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THE HUNYADIHALOM CULTURE'S SITE AT GELEJ-HUSZTY-ARKAY-DŰLŐ

Zsuzsa HEGEDŰS¹  – Klára P. FISCHL² 

The paper presents the study of the finds and features uncovered at the Middle Copper Age (MCA) site of Gelej-Husztly-Arkay-dűlő in 1994. The site yielded characteristic material of the Hunyadihalom culture, and the structure of this low-intensity, hamlet-like settlement consisting of only a few pits matches what was recorded on most sites of the culture. The study includes the typological and functional analysis of 4,128 pottery fragments, the techno-typological evaluation of 74 knapped stones, and the assessment of 898 pieces of daub. The results made it possible to reconstruct several aspects of past household activities, and to outline a detailed picture of the everyday life of this small MCA community.

A tanulmány az 1994-ben, Gelej-Husztly-Arkay-dűlő lelőhelyen feltárt középső rézkori telep anyagának feldolgozását mutatja be. A lelőhelyen a Hunyadihalom-kultúra jellegzetes leletanyaga került elő, és maga a telepstruktúra is a kultúrában általánosnak számító képet mutatja: a geleji egy kevésbé intenzív, néhány gödörből álló, tanyaszerű telep. A leletek feldolgozása során összesen 4128 darab kerámiatöredék került elemzésre, tipológiai és funkcionális szempontból, 74 darab pattintott kő techno-tipológiai szempontból, valamint 898 darab paticstöredék vizsgálata is megtörtént. Mindennek köszönhetően lehetségessé vált a telepen zajló mindennapi tevékenységek felvázolásán keresztül, hogy részletesebb képet kapjunk ennek a kis, középső rézkori közösségnek az életéről.

Keywords: *Middle Copper Age, Hunyadihalom culture, settlement analysis, household archaeology, pottery function analysis*

Kulcsszavak: *középső rézkor, Hunyadihalom-kultúra, településrégészet, háztartásrégészet, kerámiaanyag funkcionális elemzése*

Introduction

The site Gelej-Husztly-Arkay-dűlő¹ (Hungary, Borsod-Abaúj-Zemplén County) was excavated by a team led by Klára P. Fischl between 8 August and 10 November 1994, in preparation for the construction of the M3 motorway (Fig. 1). Twelve features and numerous stray finds associated with the Middle Copper Age (MCA) Hunyadihalom culture were uncovered. This article presents the analyses of the excavated pottery from a typological perspective and by using a method aiming at functional reconstruction, the techno-typological evaluation of knapped

stones, and the assessment of the remains of the wattle-and-daub structures. Adopting the methods and considerations of household archaeology and acknowledging that – although the settlement shows no higher levels of organisation – the archaeological record of the site is the result of dynamic social and material interactions, our aim was to reconstruct the everyday life of this MCA community.²

The site and the excavated area

The site lies on top of a natural elevation east of the Csincse Stream, on the southern edge of an area

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Fig. 1. The location of the site
1. kép. A lelőhely elhelyezkedése

called Husztly-Arkay-dűlő (Fig. 2). This region, the Borsodi Mezőség is situated in the meeting zone of the Bükk Mountains and the Great Hungarian Plain, within the Alluvial Fan Complex of the Northern Great Hungarian Plain. The Tisza River and the rivers and streams flowing down from the mountains shaped the landscape, and before the water regulation works of the 19th century, the southern part of the area was mostly marshland (Danis 2005, 9–12; Tóth et al. 2012, 820).

The site extends to 70 × 200 metres (Fischl 1995), of which c. 2,900 m² were excavated in 1994 (Fig. 3). The site yielded a total of 47 archaeological features, 12 of these could be linked to the MCA Hunyadihalom culture, while four other features contained Hunyadihalom-style pottery together with finds of later periods. Beside the MCA features, a section of the Csörsz Ditch (*Limes Sarmatiae*) and features of a 9th-century AD settlement were uncovered. All Hunyadihalom finds, including the stray finds, were included in the analysis. The relative abundance of MCA stray finds is likely the result of extensive

earthworks in later periods, or of intensive cultivation in modern times. Stray finds were collected in the trenches in ten-metre section units, so their distribution helped to locate archaeological phenomena that were not observed. During the excavation, the topsoil was removed manually until the yellow, or sometimes greyish-white slaggy, gravel-mixed subsoil was reached. This approach proved to be suitable for the site, as several MCA features appeared well above the subsoil. It was observed at other sites that Hunyadihalom features are generally shallow, for example, many pits on Tiszafüred-Majoroshalom did not reach the subsoil either (Kalicz 1980, 43).

Nine trenches (I–IX) and three probes (A–C) were opened on the site. Trench I is the northernmost and longest, with Trench VIII running south of it. Trench II was laid out perpendicular to these, crossing an elevated area north of the Csörsz Ditch. Trenches III and IV were laid out slightly away from the main excavation area, and along with Trenches V and VI they were positioned to provide more information on the Csörsz Ditch. Trench VII was



Fig. 2. Aerial photo of the excavated area from the north
2. kép. Légi felvétel a feltárt területről, északról

situated farther away from the rest of the excavated area. Trench IX extends south of the *Csörsz Ditch*, this is the area where the most dense concentration of MCA settlement features was observed. Probes A–C were set out on either side of Trench II near its northern end.

All uncovered features except Feature 37, a deep, round well, were small, round or irregular, shallow pits, with an average diameter of 174×192 cm and an average depth of 30 cm. A detailed list of MCA features and features of later ages yielding MCA stray finds is provided as Appendix I.³ As previously mentioned, many stray finds were uncovered in the trenches. Despite having no associated features, the positions of most of these pottery fragments and knapped stones were recorded thanks to the careful collection methods: in the narrow trenches, all finds were packed in ten-metre sections. This facilitated the interpretation of the majority of stray finds. Many MCA sherds were found in Trenches I and VIII, situated in the northern part of the site. A concentration was observed in the 140–150 m sections in both, as well as another at 133–140 m in Trench VIII. Feature 27, a medieval house with Copper Age stray finds was also positioned there, which raises the possibility that some MCA features were destroyed during its construction, and their finds were scattered in a wider area. Another dense find concentration could be observed at 80–90 m in Trenches I and VIII, which might be associated with MCA Features 14 and 19. Similarly, the concentra-

tion observed in Probe A may be linked to Feature 25. Another extremely dense concentration of stray finds at 10–30 m in Trench V can likely be linked to the later disturbance of MCA features found here. However, based on the large number of finds (c. 800 potsherds), it is also possible that some more features were completely destroyed here. No feature was uncovered in Trench VII, but it also yielded some stray finds; the presence of MCA finds in this trench, some 90 m away from the core area of the settlement, might hint at a more extensive occupation of the territory.

Overall, the intensity of the MCA settlement at Gelej was rather low likely due to the extensive later disturbance (e.g., the construction of the *Csörsz Ditch*) and perhaps due to the shape of the excavated area. On 0.29 ha, the site yielded 12 purely Hunyadihalom features (41 features/ha), while at Tiszalúc-Sarkadpuszta 495 features were unearthed on 1 ha (495 features/ha) (Patay 2005), and at Bükkábrány-Bánya XI/B 261 features on 2.5 ha (104.4 features/ha) (Kalli, K. Tutkovics 2017; Hegedűs et al. 2025). At Hajdúböszörmény-Ficsori-tó-dűlő 16 features were excavated on 0.4 ha (40 features/ha) (Kovács et al. 2006), which closely resembles the tendency detected at Gelej, and may also suggest that smaller settlements had similar low-intensity inner structures. However, it is not sure in either of these two cases that the whole settlement was excavated – and the finds in Trench VII at Gelej suggest that the MCA settlement extended beyond the excavated area.

