Cambridge Archaeological Journal (2025), 1–15
doi:10.1017/S0959774325100176

CAMBRIDGE UNIVERSITY PRESS

Research Article

Bronze Age Matting from the Heights of Vésztő-Mágor, Hungary

Paul R. Duffy[1], Karina Grömer[2], Kayleigh Saunderson[3], Tim Schroedter[1], William A. Parkinson[4], William P. Ridge[5], Ashley Lingle[6], Jerrod Seifert[7], Danielle J. Riebe[8], Georgia Tsartsidou[9,10], Panagiotis Karkanas[10] & Attila Gyucha[8]

[1]Kiel University, Leibnizstraße 3, 24118 Kiel, Germany; [2]Natural History Museum Vienna, Burgring 7, 1010 Vienna, Austria; [3]University of Vienna, Djerassiplatz 1, 1010 Vienna, Austria; [4]Field Museum of Natural History, 1400 S. DuSable Lake Shore Drive, Chicago, IL 60605, USA; [5]University of North Georgia, Strickland, 208, 3820 Mundy Mill Rd., Oakwood, GA 30566, USA; [6]University of York, The King's Manor, York YO1 7EP, UK; [7]University of Oslo, P.O. Box 1008 Blindern, 0315 Oslo, Norway; [8]University of Georgia, Baldwin Hall, 355 South Jackson Street, Athens, GA 30602, USA; [9]Hellenic Ministry of Culture, 20 Mpoumpoulinas, Athens 106 82, Greece; [10]M.H. Wiener Laboratory for Archaeological Science, American School of Classical Studies at Athens (ASCSA), 54 Souidias Street, Athens 106 76, Greece

Abstract

Tell settlements often provide a unique window into prehistoric lifeways due to remarkable preservation and safeguarding from modern disturbances. Vésztő-Mágor in Hungary is one such tell with stratigraphy, features and finds that reflect thousands of years of prehistoric settlement. In 2021, the Vésztő-Mágor Conservation and Exhibition Program began the work of stabilizing, documenting and preserving prehistoric deposits, features and artefacts exposed in an *in situ* exhibition trench at Vésztő-Mágor. In the process, an exceptionally well-preserved carbonized item was discovered embedded in a series of Middle Bronze Age house floors. We describe the object and context of discovery, and interpret it as matting inside a wattle-and-daub house. We expand our discussion to similar contexts known from Vésztő-Mágor, in the Carpathian Basin, and beyond, to highlight the technologies involving organic materials used at prehistoric tell sites and their significance for understanding lifeways at these settlements.

(Received 23 May 2025; revised 23 May 2025; accepted 4 June 2025)

Introduction

Tell sites have long been valued by archaeologists as a key resource for reconstructing long-term, regional-scale cultural developments, with the remarkable preservation of buried deposits playing a crucial role. Due to their thick stratigraphy (Corfield 1996; Forti *et al.* 2023) and regular protection by state heritage protection agencies, the archaeological deposits often suffer much less from the destructive effects of erosion and modern agriculture, preserving features that are seldom found in non-tell contexts, such as house walls and floors, clay ovens and platforms. Tell sites of the Carpathian Basin are no exception (Bóna 1994; Kalicz & Raczky 1987; Kienlin 2015; 2020; Lazarovici *et al.* 2001; Vicze & Sørensen 2023). These settlements form the northern extent of the tell networks established in the Near East and Balkans during the Neolithic (Raczky 2015). They were often reoccupied in the Bronze Age, or established in new areas for the first time (Gogâltan 2002; Gogâltan *et al.* 2014). In this paper, we review the discovery of carbonized matting and other preserved organics at the site of Vésztő-Mágor in eastern Hungary to highlight material culture other archaeologists encountered but have not systematically explored and contribute to a broader picture of shared and divergent Bronze Age technological traditions in the built environment.

The Vésztő-Mágor tell has been a rich source of information on regional prehistory and history for archaeologists and the public since the 1960s (Hegedűs & Makkay 1987; Makkay 2004; Parkinson *et al.* 2021; 2018; Sarris *et al.* 2013). The site is the largest tell in the Carpathian Basin, covering an area of 4.25 ha and containing nearly 7 m of stratified cultural layers (Fig. 1). It was occupied periodically from the Middle Neolithic to the Middle Bronze Age, *c.* 5200–1700 cal. B.C. Between the eleventh and fourteenth centuries a.d., a monastery was constructed on top (Hegedűs & Makkay 1987). The tell and its 13 ha surroundings comprise the Vésztő-Mágor National Historical Park, opened in 1982.

In the 1980s, a trench 19×4.5 m was excavated on the tell specifically to create an *in situ* exhibition with an array of archaeological features, such as houses, hearths and artefact clusters, left exposed (Makkay 2004) (Fig. 1). The dig was followed by the construction of a permanent shelter over the trench to facilitate public access (Fig. 2; inside shelter, https://sketchfab.com/3d-models/veszto-tell-8a0af159727f421fa3075b5200fa3548). The exhibit, however, has come into

Corresponding author: Paul R. Duffy; Email: paulregisduffy@gmail.com
Cite this article: Duffy, P.R., *et al.* (2025). Bronze Age Matting from the Heights of Vésztő-Mágor, Hungary. *Cambridge Archaeological Journal* 1–15. https://doi.org/10.1017/S0959774325100176

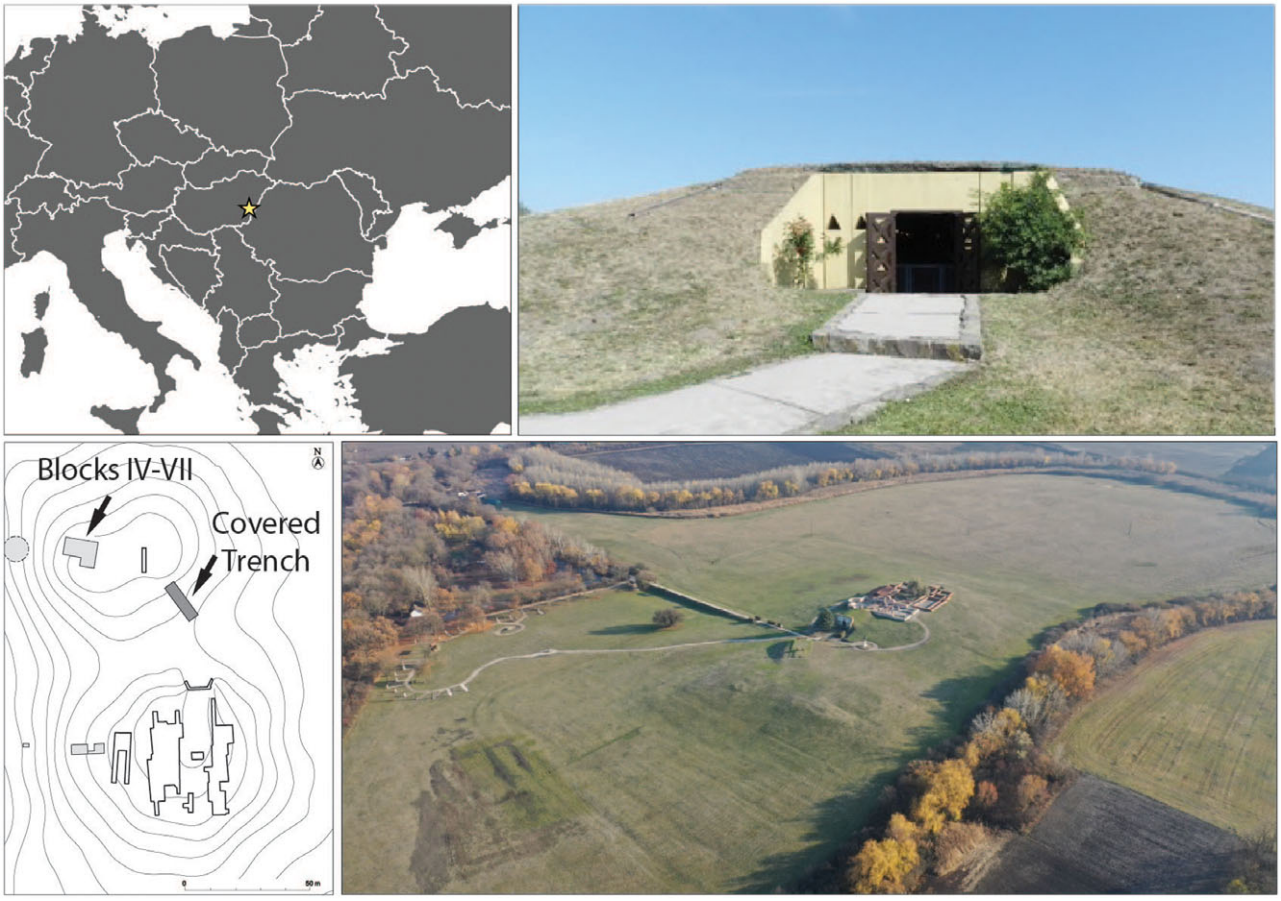

Figure 1. Clockwise from top left: site location, entrance of covered trench, aerial imagery of site, and site map and topography (dark grey: covered trench; white and light grey: earlier excavations). (Image: P. Duffy, I. Pánya & J. Seagard.)

