted as individual cultures rather than representing connected phases of one development as it was suggested previously (Furholt 2008; Horváth 2009). Concerning the origin of the finds, the Boleráz Culture has strong Central European connections, whereas the artefacts of the Baden Culture can be related to south-eastern Europe.

Still, I think there are numerous new aspects that could be investigated in connection with the pestle finds, if a comprehensive publication of finds would be available. For instance at the Balatonószöd site, »spools« were frequently found together with stone axes and clay spoons, constituting a feature which has not yet been explained adequately.

## Acknowledgements

The article was sponsored by OTKA F-67577 and PD-73490.

## Summary

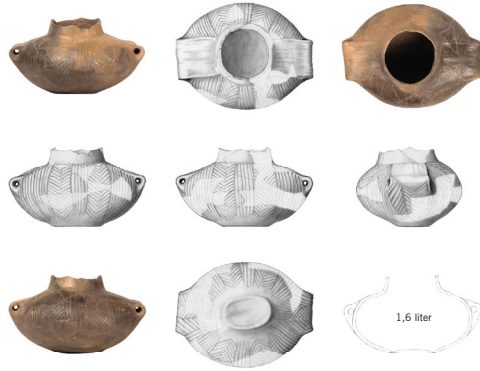
This study presents various, in some cases combinable, usage-forms for the Boleráz/Baden »spool«-find group. These functions are inferred by archaeological and anthropological analogies. It is likely that this object type was a multifunctional tool whose diverse func-

---

<sup>12</sup> For dating and a general view see Rowan/ Golden 2009.

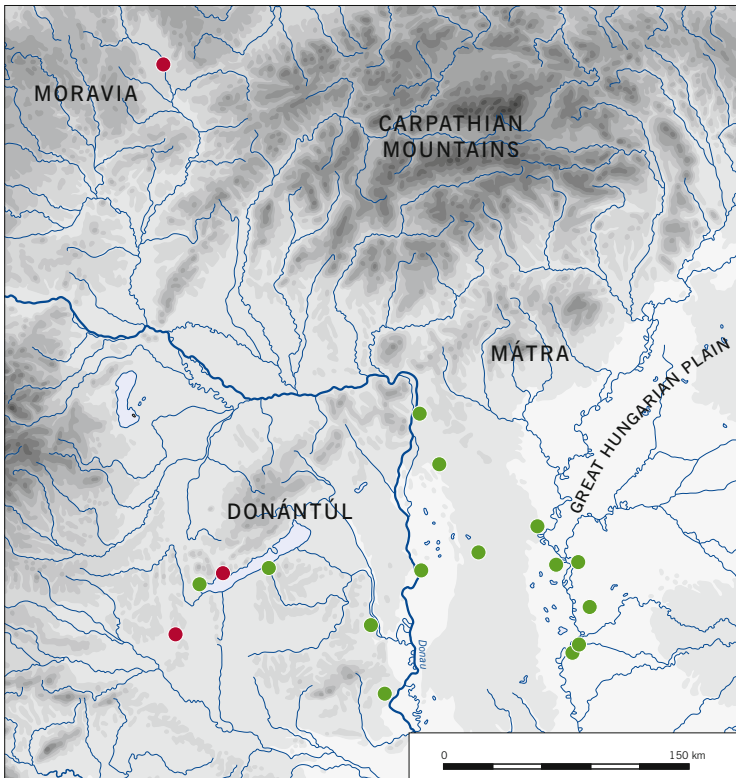


a



b

10 cm



c



**Fig. 6 (left page)** a Gilat, Sinai Peninsula, Ghassulian Culture. Figurine of the »Fertility Goddess« with a pestle under her arm and a »churn« on top of her head. b Balatonőszöd-Temetői dűlő, pit no. 1124; »churn« pot (»fischbuttenförmiges Gefäß«/fish-barque-shaped vessel). c The distribution map of the fish-barque-shaped vessels in the Boleráz/Baden Cultures: red – original »churn« pots (Boleráz Culture); green – imitations of »churn« pots (Baden Culture).