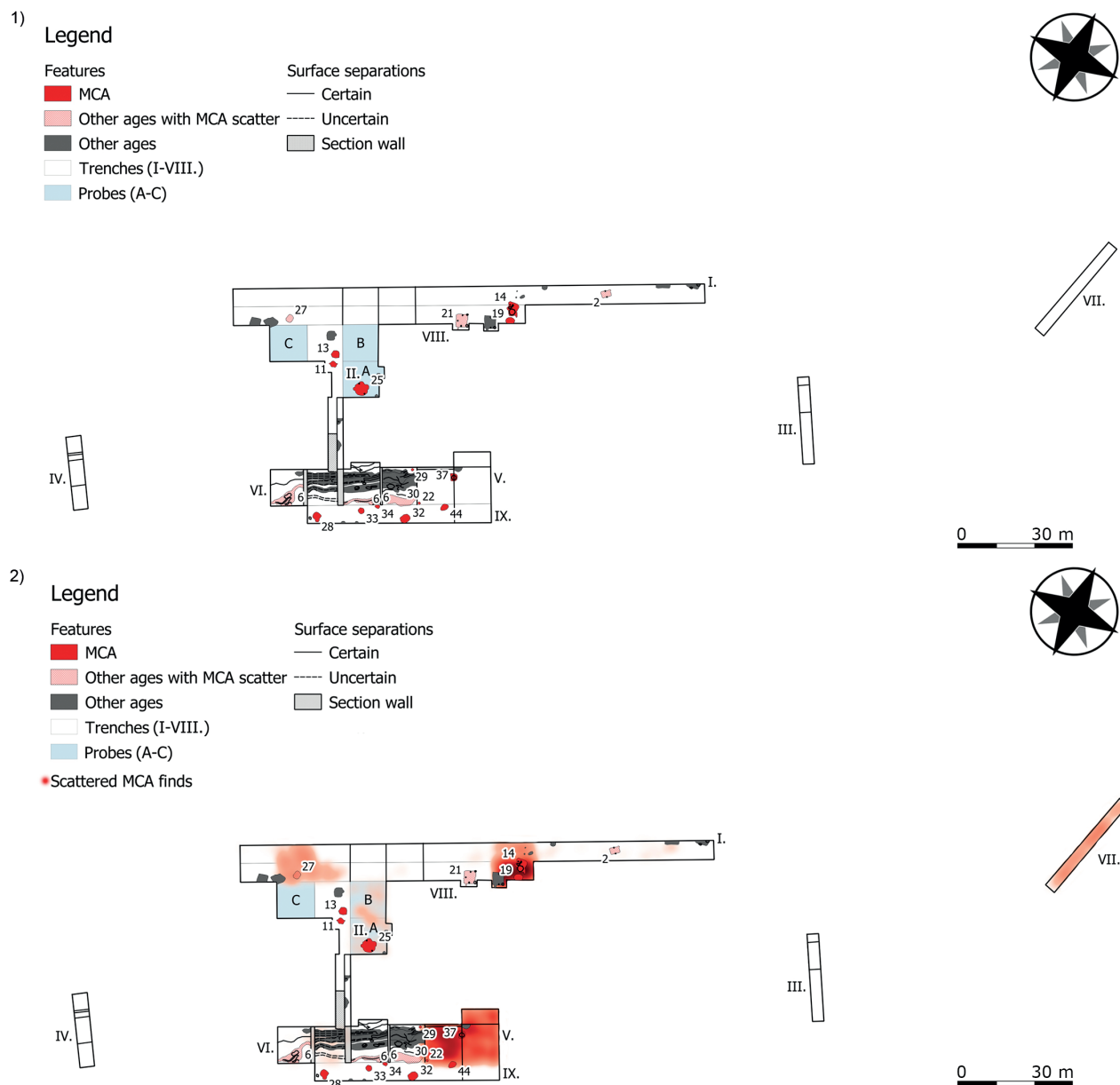


Fig. 3. 1: The excavated trenches, probes and features. 2: The excavated trenches, probes and features with the scatter and concentrations of stray MCA finds

3. kép. 1: A feltárt kutatóárok, szelvények és objektumok. 2: A feltárt kutatóárok, szelvények és objektumok, a középső rézkori szórányleletek sűrűsödésével

The Hunyadihalom culture and its research

Based on the pottery finds, the site of Gelej-Huszt-Arkay-dűlő can be clearly associated with the MCA Hunyadihalom culture. This culture existed in the eastern Carpathian Basin during the 4th millennium BCE, primarily along rivers, with sites identified not only in Hungary, but Romania, Slovakia, and Serbia as well (Fig. 4).

The first Hunyadihalom finds were discovered in the 1930s near Hódmezővásárhely, at the site named Hunyadi-halom. Gyula Török, the archae-

ologist leading the excavation noted the presence of the distinctive *Scheibenhenkel* (disc-shaped handle) decoration and lids amongst the pottery finds, based on which he identified the assemblage as the material of a previously unknown group, dated to the Bronze Age (Török 1935). Later, Ida Bognár-Kutzián identified these characteristics in the material of the Tiszapolgár-Basatanya cemetery. She associated the appearance of the *Scheibenhenkel* with Salcuța IV influence appearing in the Bodrogkeresztúr culture (Bognár-Kutzián 1963, 279). During the evaluation of the Vajka cemetery, Bogdan Brukner referred to

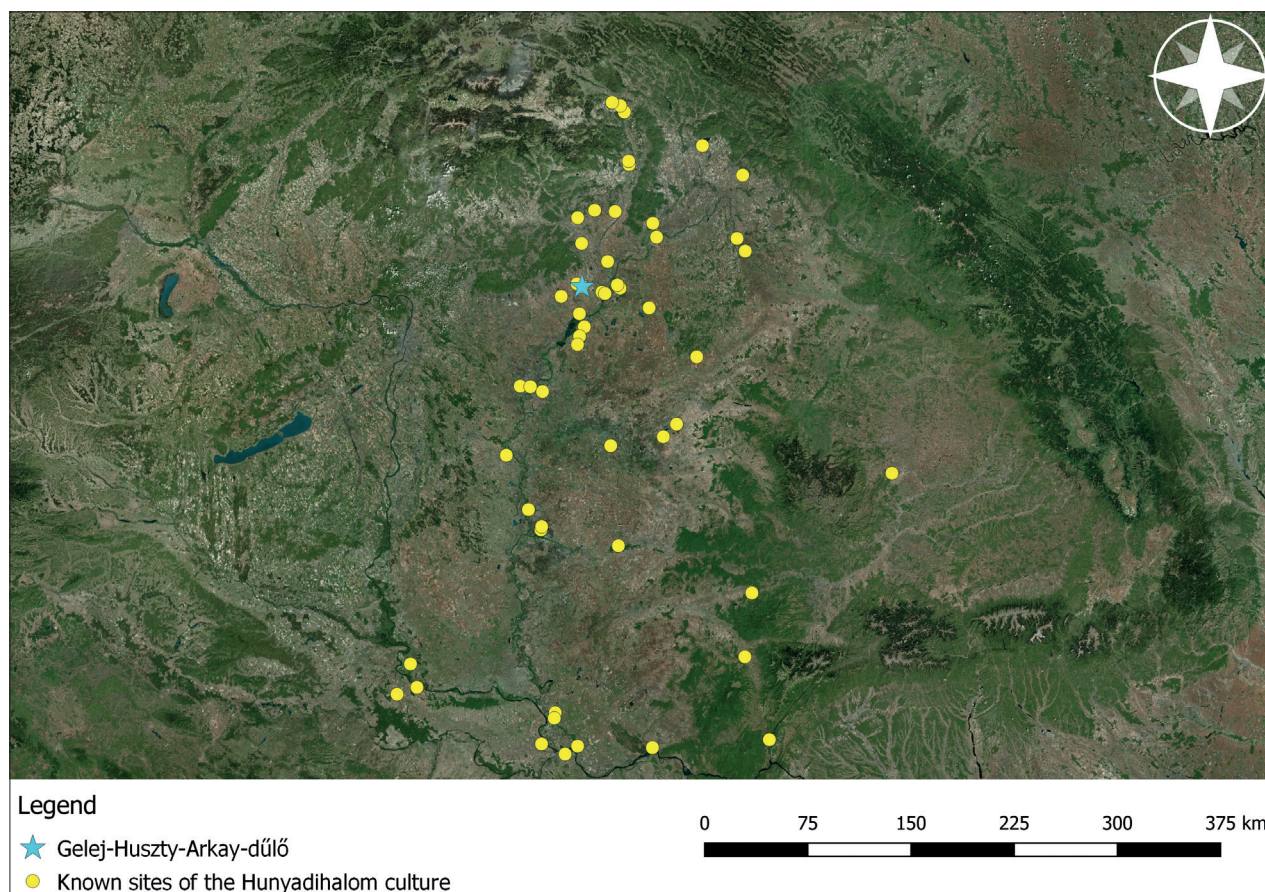


Fig. 4. Known sites of the Hunyadihalom culture (data from Patay 2005; Hungarian National Museum Archaeology Database, <https://archeodatabase.hnm.hu/en>, last accessed: 03.03.2025)

4. kép. A Hunyadihalom-kultúra ismert lelőhelyei (adatok: Patay 2005; Magyar Nemzeti Múzeum Régészeti Adatbázis, <https://archeodatabase.hnm.hu>, utolsó hozzáférés: 2025.03.03.)

such finds in Serbia as part of the 'Vajska-Hunyadihalom group' (Brukner 1970). Bognár-Kutzián divided the Bodrogkeresztúr culture into two phases and linked the appearance of Hunyadihalom-type finds to the second, B phase (Bognár-Kutzián 1969). In her later works, she suggested that the Hunyadihalom group continued to exist after this phase (Bognár-Kutzián 1973). Similarly, in eastern Slovakia, Stanislav Šiška initially equated the last phase of the local Bodrogkeresztúr culture with the Lažňany group (Šiška 1972). However, Slovakian research today recognises Hunyadihalom-Lažňany as a separate entity (Brummack 2015). In his analysis of the material of Baile Herculane-Peștera Hoților, Petre Roman came to the conclusion that the Bodrogkeresztúr and Hunyadihalom characteristics initially coexisted, but later, only the Hunyadihalom material remained (Roman 1971). Pál Patay agreed with this assessment based on the Hunyadihalom pits of Tiszavalk-Tetes, adding that there could have been a hiatus between the Bodrogkeresztúr B phase and the Hunyadihalom

period (Patay 1979, 50). However, he later pointed out that Hunyadihalom characteristics also appear on Bodrogkeresztúr B-style vessels (Patay 2008). István Ecsedy interpreted the emergence of Hunyadihalom-type assemblages as the result of integration processes that had been ongoing since the beginning of the Copper Age (Ecsedy 1973). In his publication of five pits from Tiszafüred-Majoros, Nándor Kalicz outlined the finds' connections and drew parallels between the MCA cultures of the Great Hungarian Plain and Transdanubia (Kalicz 1980). Pál Raczky outlined the so-called *Scheibenhenkel*-horizon based on the *Scheibenhenkel* decorations appearing not only in the Carpathian Basin, but also in the Rachmani culture of Thessalia, and beyond, in the southern Greek mainland, northwest Anatolia, and the eastern Aegean islands (Raczky 1988; Raczky 1991). *Scheibenhenkel* decorations also appear in assemblages in Lesser Poland, north of the Carpathian Basin (Wilk 2017). László András Horváth argued that these finds do not form a single horizon, but