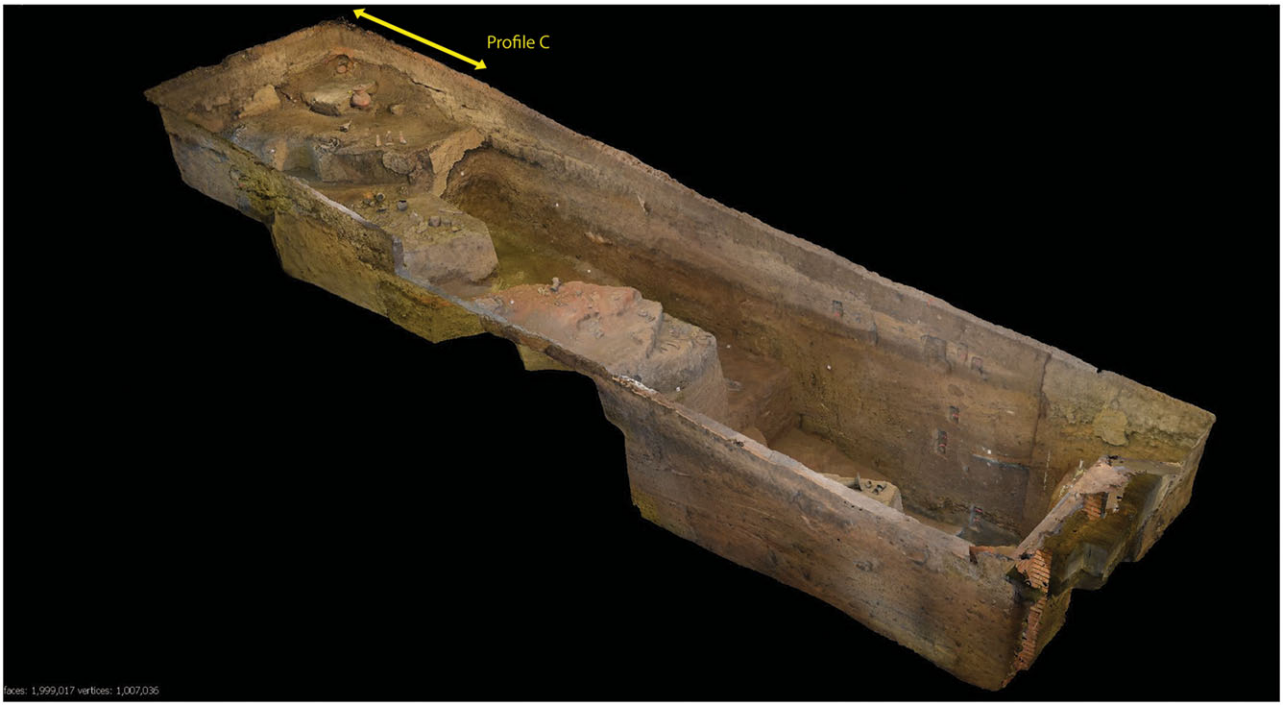

Figure 2. Photogrammetry model of the covered trench, highlighting the location of the matting. (Image credit: I. Pánya.)

https://doi.org/10.1017/S0959774325100176 Published online by Cambridge University Press

Figure 3. Work in the covered structure involves cutting back and sampling the profiles rather than excavating from the top down. Both an archaeological team and conservation team work together to study and preserve the *in situ* exhibit. In the photograph, Duffy points in the direction of the discovery. (Photograph: D. Riebe.)

disrepair due to the decades of exposure. Since 2021, our team of archaeologists and conservators, the Vésztő-Mágor Conservation and Exhibition Program, has focused on preservation and rejuvenation of the *in situ* exhibit (Gyucha *et al.* 2024; Lingle & Seifert 2024; Seifert *et al.* 2025; and see https://foundationstprte.de/time-will-tell). During the cleaning of a profile in the trench, we discovered carbonized matting on a Middle Bronze Age house floor (Fig. 3). The matting preserved a discernible weave structure and enough fragments to identify the reed material used in its construction.

Although archaeologists continue to excavate tells, projects increasingly expose smaller areas, open old trenches to explore profiles and spend more time and funding on specialized analyses of finds rather than excavating large areas (see e.g. Fischl & Kienlin 2024; Gyucha *et al.* 2019; Lie *et al.* 2018). The present study aligns with this emerging trend.

Below, we provide background and terminology for the matting and basketry techniques involved in the manufacturing, and describe the Bronze Age stratigraphic context in which the organics were found. We then provide micromorphological details about the matting context, phytolith and SEM microscope insights on its composition and direct radiocarbon dates of the material. Finally, we compare the find to other preserved organics previously discovered at Vésztő-Mágor and known elsewhere in ancient Europe.

Architecture and material such as perishable textiles and basketry that make up interior spaces represent both conscious cultural signalling of group identity and the culturally transmitted *habitus* across communities and time (Bourdieu 1970; 1977; Lemonnier 1986; Rapoport 1982). Due to climatic and soil conditions, preserved organics are rarely identified in prehistoric southeastern Europe; the find is relevant to scholars working on sites with preserved organics as such finds are often difficult to interpret. Our analysis of matting and other preserved organics from Vésztő-Mágor contributes to this underrepresented dataset. It provides comparative material for researchers working with similar finds, enhances our understanding of how Bronze Age communities may have employed basketry techniques within architectural contexts, and reveals potential variations in cultural traditions across different settlements and regions.

https://doi.org/10.1017/S0959774325100176 Published online by Cambridge University Press

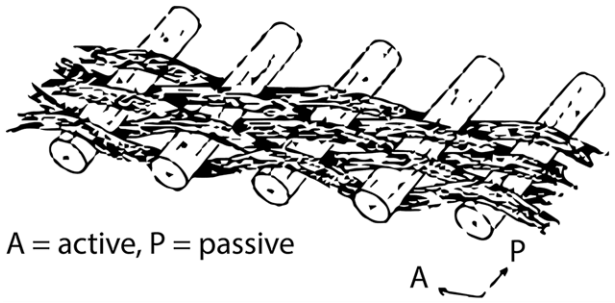

Figure 4. Technical details of a stake-and-strand basketry with an active and a passive element in under 1/over 1 technique. (After Wendrich 1991, fig. 26).

Terminological issues: mats and basketry

Conventionally in the modern world, the term textile is applied particularly to woven and knitted fabrics and a range of other techniques, such as felting and crochet. In the specialized ethnographic and archaeological literature, however, the term textile sometimes encompasses all products which consist of interconnected basic components (Seiler-Baldinger 1994), though a more restrictive definition of textile excludes items made in basketry techniques (Jørgensen *et al.* 2021). Basketry includes mats made in twining, objects made in coiling techniques, nets, wickerwork and other twined objects. The extensive range of ancient basketry and textile techniques are amply shown by ethnological classification systems such as the works of Irene Emery (2009) or Annemarie Seiler-Baldinger (1994) and—especially for basketry—Willemina Wendrich (1991). For prehistory, this variety of techniques is exemplified in the publications of the assemblages from the Swiss lake-dwellings of the Neolithic period (Médard 2010; 2012; Rast-Eicher 1997).

Woven textiles and products of basketry, matting or twining techniques rapidly undergo deterioration once interred (Kronkright 1990, 140). There are nonetheless some cases when these objects can survive the passage of time in archaeological contexts (Grömer 2016; Jørgensen *et al.* 2023; Wild 1988). The great majority of archaeological textiles are tiny fragments, often mineralized, preserved in connection with metal artefacts such as bronze, iron or silver. Organic materials can also survive in salt mines, in ice, in arid contexts, in waterlogged contexts, in bogs, as imprints on pottery or through carbonization (Pedelì & Pulga 2014).

Charred textiles, mats and basketry have better chances of survival. With charring incomplete, several chemical processes interact, leading to physical alterations. After carbonization, the charred and usually shrunken items preserve in carbonized form (see e.g. experiments by Grömer *et al.* 2023). Although there are partial transformations, the microstructure of the object usually remains substantially intact, with techniques often still visible and fibres identifiable. Plant fibres are often more stable in a carbonized state.

We describe the item in question from Vésztő-Mágor as 'matting', though 'basketry' is technically the correct term for the item in question—contrary to what is understood colloquially, however, it does not represent a basket. Thus, to avoid confusion, 'matting' with its suggested interpretation was used.

There are many different matting techniques: some involve even twining or knotting. The following terminology is used to describe the item from Vésztő-Mágor (Fig. 4):

Active element: those strands which create the coherency of a basketry technique.

Passive element: this is forming the body of the basketry structure, without having an actual part in creating the coherency in the technique.

Stake-and-strand basketry: a technique which involves two systems: a passive system, consisting of elements (stakes), and an active system which interweaves the passive system, usually at a right angle (strand or stiff rod). This type of basketry is usually rigid.

Strand: general term for all lengths of material which are used in basketry and cordage. Specific meaning with regard to stake-and-strand basketry: the active elements.

Wickerwork: a stake-and-strand basket made out of willow or also grasses.

Context and micromorphological description of the discovery

The Bronze Age deposits exposed in the closed shelter form 0.75 m of stratigraphy beneath the bottom of the ploughzone (Fig. 5). The matting was found inside a structure, likely a house (Feature 2, in Profile C). This house is the latest structure in the profile, with 8–9 floor replasterings visible, each *c.* 2 cm thick. There is a clay platform 'step', a stratigraphically higher deposit, possibly dug into another room floor in the house, but slightly elevated over neighbouring rooms. The orientation of this laminar clay structure suggests an east–west orientation of the building, which likely extends north and west. A hearth feature, less than a metre away from where the matting was found, is a common element inside Middle Bronze Age houses. Hearths were used continuously in the same spot, with ash and charcoal deposits swept up and redeposited into sequential floor and sub-floor fill layers (Kovács & Vicze 2022; Kovács *et al.* 2024).

The carbonized matting was found on top of a replastered clay floor, connected to a wattle-and-daub construction, highlighted in a slide taken for phytolith and micromorphological analysis (Fig. 6, thin section of area b in Figure 7).