**Abb. 6 (linke Seite)** a Gilat, Sinaihalbinsel, Ghassulien-Kultur. Figurine der »Fruchtbarkeitsgöttin«, mit einem Stößel unter ihrem Arm und einem »Butterfass« auf ihrem Kopf. b Balatonőszöd-Temetői dűlő, Grube Nr. 1124; »Butterfass« (fischbuttenförmiges Gefäß). c Karte der geografischen Verteilung der fischbuttenförmigen Gefäße innerhalb des Kulturkomplexes Boleráz/Baden: rot – »Butterfässer« (Boleráz-Kultur); grün – imitierte »Butterfässer« (Badener Kultur).

tions can be separated on the basis of specific shapes and wear marks. There are examples ranging from mundane to religious (idol, »pintadera«) applications.

Based on chronological-functional differences, it can be assumed that the »spools« had basically different uses in the Boleráz and Baden Cultures. It seems that the »spool« was a robust, multifunctional, everyday, utilitarian object in the Boleráz Culture, used mostly as a pedestal/pounder/pestle. Later, in the Baden Culture, the object type became a delicate, personal, and maybe prestigious item. The completely different functions of the discussed object type, appearing in both the Boleráz and Baden Cultures, further strengthen the opinion of those scholars who argue that both cultures should be interpreted as individual societies or separate ceramic traditions rather than representing linked phases of development as it was previously suggested. Concerning the origin of the objects, the Boleráz Culture has strong Central European connections, whereas the material culture of the Baden Culture can be related to south-eastern Europe.

## Zusammenfassung

### *Spulenförmige Tonartefakte: ein unbekannter Objekttyp des Kulturkomplexes Boleráz/Baden*

Die vorliegende Studie zeigt verschiedene, in einigen Fällen kombinierbare Nutzungsmöglichkeiten der »Spulen«-Fundgruppe aus dem Kulturkomplex Boleráz/Baden. Diese Funktionen sind von archäologischen und anthropologischen Analogien abgeleitet. Es ist sehr wahrscheinlich, dass dieser Objekttyp ein multifunktionales Gerät war, dessen diverse Funktionen anhand verschiedener Größen und Abnutzungsspuren unterschieden werden können. Dies umfasst sowohl profane als auch religiöse Anwendungen der Objekte.

Basierend auf chronologisch-funktionalen Unterschieden ist anzunehmen, dass die »Spulen« im Kulturkomplex Boleráz/Baden zu den verschiedensten Zwecken genutzt wurden. Es scheint, dass die »Spule« in der Boleráz-Kultur ein robuster, multifunktionaler und alltäglicher Gebrauchsgegenstand war, mit der typischen Funktion als Standfuß/Untersatz, Klopfer/Stampfer oder Stößel. Später, in der Badener Kultur, entwickelte sich dieser Objekttyp zu einem filigraneren, persönlicheren und möglicherweise prestigeträchtigeren Gegenstand. Die sehr unterschiedlichen Nutzungen des hier untersuchten Objekttyps, der sowohl in der Boleráz wie auch der Badener Kultur vorkommt, unter-

mauern die Meinungen jener Forscher, welche die Boleráz und Badener Gesellschaften als separate Kulturen oder Keramiktraditionen interpretieren und nicht als zusammenhängende Entwicklungsphasen sehen, wie dies zuvor angenommen wurde. Hinsichtlich der Herkunft dieser Objekte bleibt anzumerken, dass die Boleráz-Kultur enge Verbindungen mit Zentraleuropa hatte, während die Badener Kultur eher mit Südosteuropa verbunden war.