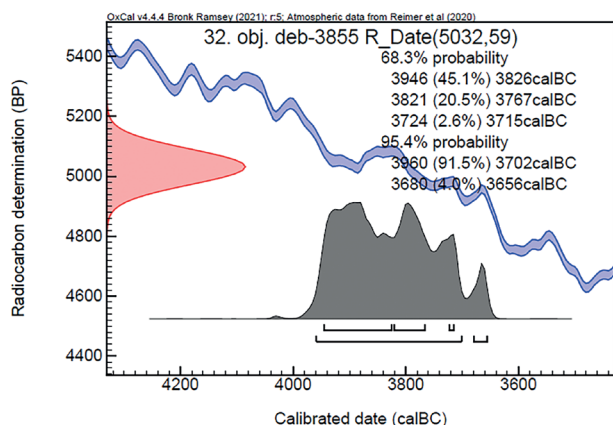


Fig. 5. Calibrated non-AMS radiocarbon date of an animal bone sample from Feature 32

5. kép. A 32. objektum egy állatcsontjából vett kalibrált, nem AMS radiokarbon adat

represent instead a period that is characterised by a distinct decoration that encompasses multiple areas and several chronological horizons (Horváth 1994, 93–99). To this day, the presence of *Scheibenhenkel* decorations is regarded as a phenomenon widespread in space and time (Brummack 2015, 1). Pál Patay's excavation of Tiszalúc-Sarkadpuszta between 1974 and 1990 brought a significant breakthrough in the research on the Hunyadihalom. The site of over one hectare was surrounded by a palisade and revealed a highly complex settlement structure with several houses. A vast quantity of finds was uncovered, and Patay's typological framework and conclusions became the basis of later works. In his 2005 publication of the site, Patay argued that Hunyadihalom was not merely a group, but an independent culture that evolved from the Bodrogkeresztúr culture (Patay 2005). Since 2005, no comprehensive summary of the culture has been published, but materials are being presented from time to time (e.g., Patay 2004; Mészáros, Paluch 2009; Hegedűs et al. 2023; Hegedűs et al. 2025).

Chronology of the site

The Hunyadihalom culture can be dated to the MCA (4000–3600/3500 BCE) of the Carpathian Basin, between approx. 4000 and 3750 BCE (Raczky, Siklósi 2013; Siklósi, Szilágyi 2021). A single, non-AMS radiocarbon date was obtained from an animal bone from Feature 32 of Gelej-Husztly-Arkay-dűlő (P. Fischl et al. 2000, 97). This dated the site to 3964–3826 calBC (1 σ), which fits well into the chronological framework of the Hunyadihalom culture (Fig. 5).

Methods

The finds of Gelej-Husztly-Arkay-dűlő are part of the collection of the Herman Ottó Museum (Miskolc). Every collected MCA find was included in the evaluation, while the rest of the find material was only inventoried. Besides the ones from the features, all of the stray finds were also analysed, which facilitated a more detailed assessment of the material. The analysed find material comprises 4,128 pottery fragments, 74 diagnostic knapped stone objects, and 898 pieces of daub. The diverse types of finds were analysed using different methods selected in accordance with the study's main focus, namely the reconstruction of past activities on the settlement, using the theoretical and methodological framework of household archaeology.

Analysis of the pottery material

A total of 4,128 MCA pottery fragments were involved in the study, with a minimum vessel count of 2,092, as calculated by the method described in Voss, Allen 2010. The pottery material was only partly restored, i.e. some fragments were refitted. Two main methods were employed during the analysis of the pottery material: a typological classification and the statistics-based functional reconstruction of vessels.

Typological assessment

While acknowledging the fact that typological categories cannot always encompass the colourful nature of the pottery sets used by communities, such systems provide a useful tool for classifying objects based on shape (Sørensen 2015, 92–93). In Copper Age research, traditional typological systems work towards the distinction of many groups and subgroups (e.g., Bognár-Kutzián 1963; Bognár-Kutzián 1972), while terms based on elusive ethnographical parallels in many cases falsely hint at possible functions (e.g., 'milk jugs' of the Bodrogkeresztúr culture, Craig et al. 2003, 253–258). Because of this, the Hunyadihalom typology presented by Pál Patay in 2005 was not fully implemented in this study, instead a system based mainly on geometrical assessments was employed. Vessels were given a code based on shape, and when the full body shape could not be determined, a partial code was given: vessel necks with no parts of the shoulder were marked with N; funnel necks with F; when it could not be

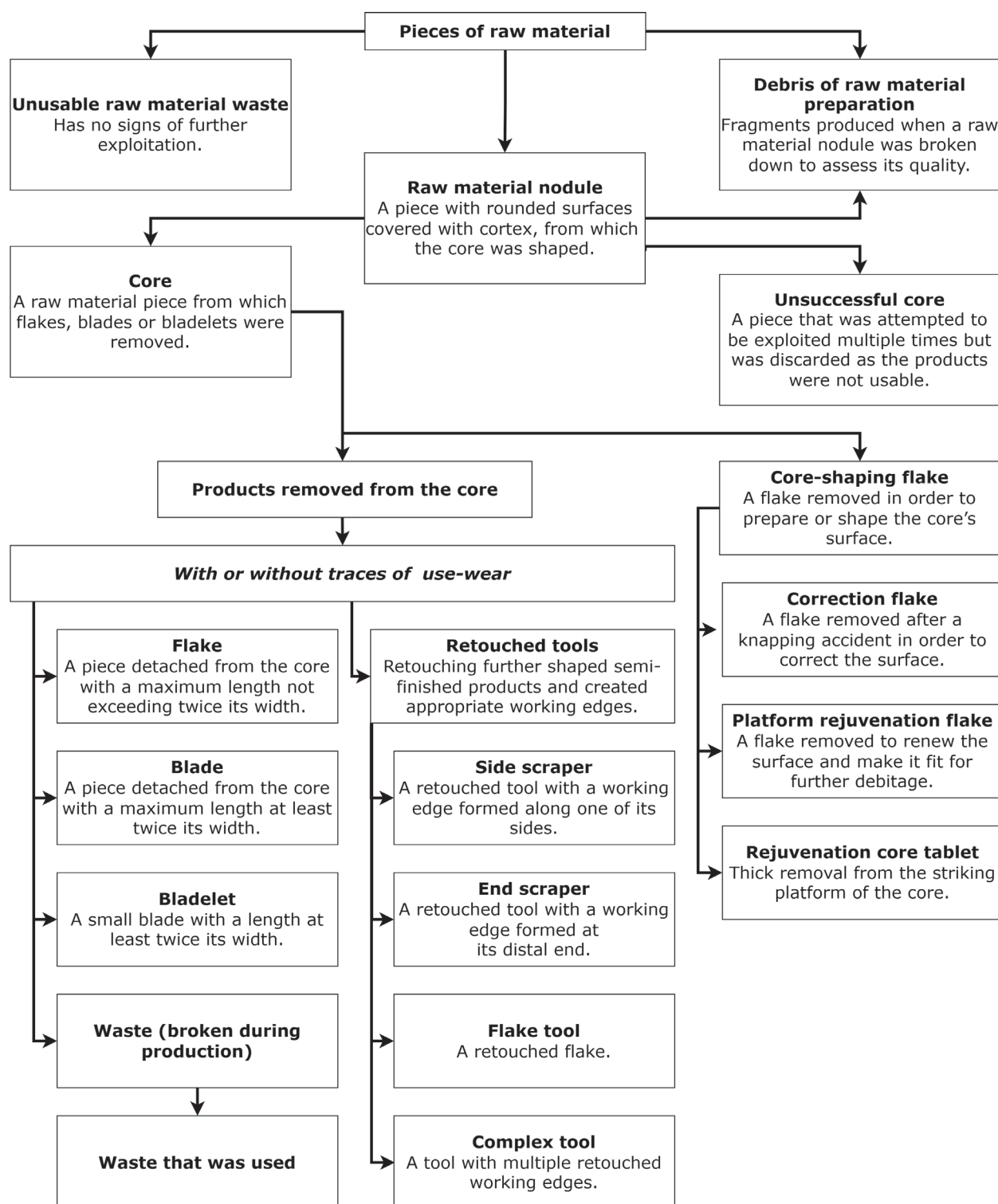


Fig. 6. Techno-typological categories of knapped stones included in the analysis (based on Inzian et al. 1991; Whittaker 1994; Simán 2000; Holló et al. 2001; Holló et al. 2004)

6. kép. A tanulmányban feldolgozott pattintott kövek techno-tipológiai kategóriái (Inzian et al. 1991; Whittaker 1994; Simán 2000; Holló et al. 2001; Holló et al. 2004 alapján)

determined whether the vessel had a neck with N? + code of the body shape; while base fragments were marked B + geometric shape of the base.

Functional reconstruction

The functional reconstruction of the pottery material involved all fragments fit for a comparative statistical analysis, and not just the pieces with reconstructible profiles. Out of the 2,092 MCA vessels, overall 1,897 were involved, while fragments of pedestalled vessels, lids, rectangular vessels, handles and knobs,

and bases without the start of the wall were excluded. The statistics-based functional analysis was done with the method detailed in Hegedűs et al. 2025. Following a systematic data collection, this method allowed for processing large amounts of pottery sherds and forming fragment groups associated with vessel types, the possible functions of which then could be determined by using archaeological and ethnoarchaeological analogies.