The clay floor in Figure 7 consists of an unsorted mixture of calcareous loess and rounded clasts of various soil material most likely derived from reworked remains of decayed earthen structures. It is also characterized by variable amounts of other anthropogenic inclusions such as fine bone, charcoal and sherds. This type of constructed floor is typical of the Late Neolithic deposits at the Vésztő-Mágor site (Parkinson *et al.* 2018) as well as of other prehistoric tell sites in Hungary (Kovács *et al.* 2024; Röpke *et al.* 2024). The floor surface appears clean and sharp. It is capped by an overturned earthen construction rich in plant imprints and matter, particularly at its base (rear part), where it dominates the structure and appears to be burnt. Its composition differs from those of the underlying floors in that it is relatively well sorted and devoid of anthropogenic inclusions. Its face

https://doi.org/10.1017/S0959774325100176 Published online by Cambridge University Press

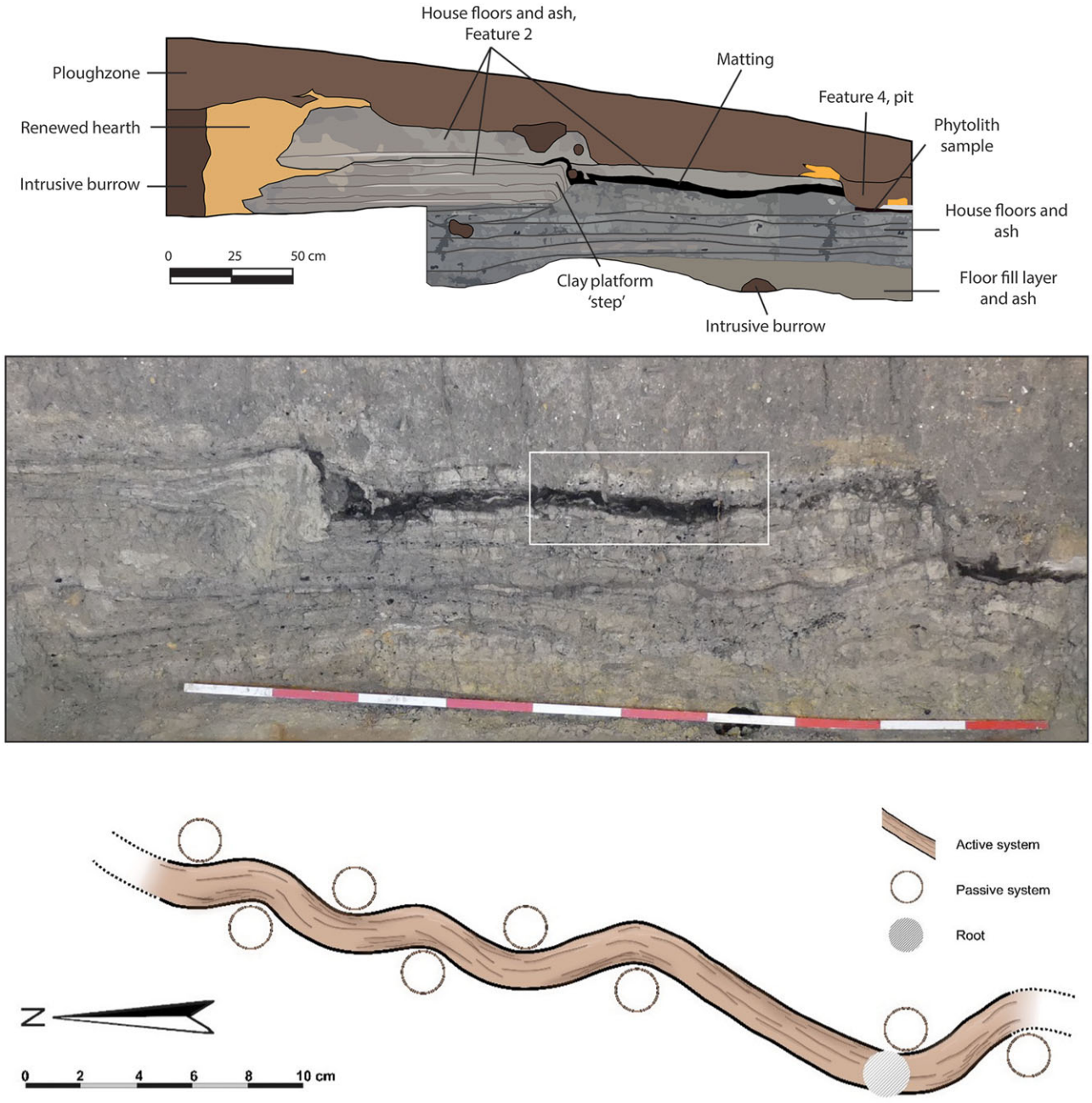

Figure 5. Profile C drawing, photograph of the matting's context, and visualization of the carbonized object, whose location is highlighted within the white box in the photo. A sample taken for phytolith and micromorphological analysis is also highlighted. (Image: K. Winter, P. Duffy and K. Saunderson.)

is finely replastered several times with a laminated fine-grained calcareous material (Fig. 6). As can be seen in the slab (Fig. 7), the construction appears quite long but relatively thin (c. 3 cm: see Fig. 6). The preservation of the rear side and the finely laminated plaster on the front face suggest that this is probably an intact piece of earthen construction preserved in its full thickness (*c.* 3 cm). This earthen construction is similar to re-plastered wall daub structures found in several Middle Bronze Age tell sites (Kovács *et al.* 2024). Above the burnt structure, the matting is visible as a mass of primarily charred whole reed pieces (see below) mixed with large fragments of *Ulmus* wood charcoal.

Description of the item in basketry technique

The matting attached to the earthen daub construction comprises a dark, fibrous, charred layer 130 cm in length and 3–4 cm in thickness in the section, and was partially block-lifted for analysis. However, because the carbonized object is very brittle, the block-lifted part was poorly preserved and only allowed some interlinking to be observed. The profile of the object *in situ* revealed a weave structure through the characteristic waved course of the active system along the profile (Fig. 5). However, the passive system is not as visible as the active system—these elements, likely a different, thicker, and stable material, such as twigs, were not as easily

https://doi.org/10.1017/S0959774325100176 Published online by Cambridge University Press

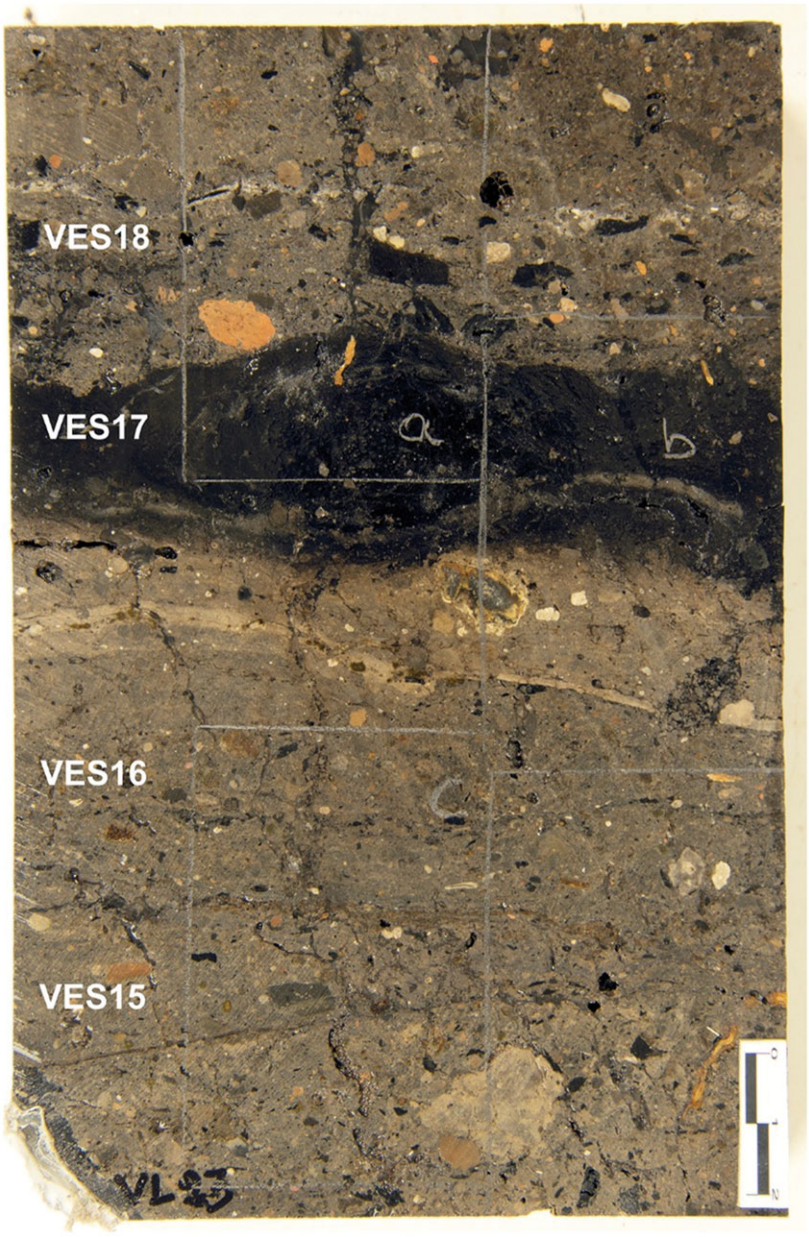

Figure 6. Resin-impregnated micromorphology slab of sample VES 3 (EU 11-11, SS 3). Thin sections are marked with pencil and location of phytoliths samples (VES 15–18) are shown as well. (Image: P. Karkanas.)

charred and did not preserve, outside of a single chunk identified as elm (*Ulmus*). The passive elements are represented by round, brown-coloured sediment spots where the active element bends, and in one spot is replaced by a root. Most of those structures occur every 1.4–1.6 cm (Table 1). As the active system is cut lengthwise in the profile, only one of these elements is visible. We assume further, parallel elements remain *in situ.*

Phytolith analysis of carbonized remains

Phytolith analysis targeted the matting itself (VES 17), two layers below it (VES 15 and VES 16) (Fig. 7) and another set of floor layers 4 m away but in a similar stratigraphic context (VES 8 to VES 14). Photographs of samples and quantitative data for phytoliths can be found in Table S1 of the Supplementary Material. Reeds dominate the silica skeleton (SS) count at 48.5% of 233 silica skeletons of the matting item VES 17 (Table 2).