---

## Bibliography

- Albore-Livadie 2002**  
C. Albore-Livadie, A First Pompeii: The Early Bronze Age village of Nola-Croce del Papa (Palma Campania phase). *Antiquity* 76, 2002, 941–942.
- Balen 2005**  
J. Balen, Sarvaš – Neolitičko i eneolitičko naselje. *Mus. Arch. Zagrabiensis Cat. a Monogr.* 2 (Zagreb 2005).
- Banner 1956**  
J. Banner, Die Pécelér Kultur. *Arch. Hungarica* 35, 1956.
- Barna 2003**  
J. P. Barna, Későrézkori település Nagykanizsa-Billa lelőhelyen (Late Copper Age settlement in Nagykanizsa-Billa). *Zalai Múz.* 12, 2003, 97–142.
- Bondár 2004**  
M. Bondár, A kocsí a késő rézkori Európában (Der Wagen im spätkupferzeitlichen Europa). *Arch. Értesítő* 129, 2004, 5–34.
- Bondár 2009**  
M. Bondár, The cemetery. In: M. Bondár/P. Raczky (eds.), *The Copper Age cemetery of Budakalász*. *Festschr. S. Soproni and J. Korek* (Budapest 2009) 11–303.
- Bondár 2010**  
M. Bondár, The Late Copper Age Settlement at Nagyút-Göböljárás II. *Antaeus* 31–32, 2010, 303–375.
- Bondár 2013**  
M. Bondár, Utilitarian, Artistic, Ritual or Prestige Articles? The Possible Function of an enigmatic Artefact. In: A. Anders/G. Kulcsár (eds.), *Moments in Time*. *Festschr. P. Raczky* (Budapest 2013) 605–613.
- Comune di Nola 2013**  
Comune di Nola (ed.), *Villaggio Preistorico* (Nola 2013), <[http://www.comune.nola.na.it/index.php?option=com\\_content&view=article&id=168&Itemid=218](http://www.comune.nola.na.it/index.php?option=com_content&view=article&id=168&Itemid=218)> (19.01.2015).
- Cucoş 1999**  
Ş. Cucuș, Faza Cucuteni B în zona subcarpatică a Moldovei. *Bibl. Mem. Ant.* 6 (Piatra Neamț 1999).
- Dietz 1992**  
U. Dietz, Zur Frage vorbronzeitlicher Trensengelege in Europa. *Germania* 70, 1992, 17–36.
- Dzhanfezova 2003**  
T. Dzhanfezova, Neolithic pintaderas in Bulgaria. Typology and comments on their ornamentation. In: L. Nikolova (ed.), *Early Symbolic Systems for Communication in Southeast Europe*. *BAR Internat. Ser.* 1139,1 (Oxford 2003) 97–108.
- Durman 2000**  
A. Durman, Vučedolki Orion i najstariji europski calendar (Vučedol Orion and the Oldest European Calendar) (Zagreb 2000).
- Furholt 2008**  
M. Furholt, Pottery, cultures, people? The European Baden material re-examined. *Antiquity* 82, 2008, 617–628.
- Genz 2004**  
H. Genz, Blühende Landschaften – Mitteldeutschland in der frühen Bronzezeit. In: H. Meller (ed.), *Der geschmiedete Himmel. Die weite Welt im Herzen Europas vor 3600 Jahren*. Begleitband zur Sonderausstellung, Landesmuseum für Vorgeschichte Halle (Saale) 15. Oktober 2004–24. April 2005, *Dänisches Nationalmuseum Kopenhagen* 1. Juli 2005–22. Oktober 2005, *Reiss-Engelhorn-Museen Mannheim* 4. März 2006–9. Juli 2006 (Stuttgart 2004) 168–172.
- Gibson/Woods 1990**  
A. Gibson/A. Woods, *Prehistoric Pottery for the Archaeologist* (London 1990).
- Guerra-Doce et al. 2011**  
E. Guerra-Doce/G. D. de Calsro/F. J. Abarquero-Moras/J. M. del Val-Recio/A. L. Palomino-Lázaro, The Beaker salt production centre of Molino Sanchón II, Zamora, Spain. *Antiquity* 85, 2011, 805–819.
- Harding 2000**  
A. F. Harding, *European Societies in the Bronze Age* (Cambridge 2000).
- Horváth 2004**  
T. Horváth, A Vátya kultúra településeinek kőanyaga. Komplex régészeti és petrográfiai feldolgozás (The stone implements of Bronze Age Vátya culture. Complex archaeological and petrographical analyses). Unpubl. Diss. Eötvös Loránd Univ. (Budapest 2004), <<https://www.academia.edu/2155380/>>