In general, the functional reconstruction of the pottery inventory can be highly helpful in reconstructing everyday life; however, multiple aspects must be

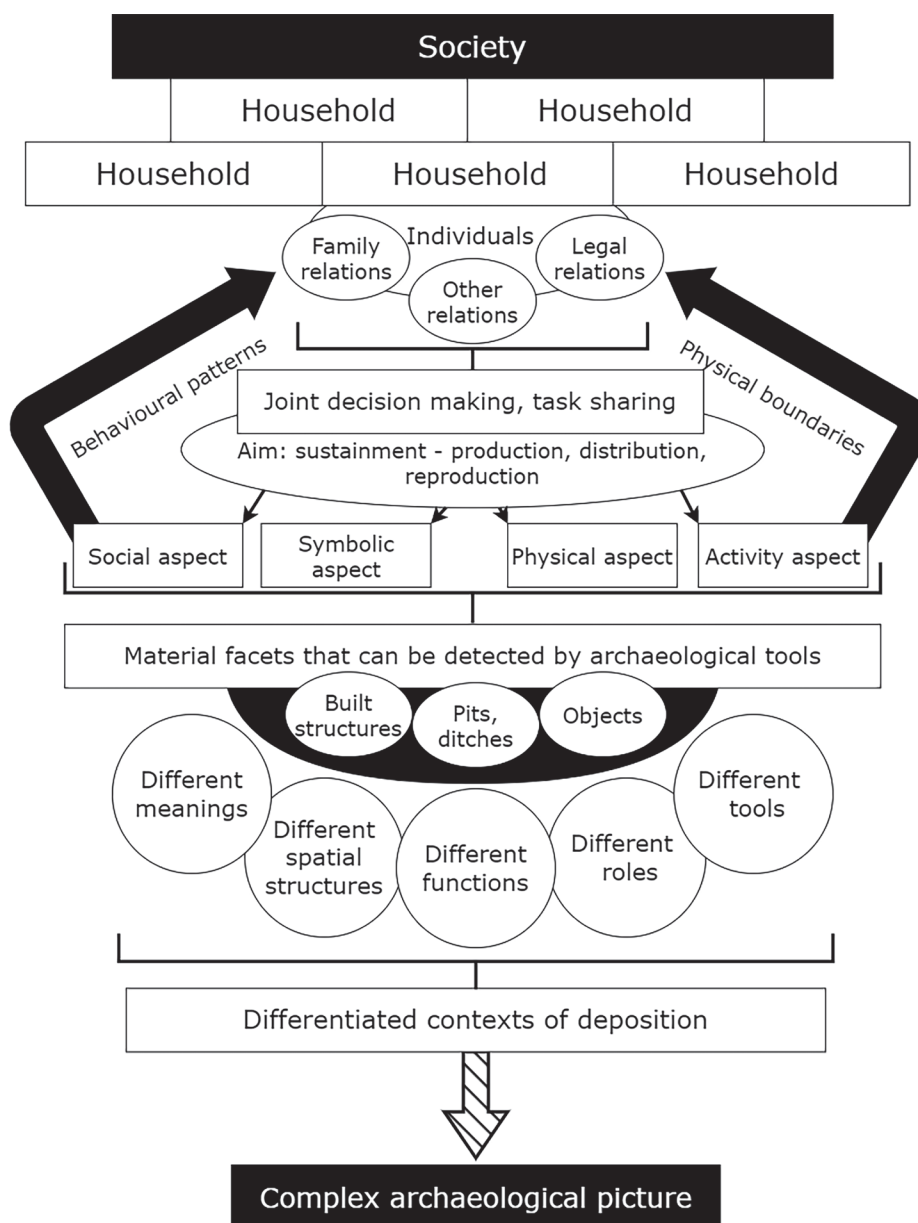


Fig. 7. Components of households and their material aspects (based on Costin 1991; Blaton 1994; Allison 2002; Rani 2002; Schiffer et al. 2010; Foster, Parker 2012; Shaw 2012; Kalla 2013)

7. kép. A háztartások építőelemei és anyagi aspektusai (Costin 1991; Blaton 1994; Allison 2002; Rani 2002; Schiffer et al. 2010; Foster, Parker 2012; Shaw 2012; Kalla 2013 alapján)

considered when using this method (Buko 2008, 15; Skibo 2013, 3; Forte et al. 2018, 121; Vuković, Bikić 2022, 37). The activities associated with individual vessels, the contexts in which they were used, and the behaviours linked to them could be highly diverse (Porčić 2012, 21). A single vessel could have served multiple purposes throughout its lifespan, sometimes even simultaneously, and the actual ways of use did not necessarily match the originally intended function. It is also important to consider that some pieces may have been designed to serve more than one purpose, and that they could have been reused (Skibo, Schiffer 2008, 10; Skibo 2013, 2–9; Forte 2022, 31). Additionally, everyday items could have been incorporated into ritual activities (Skibo 2013, 4–5). When attempting to reconstruct a community's pottery set, one must also keep in mind that people also used vessels made of organic materials (Kramberger 2015, 241). Despite these challenges, the analysis was based on the realistic assumption that certain design characteristics had a direct connection with the primary function of certain types or pieces, as pottery makers aimed for practicality (Hally 1986, 268; Rice 1987, 207). Based largely on archaeological and ethnoarchaeological parallels, academic literature generally distinguishes between three main functional groups: storage vessels, food preparation and cooking vessels, and serving vessels (Henrickson, McDonald 1983; Hally 1986, 285–290; Rice 1987, 207–211; Smith 1988, 913–914; Porčić 2012, 24; Kramberger 2015, 241–244; Roux 2019, 233) (*Table 1*).

The process of the statistics-based functional reconstruction started with a systematic data collection, where different vessel parts were sorted into different classes (A = whole vessels; C = rim fragments; CB = rim + belly fragments; D = base fragments; DB = base + belly fragments; E = belly fragments; F = body fragments with decorations; G = body fragments) (*Table 2*). To ensure that subjective aspects and preconceptions have no influence on the analysis, the characteristics of the vessels were recorded with no preliminary remarks on function. Next, the fragments were clustered using the R software (v. 4.2.2.; R CoreTeam 2022) and its integrated development environment RStudio (v. 2022.12.0 + 353; Posit Team 2022). Only pieces providing the same amount of data were analysed together (e.g., rim fragments were not involved in the analysis requiring data on property of bases). Based on quantitative data, individual vessels were grouped using k-means clustering (stats::kmeans v.4.2.2.; R CoreTeam 2022), an algorithm dividing data into *k* number of groups with the lowest possible within-group variance (Hartigan, Wong 1979). Based on qualitative variables, fragments were grouped employing hierarchical clustering (stats::hclust v.4.2.2.; R CoreTeam 2022) with Ward's method, to create harmonic groups with low within-group variance (McQuitty 1966; Everitt et al. 2016, 71–110). After the initial clustering, each fragment was assigned to a size and attribute category incorporating the most similar sherds. The relations of these categories were further examined with factor

Table 1. Functional categories of vessels and their potential characteristics (after Hegedűs et al. 2025, Table 2)
1. táblázat. Edények funkciók szerinti felosztása és az egyes csoportok előfoduló tulajdonságai (Hegedűs et al. 2025, Table 2 alapján)

<i>Vessel category</i>	<i>Code</i>	<i>Characteristics</i>
Storage vessel	T1	Coarse material + clay-coated surface + thick wall
Small storage vessel	T1a	Small size + closed shape
Large storage vessel	T1b	Stocky, large size + slightly open shape
Liquid storage vessel	T1c	Tall + closed shape + long neck
Cooking vessel	T2	Stocky + closed shape + carbonization
Multifunctional vessel	T3	Semi-coarse
Small multifunctional vessel	T3a	Small size + open mouth
Large multifunctional vessel	T3b	Large size + closed mouth
Serving vessel	T4	Fine material + burnished surface + thin wall
Communal serving vessel	T4a	Large size + open shape
Communal liquid serving vessel	T4b	Large size + closed shape + long neck
Individual serving vessel	T4c	Small size + open shape
Individual liquid serving vessel	T4d	Small size + closed shape

Table 2. Recorded data of different pottery fragment classes
2. táblázat. A különböző töredékosztályok esetén felvehető adatok

Data type	Description	Fragment class							
		A	C	CB	D	DB	E	F	G
Number of pieces	Fragments of a vessel belonging together	x	x	x	x	x	x	x	x
<i>Quantitative data</i>									
Wall thickness		x	x	x	x	x	x	x	x
Rim diameter		x	x	x					
Rim angle	Indicates the openness of the vessel rim, determined in relation to the axis of the rim	x	x	x					
Belly diameter		x		x		x	x		
Base diameter		x			x	x			
Base angle	Indicates the steepness of the base, determined in relation to the axis of the base	x			x	x			
<i>Qualitative data</i>									
Surface treatment + its difference between vessel surfaces	Smoothed – smoothing compacted the surface (Szakmány 2008, 55) Clay-coated: the surface was covered in a thin or thick layer of slip – this made the vessel more resistant to thermal and mechanical stress (Roux 2019, 99–100) Burnished: the surface was burnished with a hard, smooth object – this compacted the surface making it waterproof, and elevated the vessels aesthetics (Kramberger 2015, 240; Roux 2019, 97–98)	x	x	x	x	x	x	x	x
Smoothness of material	Smooth: the surface is smooth, with barely visible tempering Semi-smooth: the surface has easily visible temper grains Rough: the surface is coarse, with big chunks in tempering	x	x	x	x	x	x	x	x
Colour	Light: result of a mostly oxidative firing Dark: result of a mostly reductive firing Mixed: spotted surface due to changes in firing environment	x	x	x	x	x	x	x	x
Carbonization	Traces of carbonization on the inner surface were recorded, as this is a clear sign of cooking in the vessel (Skibo 2013, 63–89)	x	x	x	x	x	x	x	x
Rim shape	Rounded Slightly rounded Rectangular	x	x	x					
Rim decor	Non-decorated Incised: thin, incised lines at the top of the rim Impressed: round impressions at the top of the rim	x	x	x					
Neck	Necked Non-necked	x	x	x					
Base shape	Sharp: the edge of the base was not rounded Rounded: rounded bases improved the thermal resistance of vessels (Hally 1986, 280) Carinated: the base is articulated and sits on a thickened disk Legs: small round or rectangular stubs used as legs	x			x	x			
Plastic decoration	Ribs: smooth or impressed Knobs: round or oval flat, rounded, or pointed pressed from the inside Lugs: round or oval flat, rounded, or pointed Handles: D-shaped, oval, or rectangular vertical or horizontal + Scheibenhenkel	x	x	x	x	x	x	x	

Impressed decoration	Indentation: simple indentation that separates body parts (mostly the neck and shoulder) Impressed dots Incised motifs Channelling	x	x	x	x	x	x	x	
Shape of body parts	Neck: cylindrical, conical, or reverse conical funnelled Shoulder: compact globular, globular, or oval Base: compact globular, globular, oval, tall conical, or flat conical Body: conical: tall, flat, or curved flat semi-globular: half-globular or globular segment compact globular, globular, oval, or biconical necked non-shouldered: the often oval base is connected to the neck with no distinct shoulder composite: amalgamation of different shoulder + base shapes S-profiled	x	x	x	x	x	x		

analysis of mixed data (FactoMineR::FAMD v.2.7.; Lê et al. 2008) to outline vessel types based not on preconceptions about possible vessel functions, but on emerging data clusters.⁴ Vessel types determined this way include pieces most similar in size and design, thus likely made with similar intentions. Only after this stage were the detected characteristics of vessel types associated with possible functions based on archaeological and ethnoarchaeological parallels.