Grasses are also present in the phytolith assemblages but most probably belong to the surrounding matrix rather than the matting itself (Fig. 8).

In two carbonated fragments, the arrangement of the vascular bundles in two rows is typical for Poaceae (Fig. 9a and b) (Schweingruber & Berger 2018). The stomata, rondels with cork cells and slender dentritics in another fragment (Fig. 9c) suggest a reed culm, or possibly grass husk. Another fragment belongs to Cyperaceae (sedges), probably from the genus *Carex* (Fig. 9d) (Schweingruber & Berger 2019).

The Vésztő-Mágor site falls in the Lower Körös Basin, whose environment during the Bronze Age contained forest-steppe, wetlands and areas of stagnant water away

https://doi.org/10.1017/S0959774325100176 Published online by Cambridge University Press

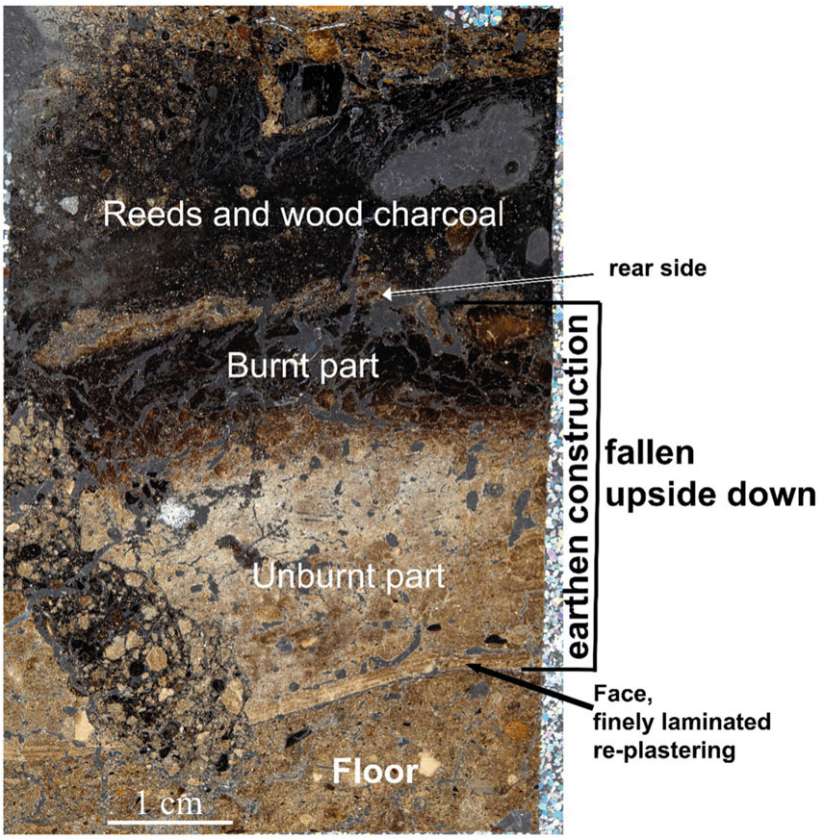

Figure 7. Image (XPL) of thin section VES 3b. The earthen construction has fallen upside down on the underlying floor. The back part of this construction is burnt. (Image: P. Karkanas.)

from active river channels (Járai-Komlódi 1987; Kosse 1979). Depressions in the latter areas would have carried reed beds and clump sedges (*Carex elata*), and stagnant waters would have had rushes (*Juncus subnodulosis*) and fenland sedge (*Carex davalliana*). The use of reeds and sedges to make basketry and matting is well attested in the historic record of the Great Hungarian Plain (Ilia & Juhász 1960; Szűcs 1933).

Dating

The dating of the matting confirms it belongs to the Middle Bronze Age, and the associated ceramics would generally be described as representing the Ottomány/Otomani culture. Two ^{14}C dates were run on samples of the matting itself (Table 3), yielding 1875–1745 B.C. (UGAMS-63227) and 1870–1695 B.C. (UGAMS-63227) at 68.3%, or –1885–1695 B.C. and 1880–1685 B.C. at 95.4%, modelled in OxCal v.4.4, using IntCal20 calibration curve (Reimer *et al.* 2020). These are consistent with the dating of the associated material culture and other dates from the site that are being prepared for publication.

Interpretation

To interpret the function of the object, we consider the technique and composition, shape and context. The structure of the object is rather unbalanced, with the distance between the passive strands being irregular. This may only have occurred with its collapse or with collapse on top of it. In one area, the passive systems are quite dense, indicating the flexibility of the active systems.

Table 1. Technical detail of the basketry item as identified along Profile C and from *in situ* blocks. (Data: K. Grömer & K. Saunderson.)

	Passive element	Active element
Material shape	Round	Flat
Width	1.4–1.6 cm	1.4–1.6 cm, 4 cm
Thickness	1.4–1.6 cm	1.5–2 cm
Distance between elements	3–4 cm (and once 9–10 cm)	12–14 cm
Composition	Elm	Reed and sedges

A container, i.e. a basket, seems unlikely due to the shape and length. Rather, it could have been a mat on the wall or the floor, perhaps covering the whole room or only partially. That the material is attached to daub suggests that it formed part of another construction such as a plastered ceiling or plastered wall that had collapsed into a horizontal position. Interestingly, the back of the construction is burnt, suggesting that the fire responsible for its collapse burned it only on one side (Fig. 7).

Matting suspended below a ceiling of light materials (possibly allowing in daylight), serving as a shelf, or even

https://doi.org/10.1017/S0959774325100176 Published online by Cambridge University Press

Table 2. Relative contribution of silica skeletons in phytolith samples.

Sample ID	VES 8	VES 9	VES 10	VES 11	VES 12	VES 13	VES 14	VES 15	VES 16	VES 17	VES 18
Absolute frequencies of silica skeletons											
Total count SS	79	69	133	69	50	101	394	54	30	233	62
Relative frequencies % total SS											
SS reeds % total SS	48.1	34.78	18.05	42.03	26	14.85	5.84	25.93	16.67	48.5	22.58
SS husk % total SS	16.46	18.84	17.29	8.7	22	10.89	14.97	27.78	23.33	11.59	11.29
SS stem % total SS	32.91	34.78	45.11	34.78	42	64.36	62.44	37.04	50	39.06	9.68
SS cereals % total SS	2.53	2.9	3.01	2.9	2	1.98	7.61	7.41	3.33	5.15	3.23

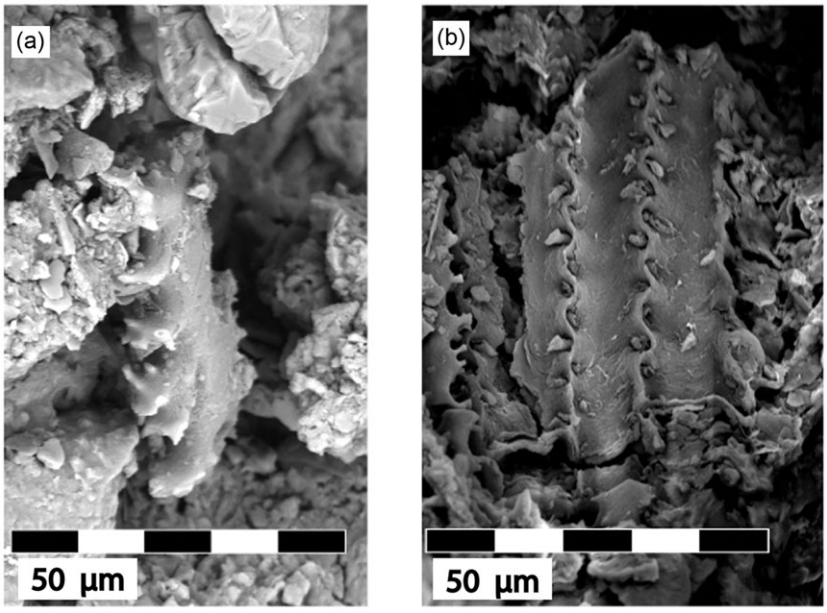

Figure 8. SEM images. (a) Grass phytolith; (b) epidermal phytolith structures from grasses, both from the matrix surrounding the charred matting. (Image: T. Schroedter.)

internal room dividers are other interpretations. The matting could have been used to protect an indoor area from pollution from the inside of the roof, for example, along with preserving warmth more efficiently in this area. It might have created some space between the actual room and the roof that could also have been used for storage of light items. This ceiling could have collapsed during a fire and then been covered by the ash layer above. A collapse of the ceiling or low wall would also explain why it is rather poorly preserved in the area of the 'steps' of the layer below. The white material several centimetres below on the bottom side of the object is likely a prepared clay floor onto which the matting fell (Fig. 7).

Comparative material from Vésztő-Mágor

The carbonized matting remains are not the sole well-preserved organics found during excavations at Vésztő-Mágor. While exposing the Late Neolithic Tisza layers in the 1970s, Katalin Hegedűs discovered several inhumations in contracted positions within coffins made of wooden planks (Fig. 10; Hegedűs & Makkay 1987). These wooden coffins were noted in more than half of the 30 burials dating to the Late Neolithic, and in some cases the sides of the coffins had preserved planks measuring up to 25 cm in height. Excavators also identified the remains of matting used for wrapping the deceased. These burials are associated exclusively with the lower Tisza stratum, suggesting that either wooden coffins and matting (as shrouds) were used only in the earlier phase of Late Neolithic habitation at Vésztő-Mágor, or that the lower layers had better conditions for preserving non-carbonized organic materials compared to the upper ones (Makkay 2004, 41). This would be consistent with the discovery of unburned wood in the lowest deposits of the Tisza tell, Szeghalom-Kovácshalom, located 7 km away (Parkinson *et al.* 2018), though both Middle Bronze Age tells at Békés-Várdomb 20 km away and Toboliu in western Romania also exhibit preserved wooden floors at shallower depths (Banner & Bóna 1974; Lie *et al.* 2018).