- A\_k%C3%B6z%C3%A9s%20C5%91\_bronzkori\_vatyai\_kult%C3%B6r%C3%A9s%20B6zeinek\_komplex\_r%C3%A9s%20A9g%C3%A9s%20A9s\_petrogr%C3%A1fia\_feldolgoz%C3%A1sa\_2004\_ELTE\_Budapest.Complex\_archaeological\_and\_petrographical\_investigation\_of\_the\_Bronze\_Age\_Vatya\_Culture. 1. r%C3%A9s\_1\_part\_Ph.D.\_dissertation> (07.01.2015).
- Horváth 2008**  
T. Horváth, »Spulni«: egy ismeretlen funkciójú tárgytypus a Badeni kultúrában (Variációk egy témára) (»Spulni«: an artifact of unknown function from the Baden culture). Somogyi Múz. Közl. 18, 2008, 157–166.
- Horváth 2009**  
T. Horváth, The intercultural connections of the Baden »culture«. In: G. Ilon (ed.), ΜΩΜΟΣ VI, Óskoros kutatók VI. Összejövetelének konferenciakötete, Nyersanyagok és kereskedelem, Kőszeg, 2009, március 19–21 (Szombathely 2009).
- Horváth 2010**  
T. Horváth, Manifestationen des Transzendenten in der Badener Siedlung von Balatonőszöd-Temetői Dűlő – Kultgegenstände. Prähist. Zeitschr. 85, 2010, 79–119.
- Horváth 2011**  
T. Horváth, A késő rézkor időszaka más szemszögből: tipo-kronológiai megfigyelések a Balatonőszöd–Temetői dűlői késő rézkori Boleráz/Baden település leletanyagán. Gesta 10, 2011, 3–135, <[http://tortenelemszak.uni-miskolc.hu/gesta/gesta2011/2011\\_3.pdf](http://tortenelemszak.uni-miskolc.hu/gesta/gesta2011/2011_3.pdf)> (23.12.2014).
- Horváth 2012**  
T. Horváth, Networks and Netwars: New perspectives on the Late Copper Age and Early Bronze Age. Typo-chronological relationships of the Boleráz/Baden/Kostolac finds at the site of Balatonőszöd–Temetői dűlő, Hungary. BAR Internat. Ser. 2427 (Oxford 2012).
- Horváth 2013**  
T. Horváth, Kritika. Bondár Mária: Agyag kocsimodellek a Kárpát–medencéből (Kr.e. 3500–1500). Specimina Electronica Ant. 15, 2012, 1–27, <[http://okor.tti.btk.pte.hu/files/tiny\\_mce/SEA/SEA\\_15\\_Horvath\\_Tunde.pdf](http://okor.tti.btk.pte.hu/files/tiny_mce/SEA/SEA_15_Horvath_Tunde.pdf)> (22.12.2014).
- Houšťová 1960**  
A. Houšťová, Kultura nálevkovitých pohárů na Moravě (Die Trichterbecherkultur in Mähren/Культура Воронковлодных Кубков в Моравии). Fontes Arch. Pragenses 3 (Prague 1960).
- Jahoda 2002**  
P. Jahoda, Az óskor utolsó tanúi. Afrika, Új-Guinea, Ázsia (Last witnesses of the Prehistory) (Budapest 2002).
- Kellner 1973**  
H. J. Kellner, Die Sigillatattöpfereien von Westerdorf und Pfaffenhofen (Stuttgart 1973).
- Kuncheva 2003**  