Analysis of the knapped stones

The assessment of knapped stones included the techno-typological analysis of the tools and technological flakes produced during knapping, as well as a raw material analysis. A total of 74 pieces could be linked to the different stages of knapped stone tool production and use (Fig. 6).

Techno-typological approach is the interpretation of knapped stone artefacts within the framework of the *chaîne opératoire*. The *chaîne opératoire* is the chain of technological steps from the procurement of the raw material to the disposal of the tool. The unworked pieces of raw material were shaped into nodules, creating debris in the process, and in cases were still discarded, as not all raw material pieces could be exploited properly. Suitable nodules were shaped into diverse cores based on the type of the desired end product. Flakes, blades, and bladelets were knapped, and the edges of some were retouched to create a working edge, as in the case of side scrapers and end scrapers. Besides finished products, the lithic assemblage includes pieces that broke during

production but were used as tools regardless. The surfaces of cores were oftentimes exhausted and renewed by knapping off platform rejuvenation flakes to enable further debitage. In case of knapping accidents – e.g., the detachment of hinged and plunging flakes – the core was rendered usable again by separating correction flakes (Inizan et al. 1991).

After the techno-typological classification of the finds and the categorisation of the raw materials, the number and weight of the finds in the categories were compared.

Analysis of the daub fragments

The remains of wattle-and-daub buildings, appearing as burnt fragments of chaff-tempered clay, were also analysed (Kovács 2005; Bittner 2016). The pieces from unknown or non-MCA contexts were excluded from this study. Daub fragments were categorised into three groups: clay plaster fragments with a smoothed surface, wattle-impressed fragments with imprints of organic building materials, and amorphous pieces of daub. The number and weight of the finds in the three categories were also compared.

Household archaeology

Several considerations of household archaeology were employed in order to interpret the trends emerging from the analysis of diverse types of finds, which may reveal multiple aspects of past life. The functional composition of the pottery set hints at the scale and ways of food storage, preparation, and

consumption; the knapped stone tools shed light on not only the technology and usage patterns, but also the ways of raw material procurement; while the examination of daub fragments can yield new data on architecture. From the perspective of household archaeology, all these tendencies are echoes of complex social phenomena, of which only a few aspects are pointed out here, as an extensive presentation of household archaeological methods goes far beyond the scope of this paper.

Households, often considered the building blocks of societies, are human communities formed around a building or a group of buildings, members of which share, to some extent, responsibilities and decision-making (Blaton 1994, 5–19). Thus, a household is not merely a physical unit, but has extensive economic and social aspects as well: it encompasses the members of the household, their relationships, their living space, activity zones, and possessions. In behavioural terms, it includes the aspects and processes that integrate and sustain these elements (Costin 1991, 1; Kalla 2013, 9–18). In archaeological studies, the importance of households lies in their potential to connect past social phenomena to material evidence. However, it is crucial to recognise that households are not static entities, their functions, forms, behaviours, and associated activities change dynamically (Foster, Parker 2012, 2). Furthermore, in archaeology, households should be regarded primarily as analytical units, because what archaeologists unearth are not complete households but only the remains of buildings, pits, objects, and the patterns of their distribution and disposal (Allison 2002, 2; Rani 2002, 81). The complex processes associated with a household's life ultimately led to the formation of the material remains that, after various post-depositional transformations, are uncovered in archaeological excavations (Fig. 7). At the core of a household's material dimension stands the residential building itself – and because of this, the absence of buildings poses several difficulties. In some cases, identifying activity zones based on artefact distribution and analysing their spatial relationships can provide insights into former household units (Fábián et al. 2013).

In the case of Gelej-Husztly-Arkay-dűlő, it must be recognised that due to the low level of structuration of the settlement and the limited number of uncovered pits, complex household archaeological analyses could not be concluded. Instead, considerations of household archaeology were applied when

examining the patterns of the site, as all fragments and features are the results of complex socioeconomic processes that interwove everyday life. Accordingly, the focus of the study was on interpreting finds based on past activities they could have been linked to. Some find distribution patterns could be connected with the waste disposal strategies of the community and, indirectly, with the spatial aspects of the use of these objects (Schiffer et al. 2010, 13; Shaw 2012, 318–319; Mazzucato 2019). The evaluation of distribution patterns included a chi-square analysis of the correlation of features and find types (stats::chisq.test v.4.2.2.; R Core Team 2022). If the result of this independence test provides a *p*-value under 0.05, the connection between the two variables is statistically significant. In addition, Pearson residuals (*r*) show the strength of the correlation between the corresponding variables, and whether it is positive or negative (Agresti 2007, 34–41).

Results

Results of the pottery analysis

Due to the high degree of fragmentation, only 661 vessels (31.6% of the whole material) were suitable for any degree of typological classification. The complexity of the vessel shape highly influenced the possibility of its recognition: composite vessel shapes were only identified in a handful of cases. Fig. 8 summarises the frequency of occurrence of each typological category. A few special vessel types have also been identified. Lids typically appear in Hunyadhalom assemblages (Patay 2005, 88–90, 113–14), as do rectangular vessels (Patay 2005, 82–84), and according to Pál Patay, both types likely had symbolic function or played a role in social signalling. Pedestalled vessels, a staple type of the Early Copper Age (ECA) assemblages, appear much less frequently in the MCA, including the Hunyadhalom pottery sets (Patay 2005, 84–86; Patay 2008, 37). A piece thought to be a zoomorphic vessel was also found on the site: it resembles a rectangular vessel but stands on four long legs (P. Fischl et al. 2000).

Altogether, 3,856 fragments of 1,897 vessels were included in the statistics-based functional reconstruction. The fragment classes (rim [Class C + CB], body [Class E + F + G], and base [Class D + DB] fragments) were analysed separately. Complete vessels (Class A) were only analysed together with all the other categories, as their low count (5 pieces, making up 0.2% of the whole set), made this group

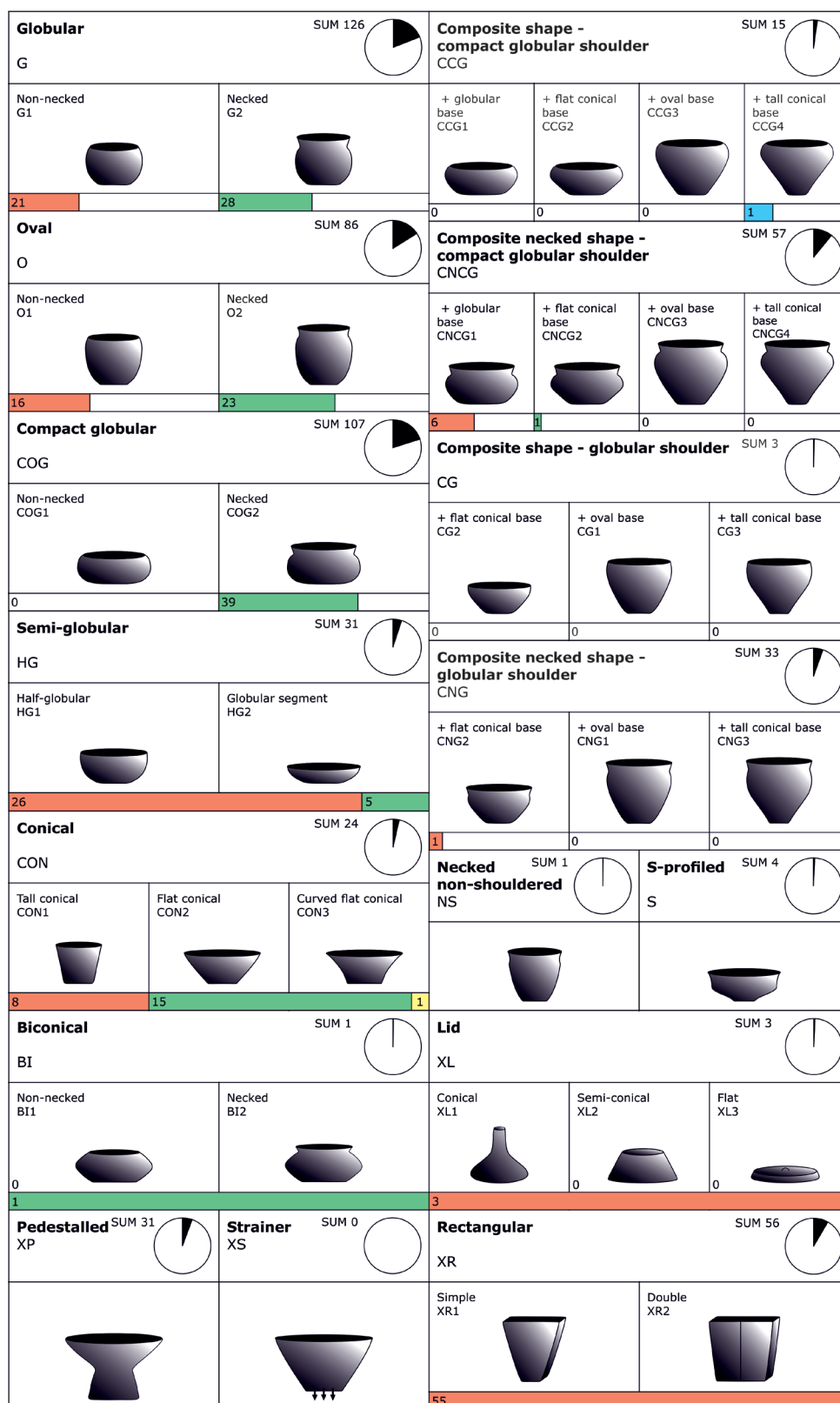


Fig. 8. Typological categories of pottery and their frequency of occurrence. Pie charts show the proportion of each main type in relation to all vessels with a reconstructed shape (N = 661). Bar charts show the proportion of subtypes within the types

8. kép. Kerámiaedények tipológiai kategóriái és előfordulási gyakoriságuk. A kördiagrammok az egyes tipológiai főcsoportok arányát mutatják a teljes, tipológiai értékelhető anyagon belül (N = 661). A sávdigrammok a tipológiai főcsoportokon belül mutatják meg az alcsoportok megoszlását

unsuitable for statistical evaluation (Fig. 9).