Hegedűs also excavated Bronze Age contexts in Block IV, a trench *c.* 20 m from where the *in situ* exhibit would be built (Archives of the Hungarian National Museum). Her team exposed a large area of a house floor which contained what she interpreted as ashy layers of sedges (*pernyeszerű, sás réteg*) (Fig. 11) (*c.* 120 cm below surface). Having seen similar deposits during excavations in 2022–23, by macroscopic

https://doi.org/10.1017/S0959774325100176 Published online by Cambridge University Press

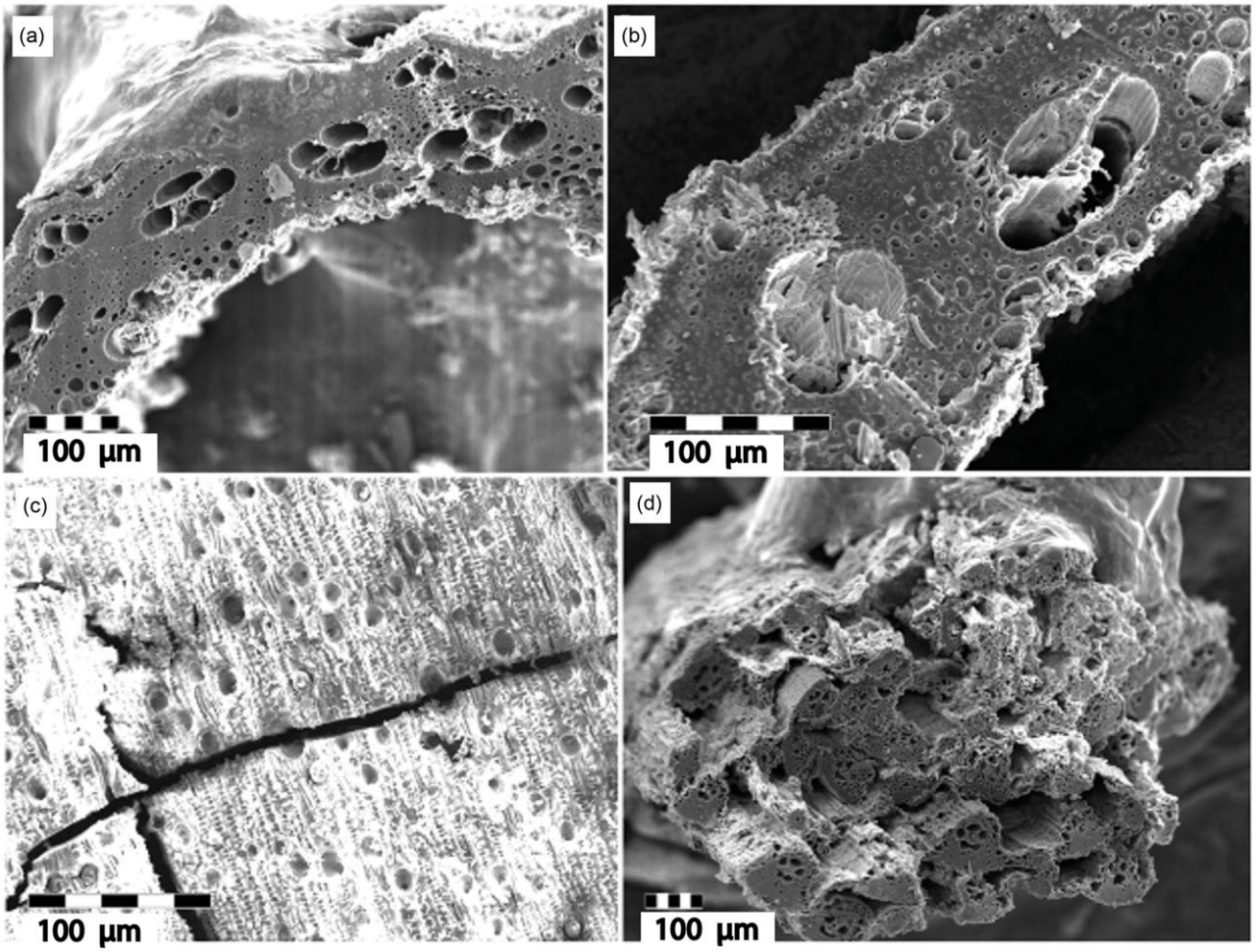

Figure 9. SEM images of diagnostic features from four fragments from the matting. (a) fragment a: stem of Poaceae, cf. *Triticum sp.*; (b) fragment b: Poaceae, cf. *Triticum sp.* (c) fragment c: epidermis, Poaceae, cf. *Triticum dicoccum*; (d) possibly Cyperaceae, cf. *Carex*. (Image and taxa identification: T. Schroedter.)

Table 3. Radiocarbon dates of the matting from Profile C.

Lab ID	Sample ID	Context	Culture	Material	Date bp	Error	δ^{13}C ‰	δ^{15}N ‰	pMC	±
UGAMS-63227	SS 002_2	Profile C, Feature 2	Ottomány	Carbonized plant	3470	20	−25.8	n/a	64.92	0.18
UGAMS-63228	SS 002_1	Profile C, Feature 2	Ottomány	Carbonized plant	3450	20	−24.8	n/a	65.12	0.18

inspection we interpret these as phytolith layers (Fig. 12). One such section of matting appears to be folded over with an additional cordage of some kind wrapped on part of the surface. Initial examination of the weaving pattern looks similar to a twilled weave. They followed this layer in an extension block (Block VII, *c.* 105–135 cm below surface), continuing with identified phytoliths and rubble on a clay surface.

In a deeper and earlier Bronze Age context (*c.* 175 cm below surface), Hegedűs's team opened a larger area and observed that the direction of the reported sedge layer was parallel to the orientation of the long axis of the house. The consistent location and preservation of the phytolith layer and macrostructure of their deposits suggested to them that they were not roof building material but were instead placed directly on the floor as mats. Details regarding whether they were loosely strewn, twined, or sewn into a mat, however, are not clear from the notes or the photographs.

Compared to the matting remains analysed in this study, the 'sedge floor' discovered during the Hegedűs excavations, and those identified in Profile F-E, seem to represent an alternative use of grasses, a different form of preservation, and a different taphonomic pathway. The grasses of the Bronze Age houses of Blocks IV–VIII were all directly on top of a prepared floor surface, extending at least 5×4 m, presumably the majority of the floor of a single room. These

https://doi.org/10.1017/S0959774325100176 Published online by Cambridge University Press

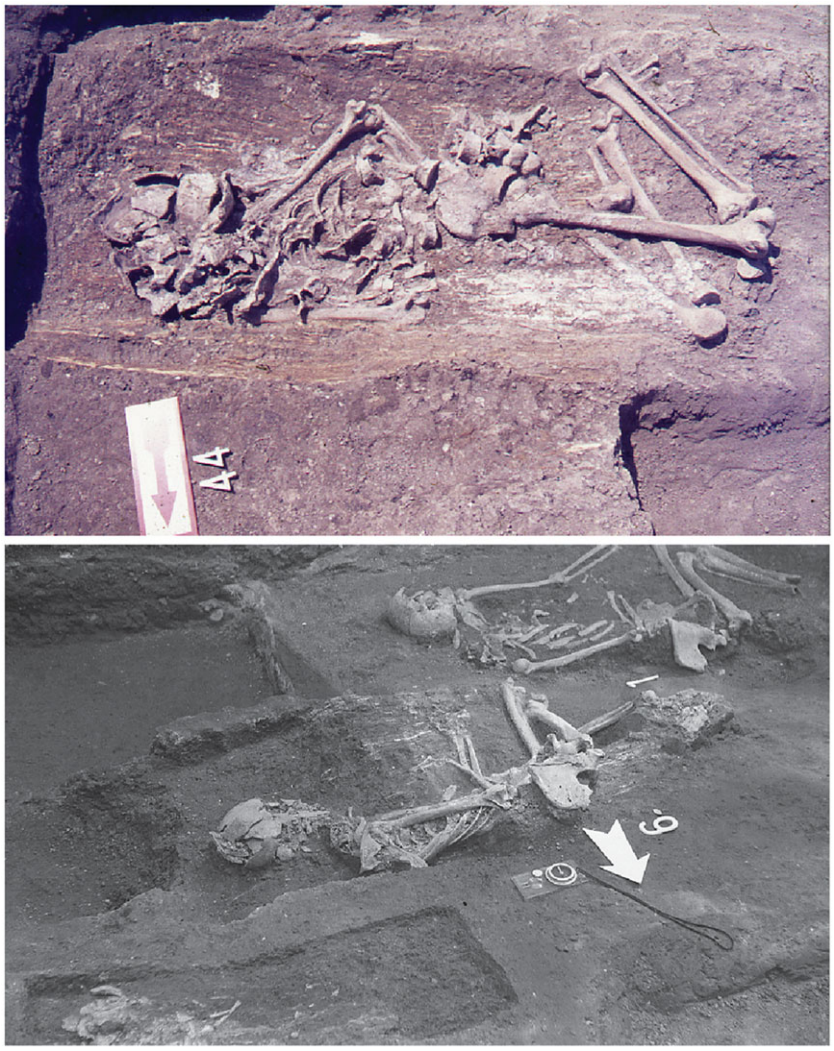

Figure 10. Late Neolithic burials in preserved wooden coffins. The excavators also noted finding the remains of matting in which the bodies were wrapped. (Image: Archives of the Hungarian National Museum.)

are reasonably interpreted as floor mats (see Cameron 2017 for possible analogues). Unlike the matting discovered in Profile C of the covered trench, it was preserved as a structured light grey phytolith layer, and not as black carbonized plant material. This seems to be the case for the other phytolith layers discovered in the Bronze Age contexts at Vésztő-Mágor from the 1970s as well; the remains of the mats also left *in situ* before preparing new house floors. The dominant phytoliths discovered in Profile C were identified as reeds, likely the active material, with elm serving as the passive element.