T. Kuncheva, Ceramic pintaderas from Nova Zagora Region (Southeast Bulgaria). In: L. Nikolaeva (ed.), Early Symbolic Systems for Communication in Southeast Europe. BAR Internat. Ser. 1139,1 (Oxford 2003) 109–111.
- Kirsch 1994**  
E. Kirsch, Beiträge zur älteren Trichterbecherkultur in Brandenburg. Forsch. Arch. Land Brandenburg 2 (Potsdam 1994).
- Kuzmina 2008**  
E. E. Kuzmina, The Prehistory of the Silk Road (Philadelphia 2008).
- Mantu 1998**  
C.-M. Mantu, Cultura Cucuteni. Evoluție, cronologie, legături. Bibl. Mem. Ant. 5 (Piatra Neamț 1998).
- Matthias 1976**  
W. Matthias, Die Salzproduktion – ein bedeutender Faktor in der Wirtschaft der frühbronzezeitlichen Bevölkerung an der mittleren Saale. Jahresschr. Mitteldt. Vorgesch. 60, 1976, 373–394.
- Mauel 2009**  
S. Mauel, Die Spinnwirtel und Webgewichte der bronze- und eisenzeitlichen Siedlung von Kastanas. Zur Textilproduktion Nordgriechenlands im 2. vorchristlichen Jahrtausend. Unpubl. MA Diss. Univ. Copenhagen (Copenhagen 2009), <[https://www.academia.edu/349596/Die\\_Spinnwirtel\\_und\\_Webgewichte\\_der\\_bronze-\\_und\\_eisenzeitlichen\\_Siedlung\\_von\\_Kastanas\\_Zur\\_Textilproduktion\\_Nordgriechenlands\\_im\\_2.\\_vorchristlichen\\_Jahrtausend](https://www.academia.edu/349596/Die_Spinnwirtel_und_Webgewichte_der_bronze-_und_eisenzeitlichen_Siedlung_von_Kastanas_Zur_Textilproduktion_Nordgriechenlands_im_2._vorchristlichen_Jahrtausend)> (23.12.2014).
- Mauss 2000**  
M. Mauss, Szociológia és antropológia (Sociologie et anthropologie) (Budapest 2000).
- Medović 1976**  
P. Medović, The eneolithic settlement Brza Vrba near Kovin. Grada 6–7, 1976, 5–18.
- Němejcová-Pavůková 1964**  
V. Němejcová-Pavůková, Sídliško bolerázského typu v Nitriánsky Hrádku (Siedlung der Boleráz-Gruppe in Nitriánsky-Hrádko). Slovenska Arch. 12,1, 1964, 163–268.
- Němejcová-Pavůková 1974**  
V. Němejcová-Pavůková, Beitrag zum Kennen der Postboleráz-Entwicklung der Badener-Kultur. Slovenská Arch. 22,2, 1974, 237–350.
- Němejcová-Pavůková 1981**  
V. Němejcová-Pavůková, Náct periodizácie badenskej kultúry a jej chronologických vzťahov k juhovýchodnej Európe (An outline of the periodical system of Baden culture and its chronological relations to Southeast Europe). Slovenska Arch. 29,2, 1981, 261–291.
- Němejcová-Pavůková 1984**  
V. Němejcová-Pavůková, K problematike trvania a konca bolerázskej skupiny na Slovensku (Zur Problematik von Dauer und Ende der Boleráz-Gruppe in der Slowakei). Slovenska Arch. 32,1, 1984, 75–146.
- Pavelčík 1982**  
J. Pavelčík, Drobné terrakoty z Hlinska u Lipníku