Rim fragments of 435 vessels were analysed (Class A + C + CB). The highly diverse sherds formed four clusters based on quantitative variables and five clusters based on qualitative ones. As a result, ten distinct vessel types emerged from the combination of quantity- and quality-based clusterings: small storage vessels (T1a), large storage vessels (T1b), liquid storage/transportation vessels (T1c), cooking vessels (T2), small multifunctional vessels (T3a), large multifunctional vessels (T3b), communal serving vessels (T4a), communal liquid serving vessels (T4b), individual serving vessels (T4c) and individual liquid serving vessels (T4d). The FAMD visualisation of the results show that rim angle and neck shape (both mainly contributing to Dim2) i.e. the openness of the mouth was an important factor in differentiating be-

tween vessel types. For example, storage vessels (T1) had closed shapes, conical and funnel conical necks, meanwhile multifunctional vessels (T3a) and communal serving vessels (T4a) had open mouths and reverse conical necks. The smoothness of the texture, the surface treatment, the decoration of the rim, and the wall thickness (all mostly contributing to Dim1) were also strong indicators of difference between functional categories. At one end of the spectrum, we see consumption vessels (T4) with smooth material texture, burnished surface, and relatively thin walls, while at the other end there are large storage vessels (T1b) with semi-smooth material, clay-coated surface, impressed rim decoration, and thick walls. Although the correlation between most vessel shapes and functional types is low, vessels with compact globular body (COG) and composite necked body

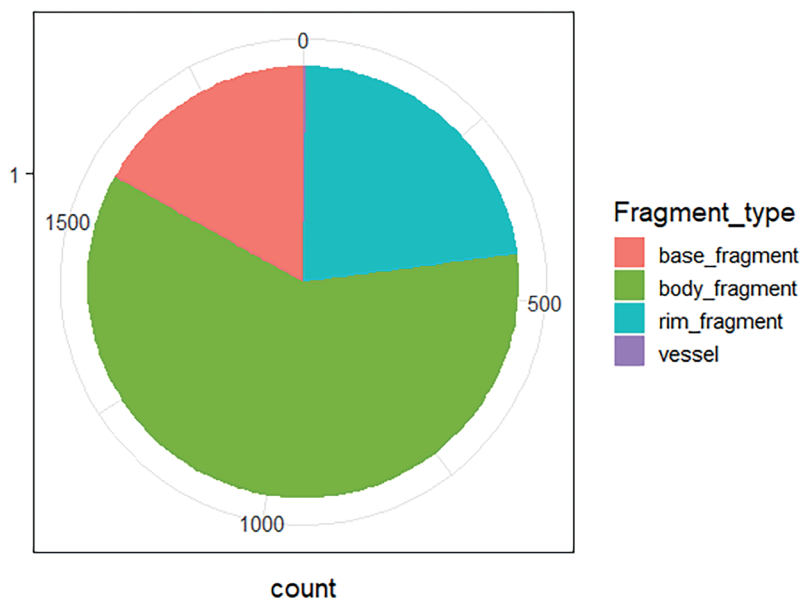


Fig. 9. Distribution of pottery fragment types in the assemblage (N = 1,897)

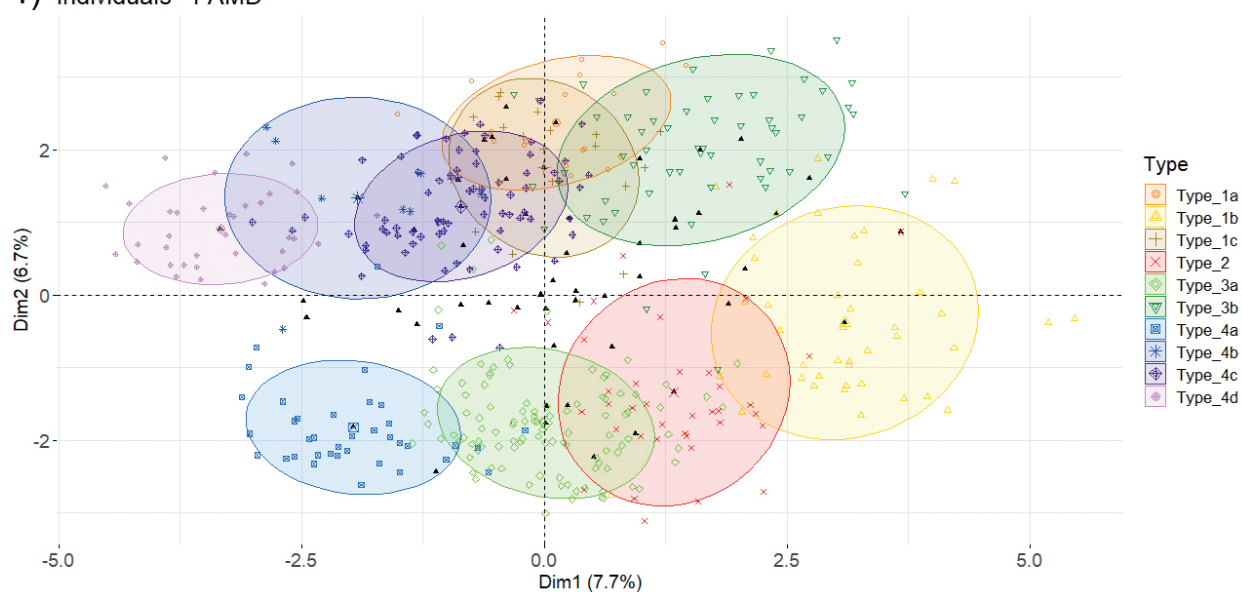
9. kép. A kerámiaanyagban előforduló töredéktípusok aránya (N = 1.897)

Fig. 10. FAMD analysis of rim fragments, plotted on the first two axes (together, they account for 14.4% of variability in the whole sample). The *contrib* value on Fig. 10. 1. and 3. shows to what extent each variable contributes to the plotted dimensions. 1: Individuals coloured by type: Type 1a = small storage vessel; Type 1b = large storage vessel; Type 1c = liquid storage vessel; Type 2 = cooking vessel; Type 3a = small multifunctional vessel; Type 3b = large multifunctional vessel; Type 4a = communal serving vessel; Type 4b = communal liquid serving vessel; Type 4c = individual serving vessel; Type 4d = individual liquid serving vessel. 2: Quantitative variables. 3: Qualitative variables and their relation to types

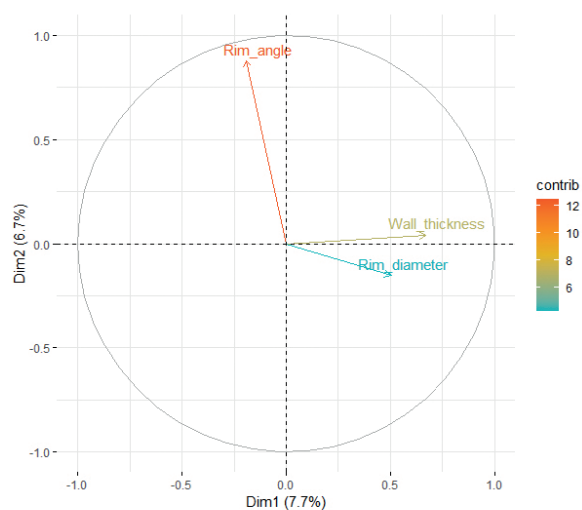
10. kép. A peremtöredékek FAMD analízise, az első két tengelyen megjelenítve (ezek összesen a teljes minta varianciájának 14,4%-át fedik le). A *contrib* érték a 10. 1. és 3. képeken azt mutatja, hogy az egyes változók milyen mértékben járulnak hozzá a megjelenített dimenziók felépítéséhez. 1: Az esetek típusok alapján színezve: Type 1a = kisméretű tárolóedény; Type 1b = nagyméretű tárolóedény; Type 1c = folyadéktároló edény; Type 2 = főzőedény; Type 3a = kisméretű multifunkciós edény; Type 3b = nagyméretű multifunkciós edény; Type 4a = közösségi tálalóedény; Type 4b = közösségi folyadéktálaló edény; Type 4c = egyéni tálalóedény; Type 4d = egyéni folyadéktálaló edény.