Broader comparisons

There are no objects similar to this example of complex matting remains with daub we found at Vésztő-Mágor known from other excavated Bronze Age tells from the Carpathian Basin. The matting includes grasses (Poaceae), but these probably belong to the surrounding matrix. Poaceae have been identified as common features on Bronze Age house floors at the site of Borsodivánka in northeastern Hungary (Röpke *et al.* 2016) and Százhalombatta on the Danube south of Budapest (Kovács 2023; Kovács & Vicze 2022). Micromorphological studies from Százhalombatta do, however, report distinct imprints of matting from Level 3 of the tell, in comparatively cleaner areas, which may have been associated with sitting or sleeping (Kovács 2023, 266–7; Richter 2008). An extended phytolith layer was found contemporary with House G at Borsodivánka, but in contrast to Vészző-Mágor, was not in the house, but in between houses in an alleyway (Fischl & Kienlin 2024, 243).

Items made in basketry techniques are known in Europe dating to the Neolithic (Alfaro Giner 1984; Bazzanella *et al.* 2003; Médard 2010; Rimkute 2008), the Bronze Age (Rast-Eicher & Dietrich 2015), the Iron Age (for the latest collection, see Grömer *et al.* 2018), and the Roman period (e.g. Gostenčnik 2001). In Anatolia, sedges (*Scirpus* sp.) were commonly used to provide matting at Çatalhöyük (Ryan 2011; Wendrich & Ryan 2012), likely obtained from the surrounding marshes (Rosen 2005), similar to the phytolith layers found in the Hegedűs excavations at Vésztő-Mágor. Their spongy leaves and stems would be comfortable on floors to walk on, and sedges were also used for adult burial mats at Çatalhöyük (Ryan 2011). Reeds have been used more

https://doi.org/10.1017/S0959774325100176 Published online by Cambridge University Press

sporadically for the same purpose (Ryan 2011), as opposed to Aşıklı Höyük where reeds have almost exclusively been used for burial mats (Tsartsidou *et al.* under review). Among the techniques, matting, coiled basketry and wickerwork are still in use today in Hungary and Romania.

The stake-and-strand techniques identified from Vésztő-Mágor may have been employed for smaller items, such as baskets and other household objects. From Late Bronze Age lake dwelling sites in Zürich and Greifensee-Böschen in Switzerland, various baskets in stake-and-strand technique have been found (Rast-Eicher & Dietrich 2015, 149–50). Similar artefacts in the same technique come from Iron Age cult sites and graves such as the Býčí skála cave in the Czech Republic (Rast-Eicher 1995) or Kainach in Austria (Grömer *et al.* 2018). Household objects such as boxes or chairs in stake-and-strand technique are known both from actual objects but also from pictorial sources in the Roman period (Gostenčnik 2001). The same technique was also used for construction details, such as fences and the inner structure of walls, as seen at the lakeside settlements around the Alps (Schlichtherle 2016, fig. 26). A reconstruction of such a light structure within a house can be seen in a Neolithic house model at the open-air museum at Dispilio, Greece (Fig. 13). The upper loft floor, a platform of logs, may have served a similar purpose to the matting found at Vésztő-Mágor. The composition, however, would look more like the unplastered wall visible below on one side. Although no evidence of stake-and-strand technique was found at Bosodivánka, the excavators identified internal partition daub walls in House G, each 8–9 cm thick (Fischl & Kienlin 2024, 245). Due to their thickness, they do not expect they reached the roof but were only half-height room dividers. The basketry matting with daub identified at Vésztő-Mágor could have served a similar function, if not suspended horizontally as suggested in Figure 13.

Similar horizontal basketry findings in buildings are nonetheless known, for example, from Early Medieval (ninth-century) Haithabu in northern Germany. Most of these were interpreted as collapsed wattle-and-daub walls. In contrast with Vésztő-Mágor, they still showed traces of thick daub on the walls rather than the 3 cm associated here. Some have also been described as mats in front of house entrances that offered a dry passage into the building. Both were built in the same structure. Such an outside mat seems less likely for the object from Vésztő-Mágor, as more sediment would be expected, as was observed in Haithabu (Schietzel & Bau 2014).

In learning about the built environment at Bronze Age tells, we increasingly recognize that people often did similar things under different environmental constraints or made different building choices given similar environmental conditions. Currently it seems that choosing unweathered local sediment for floors is an example of consistent behaviour from the Danube to the Tisza region during the Bronze Age (Kovács *et al.* 2024), while use of wooden floors seems more restricted to the Körös river drainage (Fischl & Kienlin 2024; Lie *et al.* 2018). Internal partitions in Bronze Age structures appear at many settlements across the Great Hungarian Plain, though specific technological choices in constructing them may have been due to unconscious, inherited, habitual traditions rather than being overtly symbolically meaningful (cf. Lemonnier 1986). Using matting or basketry with daub to modify spaces with low dividing walls or ceiling storage may have been a less common practice that we observe only in the Körös region, though this conclusion may change as we become better attuned to the analysis of construction techniques through micromorphology, phytolith, and greater attention to the details of material remains at tells.

Figure 11. 'Sedge floor', Surface IV, in Block VII, excavated in 1973. An area approximately 2.5 m by 3.5 m is shown. For location, see Figure 1. (Image: Archives of the Hungarian National Museum/KJM.)

Conclusions and future directions

The preservation demonstrated at Vésztő-Mágor is exceptional and offers an opportunity to study ancient materials and techniques not regularly encountered at Bronze Age settlements in southeastern Europe. The matting from the Feature 2 house is only one of several preserved (in carbonized or phytolith state) and observed at the site. The Vésztő-Mágor Conservation and Exhibition Program will continue the process of cleaning and conservation of the exhibition trench until at least 2026. Future excavations will likely result in the recovery of additional organic materials to

https://doi.org/10.1017/S0959774325100176 Published online by Cambridge University Press

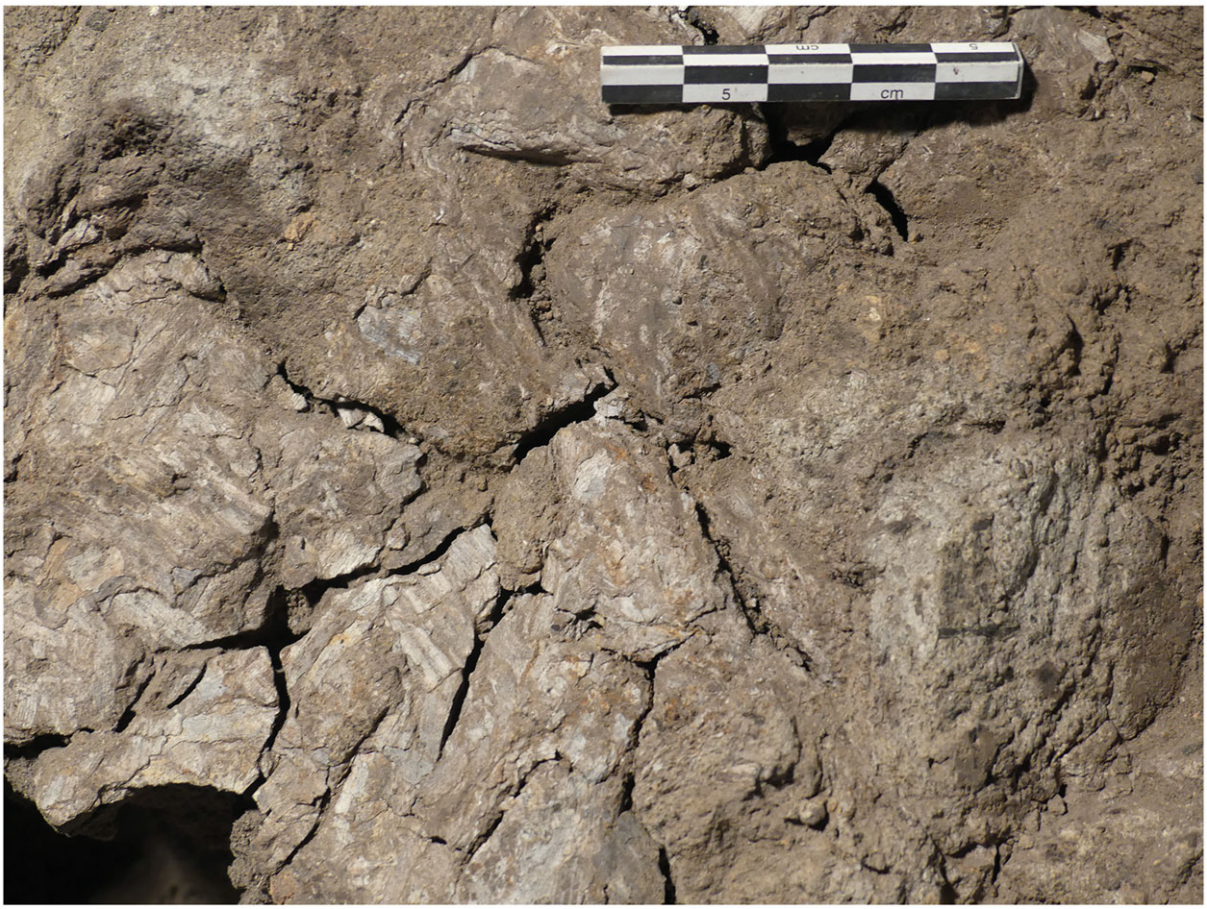

Figure 12. Phytolith layer discovered in Profile F–E, in 2023, *c.* 2.5 m from the profile with the matting. The area shown is approximately 12×15 cm. (Image: A. Lingle.)