- (okr. Přerov) (Kleine Terrakotten aus Hlinsko bei Lipník [Bez. Přerov]). *Pam. Arch.* 73,2, 1982, 261–292.
- Petrović/Jovanović 2002**  
J. Petrović/B. Jovanović, Gomolava. Naselje kasnog eneolita (Novi Sad, Belgrade 2002).
- Rahmstorf 2006**  
L. Rahmstorf, Zur Ausbreitung vorderasiatischer Innovationen in die frühbronzezeitliche Ägäis. *Prähist. Zeitschr.* 81, 2006, 49–96.
- Roman 2001**  
P. Roman, Die Cernavodă III – Boleráz-Kulturer-scheinung an der Unteren Donau. In: P. Roman/S. Dimanadi (eds.), Cernavodă III – Boleráz. Ein vorgeschichtliches Phänomen zwischen dem Ober-rhein und der unteren Donau. Symposium, Mangalia/Neptun (18.–24. Oktober 1999). *Stud. Danubiana 2* (București 2001) 13–60.
- Rowan/Golden 2009**  
Y. M. Rowan/J. Golden, The Chalcolithic Period of the Southern Levant: A synthetic Review. *Journal World Prehist.* 22, 2009, 1–92.
- Rutt kay 1973**  
E. Rutt kay, Über die Badener Kultur in Nieder-österreich und im Burgenland. In: B. Chropovský (ed.), Symposium über die Entstehung und Chronologie der Badener Kultur (Bratislava 1973) 441–452.
- Rutt kay 1999**  
E. Rutt kay, Boleraz-Gruppe. In: E. Lenneis/C. Neugebauer-Maresch/E. Rutt kay (eds.), Jung-steinzeit im Osten Österreichs<sup>2</sup> (St. Pölten, Vienna 1999) 145–161.
- Seipel 1998**  
W. Seipel (ed.), Land der Bibel. Schätze aus dem Israel Museum Jerusalem. Katalog zur Ausstellung des Kunsthistorischen Museums Wien, Künstler-  
haus, 22. September 1997 bis 18. Jänner 1998 (Jerusalem 1998).
- Sherratt 1983**  
A. Sherratt, The secondary exploitation of animals in the Old World. *World Arch.* 15,1, 1983, 90–104.
- Sherratt 2000**  
A. Sherratt, Catalogue of Cycladic antiquities in the Ashmolean Museum (Oxford 2000).
- Sherratt 2004**  
A. Sherratt, Economy and Society in Prehistoric Europe. *Changing Perspectives* (Edinburgh 2004).
- Šuteková 2010**  
J. Šuteková, Ein Einblick in die post-Badener Epoche in der Westslowakei. In: J. Šuteková/P. Pavuk/P. Kalábková/B. Kovár (eds.), *Panta Rhei. Studies in Chronology and cultural Development of South-Eastern and Central Europe in Earlier Prehistory.* *Festschr. J. Pavuk* (Bratislava 2010) 469–489.
- Thimme 1975**  
J. Thimme, Ein monumentales Kykladenidol in Karlsruhe. *Zur Typologie und Deutung der Idole.* *Jahrb. Staatl. Kunstslg. Baden-Württemberg* 12, 1975, 17–20.
- Tončeva 1981**  
G. Tončeva, Un habitat lacustre de l'âge du bronze ancien dans les environs de la ville de Varna (Ézérovó II). *Dacia* 26, 1981, 41–62.
- Videiko 2004**  
M. Y. Videiko, Late Tripillya and Baden Cultures: Facts and Character of Interaction. In: B. Hänsel/E. Studeniková (eds.), *Zwischen Karpaten und Ägäis. Neolithikum und Ältere Bronzezeit.* *Gedenkschrift für Viera Němejcová-Pavúková.* *Internat. Arch. Stud. Honoraria* 21 (Rahden/Westf. 2004) 355–367.

---

## Source of figures

- |      |  |        |   |
|------|--|--------|---|
| 1–2  | author   | 5      | a Tončeva 1981, Fig. 24,19–21; b Cucoș 1999, 284 Fig. 66,4; c Jahoda 2002, 60 below |
| 3    | a J. Lipták, Munich; b A. Hörentrup (State Office for Heritage Management and Archaeology Saxony-Anhalt); c author | 6      | a–b Seipel 1998, 29; c author   |
| 4a–e | author   | Tab. 1 | author  |

---

## Address

Dr. Tünde Horváth  
Korányi Sándor út 10, 1/14  
1089 Budapest  
Hungary  
tundehorvath4@gmail.com