2: Mennyiségi változók. 3: Minőségi változók és kapcsolatuk a típusokkal

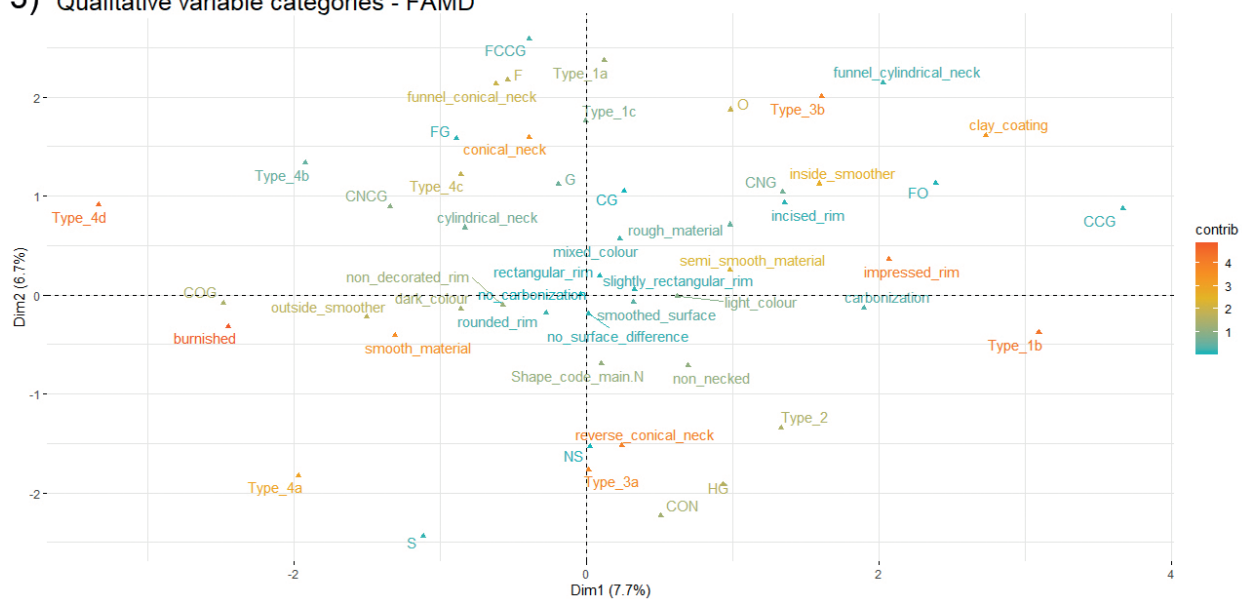
1) Individuals - FAMD



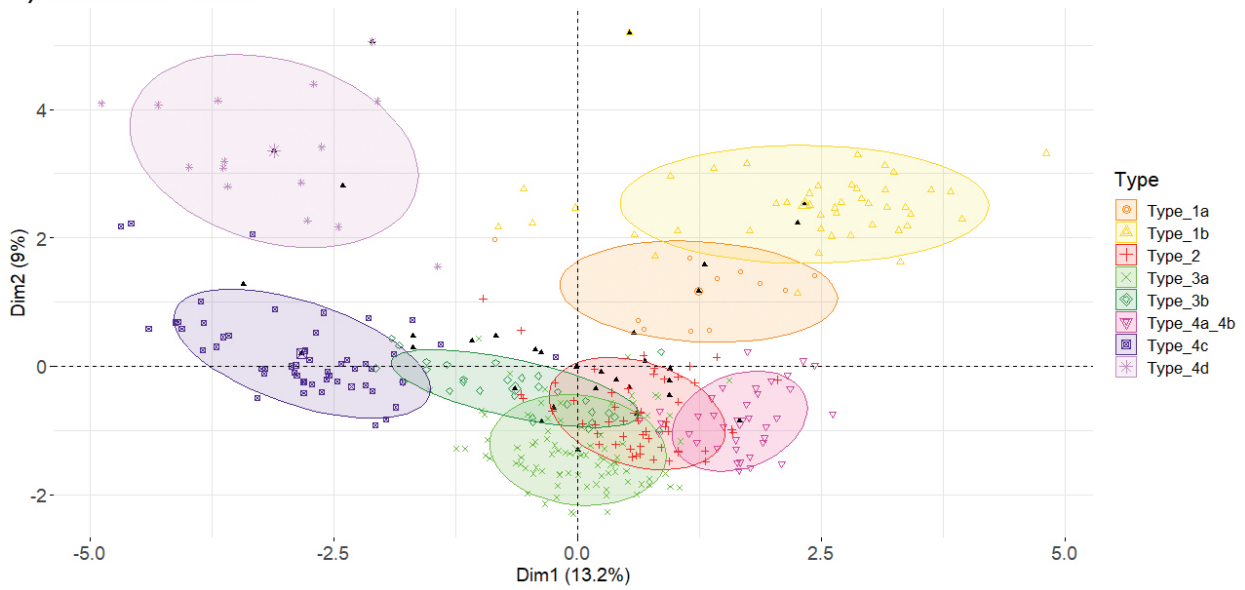
2) Quantitative variables - FAMD



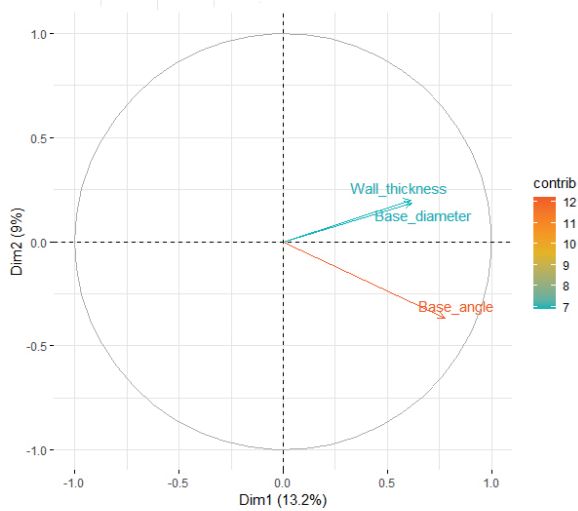
3) Qualitative variable categories - FAMD



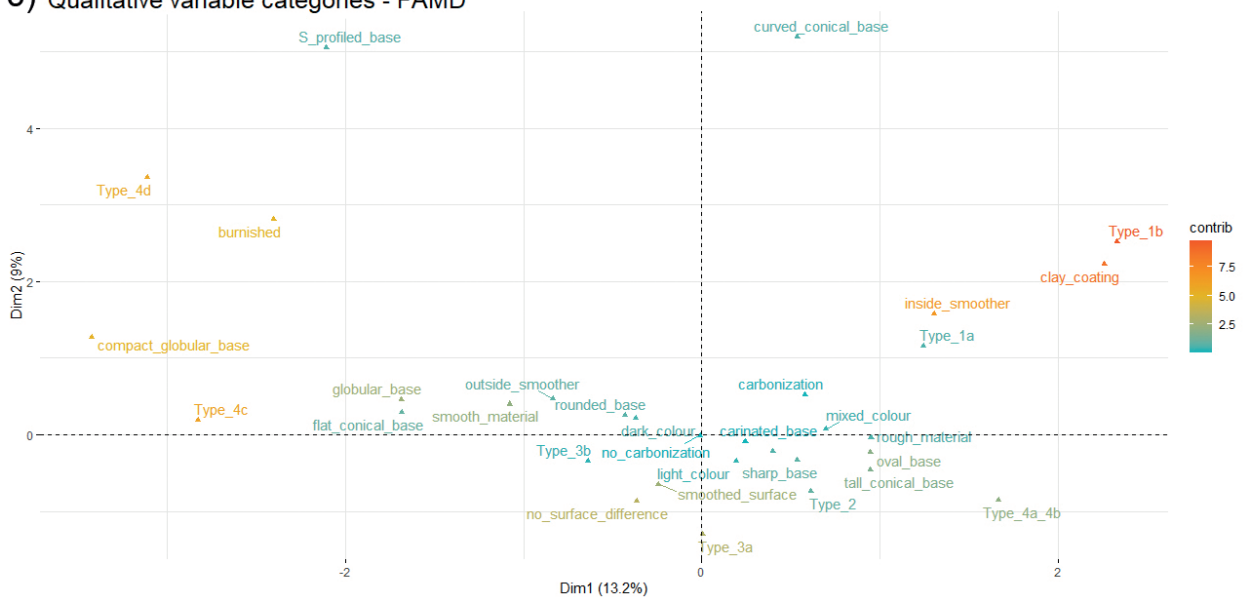
1) Individuals - FAMD



2) Quantitative variables - FAMD



3) Qualitative variable categories - FAMD



with compact globular shoulder (CNCG) are mostly associated with serving vessels (T4). Small multifunctional vessels (T3a) often had conical (CON) or half-globular (HG) shapes, while large multifunctional vessels (T3b) oval bodies (O) (Fig. 10).

The analysis of base fragments involved sherds of 320 vessels (Class A + D + DB). These were divided into five clusters based on quantitative variables, and four clusters based on qualitative ones. By combining these clusters, a range of different pottery types were outlined: small storage vessels (T1a), large storage vessels (T1b), cooking vessels (T2), small multifunctional vessels (T3a), large multifunctional vessels (T3b), communal serving and communal liquid serving vessels (T4a and T4b), individual serving vessels (T4c), and individual liquid serving vessels (T4d). It was not possible to distinguish between vessels of communal consumption and communal liquid consumption, as their base shapes and sizes are quite similar – in their cases, the real difference is in rim and neck design, which regulates access to their content. FAMD visualisation shows that surface treatment and base angle (mostly contributing to Dim1) are strong differentiating factors between vessel types. For example, vessels of individual consumption (T4c) and individual liquid consumption (T4d) had flatter bases and burnished surfaces, while large storage vessels (T1b) and small storage vessels (T1a) had taller bases and clay-coated surface. The shape of the base of the vessels was also a strong determinant (contributing to Dim2), for example, cooking vessels (T2) generally had tall conical or oval bases (Fig. 11).