Figure 13. Example of the inner structure of a Neolithic house, based on archaeological evidence from Dispilio, Greece. Matting such as that discovered at Vésztő-Mágor, instead of a log beam platform, could serve a similar purpose. (Image: www.limneosoikismos.gr/gallery, accessed 24 July 2025.)

study. These materials, in conjunction with those organics from previous excavations at Vésztő-Mágor, provide unique insights into object construction and use, while also providing the means to understand better how regional variation constituted active choice or the inherited and unseen practices transmitted unceremoniously from

https://doi.org/10.1017/S0959774325100176 Published online by Cambridge University Press

generation to generation. We hope the detailed discussion provided here will help others identify similar patterning in preserved organics as we continue to build a corpus of documented architectural choices and their social meanings in the past.

Supplementary material. To view supplementary material for this article, please visit https://doi.org/10.1017/S0959774325100176

Acknowledgements. This research was conducted within the 'Time Will Tell: The Vésztő-Mágor Conservation and Exhibition Program', funded by the Foundation for the Study and Preservation of Tells in the Prehistoric Old World, the municipality of Vésztő, the Deutsche Forschungsgemeinschaft (DFG, German Research Foundation) under Germany's Excellence Strategy – _EXC 2150 – _390870439, the Willson Foundation at the University of Georgia, and the National Science Foundation (BCS-2217943). Thanks to Dorottya Kékegyi for the original field drawings of the profile and basketry, to Györgyi Parditka for help with the unpublished Hegedűs journals, to Wolfgang Lobisser, VIAS, for hints of the use of basketry in the construction of houses in prehistoric Europe, and to Lucy Kubiak-Martens for her help in identifying the grasses microscopically.

References

Alfaro Giner, C., 1984. *Tejido y cestería en la Península Ibérica*. Madrid: Bibliotheca Praehistorica Hispana.

Banner, J. & I. Bóna, 1974. *Mittelbronzezeitliche Tell-Siedlung bei Békés*. Budapest: Akadémiai Kiadó.

Bazzanella, M., A. Mayr, L. Moser & A. Rast-Eicher, 2003. *Textiles: intrecci e tessuti dalla preistoria europea. Catalogo della mostra tenutasi a Riva del Garda dal 24 maggio al 19 ottobre 2003*. Trento: Riva del Garda.

Bóna, I. (ed.), 1994. *Le Bel Age du Bronze en Hongrie*. Mont Beuvray: Centre Européen d'Archéologie du Mont-Beuvray.

Bourdieu, P., 1970. The Berber house or the world reversed. *Social Science Information* 9, 151–70.

Bourdieu, P., 1977. *Outline of a Theory of Practice*. Cambridge: Cambridge University Press.

Cameron, J., 2017. Matting impressions from Lo Gach: materiality at floor level, in New Perspectives in Southeast Asian and Pacific Prehistory, eds P.J. Piper, H. Matsumura & D. Bulbeck. Canberra: ANU Press, 357–68.

Corfield, M., 1996. Preventive conservation for archaeological sites. *Studies in Conservation* 41(sup1), 32–7.

Emery, I., 2009. *The Primary Structures of Fabrics: An illustrated classification*. London: Thames & Hudson.

Fischl, K.P. & T.L. Kienlin, 2024. Houses and households in the Early to Middle Bronze Age of the Borsod Plain, north-eastern Hungary, in *Household Practices and Houses – Current approaches from archaeology and the sciences*, ed. T.L. Kienlin. Bonn: Verlag Dr Rudolf Habelt, 229–70.

Forti, L., F. Brandolini, V. Oselini, *et al.*, 2023. Geomorphological assessment of the preservation of archaeological tell sites. *Scientific Reports* 13(1), 7683.

Gogâltan, F. 2002. Die Tells der Bronzezeit im Karpatenbecken. Terminologische Fragen, in *Interregionale und Klturelle Beziehungen im Karpatenraum (2 Jahrtausend V. Chr.-1 Jahrtausend N. Chr.)*, eds A. Rustoiu & A. Ursuţiu. Cluj-Napoca: Institut für Archäologie und Kunstgeschichte Cluj-Napoca, 11–47.

Gogâltan, F., C. Cordoş & A. Ignat, 2014. *Bronze Age Tell, Tell-like and Mound-like Settlements on the Eastern Frontier of the Carpathian Basin: History of research*. Cluj-Napoca: Editura Mega.

Gostenčnik, K. 2001. Flechtwerk und Korbwaren im römischen Kärnten. *Carinthia* 191, 53–74.

Grömer, K., 2016. *The Art of Prehistoric Textile Making – The development of craft traditions and clothing in Central Europe*. Vienna: Verlag des Naturhistorischen Museums Wien.

Grömer, K., C. Gutjahr & A.G. Heiss, 2018. Ein Geflecht aus einem HaB1-Grab aus Kainach bei Wildon, Steiermark. *Archäologie Österreichs* 29, 23–8.

Grömer, K., M. Gleba & S. Van Horne, 2023. Textiles burning: understanding charred textiles from cremation graves and experimental charring, in *Interdisciplinary Approaches to Textile Research: Northern and Central European textile production and use of textiles and clothing from the Neolithic to the modern period. The Proceedings of NESAT XIV, The North European Symposium for Archaeological Textiles, 23rd–26th August 2021*, eds S. Lipkin, E. Ruhl & K. Wright. (Monographs of the Archaeological Society of Finland 12.) Helsinki: Archaeological Society of Finland, 309–22.

Gyucha, A., W.A. Parkinson & R.W. Yerkes, 2019. The evolution of a Neolithic Tell on the Great Hungarian Plain: site formation and use at Szeghalom-Kovácshalom. *Journal of Field Archaeology* 44, 458–79.

Gyucha, A., A. Lingle, J. Seifert, *et al.*, 2024. Saving the past for the future: archaeological conservation and exhibition efforts at the tell site of Vésztő-Mágor. *Hungarian Archaeology E-Journal* 13(4), 1–9.

Hegedűs, K. & J. Makkay, 1987. Vésztő-Mágor: a settlement of the Tisza culture, in *The Late Neolithic of the Tisza Region: A survey of recent excavations and their findings*, eds L. Tálas & P. Raczky. Budapest-Szolnok: Szolnok County Museums, 85–103.

Ilia, M. & A. Juhász, 1960. A tápai gyékényszövés és szókincse. *Acta Universitatis Szegediensis* 3-4, 149–82.

Járai-Komlódi, M., 1987. Postglacial climate and vegetation history in Hungary, in *Holocene Environment in Hungary: Contribution of the INQUA Hungarian National Committee to the XIIth INQUA Congress, Ottawa, Canada, 1987*, eds M. Pécsi & L. Kordos. Budapest: Geographical Research Institute, Hungarian Academy of Sciences.

Jørgensen L.B., A. Rast-Eicher & W. Wendrich, 2021. Textiles, cordage and basketry from Catalhöyük, in *The Matter of Catalhöyük. Reports from the 2009–2017 seasons*, ed. I. Hodder. (Catalhöyük Project Series 14.) Ankara: British Institute at Ankara, 265–86.

Jørgensen L.B., A. Rast-Eicher & W. Wendrich, 2023. Earliest evidence for textile technologies, in 'The Palaeolithic of the Arabian Peninsula: State of Research', ed. A. Beshkani. *Paléorient* 49(1), 213–28.

Kalicz, N. & P. Raczky, 1987. The Late Neolithic of the Tisza region: a survey of recent archaeological research, in *The Late Neolithic of the Tisza Region: A survey of recent excavations and their findings*, eds L. Tálas & P. Raczky. Budapest-Szolnok: Szolnok County Museums, 11–30.

Kienlin, T.L., 2015. *Bronze Age Tell Communities in Context: An exploration into culture, society and the study of European prehistory. Part 1: Critique. Europe and the Mediterranean*. Oxford: Archaeopress.

Kienlin, T.L., 2020. *Bronze Age Tell Communities in Context: An exploration into culture, society and the study of European prehistory. Part 2: Practice – The social, space, and materiality*. Oxford: Archaeopress.

Kosse, K. 1979. *Settlement Ecology of the Körös and Linear Pottery Cultures in Hungary*. Oxford: British Archaeological Reports.

Kovács, G., 2023. 7. Soil micromorphological thin sections, in *Living in a Tell: Memory and abandonment*, eds M. Vicze & M.L.S. Sørensen. Budapest: Hungarian National Museum, 259–70.

Kovács, G., A. Röpke, J. Anvari, *et al.*, 2024. Construction materials and building techniques – comparing anthropogenic sediments of three Middle Bronze Age sites from Hungary. *Archaeological and Anthropological Sciences* 16, 143.

Kovács, G. & Vicze, M. 2022. Soil micromorphological observations of construction techniques at Százhalombatta-Földvár Bronze Age tell settlement, Hungary, in *Inspired Geoarchaeologies: Past landscapes and social change: Essays in honour of Professor Charles A.I. French*, eds F. Sulas, H. Lewis & M. Arroyo-Kalin. Cambridge: McDonald Institute for Archaeological Research, 193–208.

Kronkright, D.P., 1990. Deterioration of artifacts made from plant materials, in *The Conservation of Artifacts Made from Plant Materials*, eds M.-L.E. Florian, D.P. Kronkright & R.E. Norton. Marina del Rey (CA): Getty Conservation Institute, 139–94.

Lazarovici, G., F. Draşovean & Z. Maxim, 2001. *Parţa: Monografie arheologică vol. I.1.* Timişoara: Waldpress.

Lemonnier, P., 1986. The study of material culture today: toward an anthropology of technical systems. *Journal of Anthropological Archaeology* 5, 147–86.

Lie, M., C. Cordoș, A. Găvan, G. Fazecaș, T. Kienlin & F. Gogâltan, 2018. An overview of the Bronze Age tell-settlement in Toboliu (Bihor County, Romania). *Gesta* 17, 63–76.

Lingle, A. & J. Seifert, 2024. Stratagems and back spoils: utilizing backdirt in the management of archaeological earthen heritage. *Journal of Field Archaeology* 49, 192–203.

Makkay, J., 2004. *Vésztő-Mágor. Ásatás a szülőföldön.* Békéscsaba: Békés Megyei Múzeumok Igazgatósága.

Médard, F., 2010. *L'art du tissage au Néolithique. IVe–IIIe millénaires avant J.-C. en Suisse*. Paris: CNRS Èditions.

Médard, F., 2012. Switzerland: Neolithic period, in *Textiles and Textile Production in Europe from Prehistory to AD 400*, eds M. Gleba & U. Mannering. Oxford: Oxbow.

Parkinson, W.A., A. Gyucha, P. Karkanas, *et al.*, 2018. A landscape of tells: geophysics and microstratigraphy at two Neolithic tell sites on the Great Hungarian Plain. *Journal of Archaeological Science: Reports* 19, 903–24.

Parkinson, W.A., A. Gyucha & R.W. Yerkes (eds.), 2021. *Bikeri: Two Copper Age villages on the Great Hungarian Plain*. Los Angeles: Cotsen Institute of Archaeology Press.

Pedelì, C. & S. Pulga, 2014. *Conservation Practices on Archaeological Excavations: Principles and Methods*. Marina del Rey (CA): Getty Conservation Institute.

Raczky, P. 2015. Settlements in south-east Europe, in *The Oxford Handbook of Neolithic Europe*, eds C. Fowler, J. Harding & D. Hofmann. Oxford: Oxford University Press.

Rapoport, A., 1982. *The Meaning of the Built Environment: A nonverbal communication approach*. Beverly Hills (CA): Sage.

Rast-Eicher, A., 1995. Die Filze und Geflechte, in *Die Býčí skála-Höhle : ein Hallstattzeitlicher Höhlenopferplatz in Mähren; The Býcí skála Cave: a Hallstattian sacrifice place in Moravia*, eds H. Parzinger, J. Nekvasil,
F.E. Barth & S.V. Schnurbein. Mainz: Von Zabern, 167–75.

Rast-Eicher, A., 1997. Die Textilien, in H. Hüster-Plogmann, J. Schibler, S. Jacomet, C. Brombacher, E. Gross-Klee & A. Rast-Eicher (eds), *Ökonomie und Ökologie neolithischer und bronzezeitlicher Ufersiedlungen am Zürichsee*. Zürich: Fotorotar AG, 300–328.

Rast-Eicher, A. & A. Dietrich, 2015. *Neolithische und bronzezeitliche Gewebe und Geflechte. Die Funde aus den Seeufersiedlungen im Kanton Zürich*. Zürich: Amt für Raumentwicklung Archäologie und Denkmalpflege.

Reimer, P.J., Austin, W.E.N., Bard, E., *et al.*, 2020. The IntCal20 Northern Hemispheric radiocarbon calibration curve (0–55 kcal BP). *Radiocarbon* 62(4), 725–57.

Richter, E., 2008. Our threads to the past: plaited motifs as predecessors of woven binding structures, in *NESAT X. North European Symposium for Archaeological Textiles X*, eds E. Andersson Strand, M. Gleba, U. Mannering, C. Munkholt & M. Ringgard. Oxford/Oakville: Oxbow, 211–16.

Rimkute, V., 2008. The Neolithic mats of the eastern Baltic littoral, in *NESAT X. North European Symposium for Archaeological Textiles X*, eds E. Andersson Strand, M. Gleba, U. Mannering, C. Munkholt & M. Ringgard. Oxford/Oakville: Oxbow, 217–20.

Röpke, A., G. Kovács & Á. Petõ, 2024. Household activites imprinted in floors, in *Household Practices and Houses – Current approaches from archaeology and the sciences*, ed. T.L. Kienlin. Bonn: Verlag Dr Rudolf Habelt, 271–89.

Röpke, A., V. Wilde, K.P. Fischl & T.L. Kienlin, 2016. *Phytolith-rich layers from the Early Bronze Age tell at Borsodivánka (Hungary) – Preliminary taphonomic and archaeological implications.* DOI: 10.13140/RG.2.1.4329.8803.

Rosen, A.M., 2005. Phytolith indicators of plant and land use at Çatalhöyük, in *Catalhöyük Project Volume IV: Inhabiting Çatalhöyük*, ed. I. Hodder. (BIAA Monograph 38.) Cambridge/Ankara: McDonald Institute for Archaeological Research/British Institute at Ankara.

Ryan, P., 2011. Plants as material culture in the Near Eastern Neolithic: perspectives from the silica skeleton artifactual remains at Çatalhöyük. *Journal of Anthropological Archaeology* 30, 292–305.

Sarris, A., N. Papadopoulos, A. Agapiou, *et al.*, 2013. Integration of geophysical surveys, ground hyperspectral measurements, aerial and satellite imagery for archaeological prospection of prehistoric sites: the case study of Vésztő-Mágor Tell, Hungary. *Journal of Archaeological Science* 40, 1454–70.

Schietzel, K. & F. Bau, 2014. *Spurensuche Haithabu: archäologische Spurensuche in der frühmittelalterlichen Ansiedlung Haithabu: Dokumentation und Chronik 1963–2013*. Neumünster/Hamburg: Wachholtz Verlag.

Schlichtherle, H., 2016. Neue Wege der Forschung, in *4.000 Jahre Pfahlbauten. Begleitband zur Großen Landesausstellung Baden-Württemberg*, ed. Archäologisches Landesmuseum Baden-Württemberg. Ostfildern: Thorbecke Verlag, 35–9.

Schweingruber, F.H. & H. Berger, 2018. *Anatomy of Grass Culms: Atlas of Central European Poaceae* Vol. I. Remagen: Kessel Verlag.

Schweingruber, F.H. & H. Berger, 2019. *Anatomy of Culms and Rhizomes of Sedges: Atlas of Central European Cyperaceae (Poales)* Vol. II. Remagen: Kessel Verlag.

Seiler-Baldinger, A., 1994. *Textiles: A classification of techniques*. Bathurst (NSW): Crawford House Press.

Seifert, J., A. Lingle, J. Wolfhagen, *et al.*, 2025. Linking pedological and atmospheric environments for the conservation and management of earthen archaeological sites: development of a novel technique. *European Physical Journal Plus*, 140 (5), 422–33.

Szűcs, S. 1933. A gyékény feldolgozása és eszközei a Biharmegei sárréten. *Revue de Debrecen*, 392–408.

Tsartsidou, G., M.C. Stiner & M. Özbaşaran, under review. Organic artefacts identified by phytolith analysis at Aşıklı Höyük. Basketry and matting in household and burial contexts. *Archaeological and Anhtropological Sciences.*

Vicze, M. & M.L.S. Sørensen (eds.), 2023. *Living in a Tell: Memory and abandonment*. Budapest: Hungarian National Museum.

Wendrich, W., 1991. *Who is Afraid of Basketry? A guide to recording basketry and cordage for archaeologists and ethnographers*. Leiden: Centre for Non-Western Studies, Leiden University.

Wendrich, W. & P. Ryan, 2012. Phytoliths and basketry materials at Çatalhöyük (Turkey): timelines of growth, harvest and objects life histories. *Paléorient* 38(1), 55–63.

Wild, J.-P., 1988. *Textiles in Archaeology*. Aylesbury: Shire.

Paul R. Duffy is a postdoctoral researcher in the ROOTS Cluster of Excellence and at the Institute of Pre- and Protohistoric Archaeology in Kiel University. His research focuses on the origins of social inequalities and he specializes in the Bronze Age of Southeastern Europe.

Karina Grömer is the head of the Department of Prehistory at the Natural History Museum Vienna. She teaches at the Universities of Vienna, Ljubljana and Graz and is specialized in textile archaeology covering a time-span from the Stone Age to the Early Modern Period.

Kayleigh Saunderson is a student at the University of Vienna and textile archaeologist at the Archaeological Textiles Lab at the Natural History Museum Vienna. She works on analyses of ancient textiles as well as their reconstruction.

https://doi.org/10.1017/S0959774325100176 Published online by Cambridge University Press

Tim Schroedter is a postdoctoral researcher in the ROOTS Cluster of Excellence and the Institute of Pre- and Protohistoric Archaeology in Kiel University. He is Dendroarchaeologist with a focus on woodland management and works with material from the Neolithic to modern times.

William A. Parkinson is Curator of Anthropology and Associate Director of Research at the Field Museum of Natural History and Professor of Anthropology at the University of Illinois at Chicago. He directs archaeological research projects in Hungary, Greece and the United States.

William P. Ridge is a Visiting Assistant Professor in the Department of History, Anthropology, and Philosophy at the University of North Georgia. His research is focused on the relationship between social organization and demographic change and he specializes on the Copper Age in southeastern Europe.

Ashley Lingle is a Lecturer in Conservation in the Department of Archaeology at the University of York. She is an accredited conservator-restorer, specializing in the preservation of archaeological heritage.

Jerrod Seifert is an Associate Professor of Conservation in the Department of Archaeology, Conservation, and History at the University of Oslo. His primary research focuses on determining and mitigating the impact of environments on cultural heritage, particularly on archaeological sites and artefacts.

Danielle J. Riebe is an Assistant Professor in the Department of Anthropology at the University of Georgia. She specializes in prehistoric archaeology of eastern and southeastern Europe and utilises compositional analytical techniques to reconstruct interactions and socio-cultural boundaries in the past.

Georgia Tsartsidou is an archaeologist-archaeobotanist with a specialty in phytolith analysis and her research focuses on ethnoarchaeological and archaeological studies of Greece, Cyprus, Hungary, Albania and Turkey.

Panagiotis Karkanas is director of the M.H. Wiener Laboratory for Archaeological Science of the American School of Classical Studies at Athens. He specializes in geoarchaeology and soil micromorphology with a focus on site-formation processes.

Attila Gyucha is an Assistant Professor in the Department of Anthropology at the University of Georgia. His research concentrates on early farming villages in southeast Europe, with particular emphasis on the processes of aggregation and disintegration in prehistoric societies.

https://doi.org/10.1017/S0959774325100176 Published online by Cambridge University Press