In the analysis of body fragments, pieces from all 1,897 vessels were involved, as they all yielded relevant data. The single quantitative variable, wall thickness, was examined together with qualitative variables. The limited number of variables prevented

the identification of a wide variety of vessel types, but a few tendencies could still be outlined. Coarse, often clay-coated pieces could be linked to storage vessels (T1), while thin, often burnished sherds to serving vessels (T4). Semi-coarse household pottery, sometimes with carbonization on the surface, could be linked to small multifunctional and cooking vessels (T2 and T3a), and the thicker pieces to large multifunctional vessels (T3b). The FAMD analysis suggests a strong correlation between surface treatment, smoothness of material texture, colour (contributing to Dim1) and vessel types: consumption vessels (T4) have smooth texture, are burnished, and dark in colour, while storage vessels (T1) have clay-coated surfaces, semi-smooth material, and a generally lighter or mixed colour (Fig. 12). In some cases, vessel shapes (contributing to Dim2) could also be connected with types; for example, storage vessels (T1) were associated with composite shapes with compact globular shoulders (CCG), large multifunctional vessels (T3b) with oval bodies (O), and serving vessels (T4) with compact globular shapes (COG).

Another analysis provides insight into the relation of vessel types and decoration (Fig. 13). Note that the correlation analysis in this case showed no statistically significant correlation between decoration and vessel types (p -value = 0.2629), which might be due to the overall low number of decorated vessels.

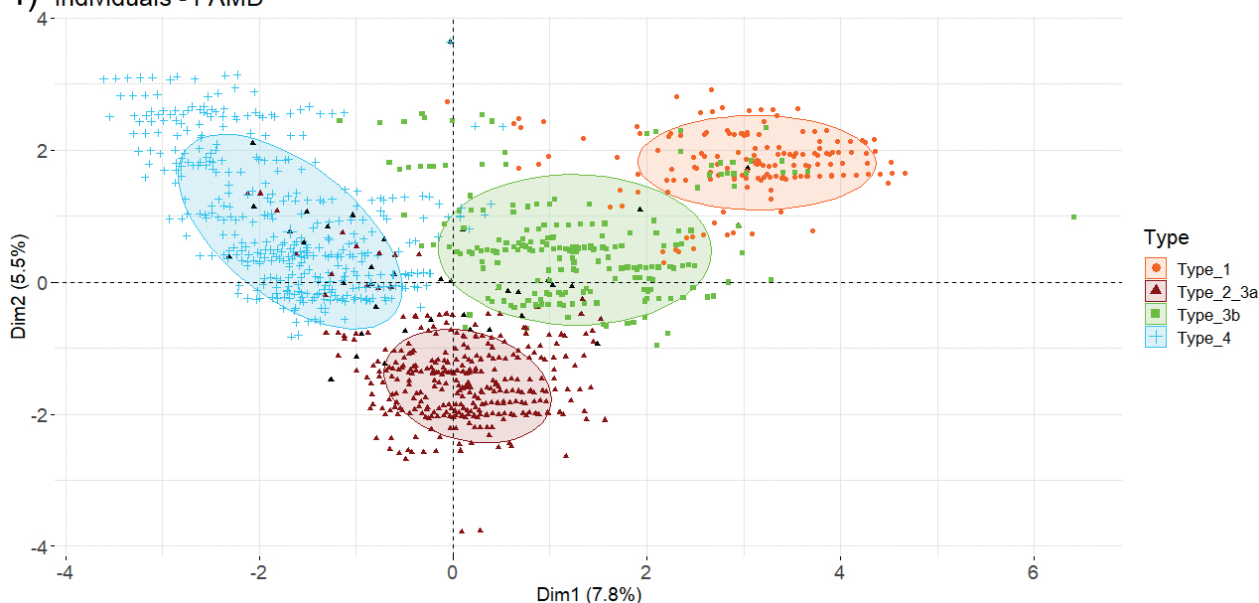
Overall, typological assessments and functional reconstruction made the characterisation of all vessel types in the pottery set of the MCA community at Gelej-Husztly-Arkay-dűlő possible (Figs. 14–15).

Coarse, thick-walled, clay-coated storage vessels, often relatively light in colour, and having coarse or semi-smooth material, could be classified into three groups. The community used relatively smaller vessels (T1a) with rounded rim and sharp or carinated

- ◁ Fig. 11. FAMD analysis of base fragments, plotted on the first two axes (together, they account for 22.2% of variability in the whole sample). The *contrib* value on Fig. 11. 2. and 3. shows to what extent each variable contributes to the plotted dimensions. 1: Individuals coloured by type: Type 1a = small storage vessel; Type 1b = large storage vessel; Type 2 = cooking vessel; Type 3a = small multifunctional vessel; Type 3b = large multifunctional vessel; Type 4a and 4b = communal serving and communal liquid serving vessel; Type 4c = individual serving vessel; Type 4d = individual liquid serving vessel. 2: Quantitative variables. 3: Qualitative variables and their relation to types

11. kép. Az aljtörédek FAMD analízise, az első két tengelyen megjelenítve (ezek összesen a teljes minta varianciájának 22,2%-át fedik le). A *contrib* érték a 11. 2. és 3. képeken azt mutatja, hogy az egyes változók milyen mértékben járulnak hozzá a megjelenített dimenziók felépítéséhez. 1: Az esetek típusok alapján színezve: Type 1a = kisméretű tárolóedény; Type 1b = nagyméretű tárolóedény; Type 2 = főzőedény; Type 3a = kisméretű multifunkciós edény; Type 3b = nagyméretű multifunkciós edény; Type 4a és 4b = közösségi tálalóedény és közösségi folyadéktálaló edény; Type 4c = egyéni tálalóedény; Type 4d = egyéni folyadéktálaló edény. 2: Mennyiségi változók. 3: Minőségi változók és kapcsolatuk a típusokkal

1) Individuals - FAMD



2) Qualitative variable categories - FAMD

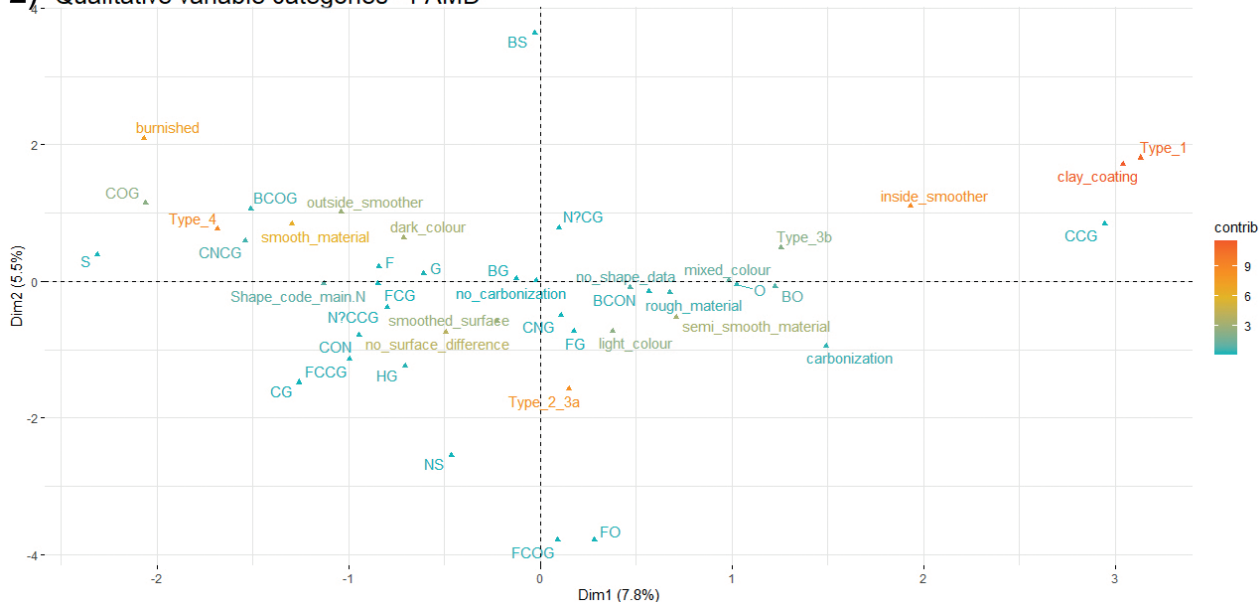


Fig. 12. FAMD analysis of body fragments, plotted on the first two axes (together, they account for 13.3% of variability in the whole sample). 1: Individuals coloured by type: Type 1 = storage vessel; Type 2 and 3a = cooking vessel and small multifunctional vessel; Type 3b = large multifunctional vessel; Type 4 = serving vessel. 2: qualitative variables and their relation to types. The *contrib* value shows to what extent each variable contributes to the plotted dimensions

12. kép. Az oldaltöröredékek FAMD analízise, az első két tengelyen megjelenítve (ezek összesen a teljes minta varianciájának 13,3%-át fedik le). 1: Az esetek típusok alapján színezve: Type 1 = tárolóedény; Type 2 és 3a = főzőedények és nkisméretű multifunkciós edények; Type 3b = nagyméretű multifunkciós edény; Type 4 = tálalóedények. 2: Minőségi változók és kapcsolatuk a típusokkal. A *contrib* érték a azt mutatja, hogy az egyes változók milyen mértékben járulnak hozzá a megjelenített dimenziók felépítéséhez

base for storing small quantities of materials. These often have necked, globular or oval bodies, with an average wall thickness of 0.8 cm, rim diameter of 10.9 cm, and base diameter of 8.6 cm. Large storage vessels (T1b) frequently have a rectangular impressed rim and rounded or carinated base, and are generally

taller. These often necked vessels have tall, composite shapes with globular or compact globular shoulder. Their average wall thickness is 1.2 cm, rim diameter 28.1 cm, and base diameter 15.8 cm. In a few instances, it was possible to identify liquid storage/transportation vessels, distinguished by a smoothed

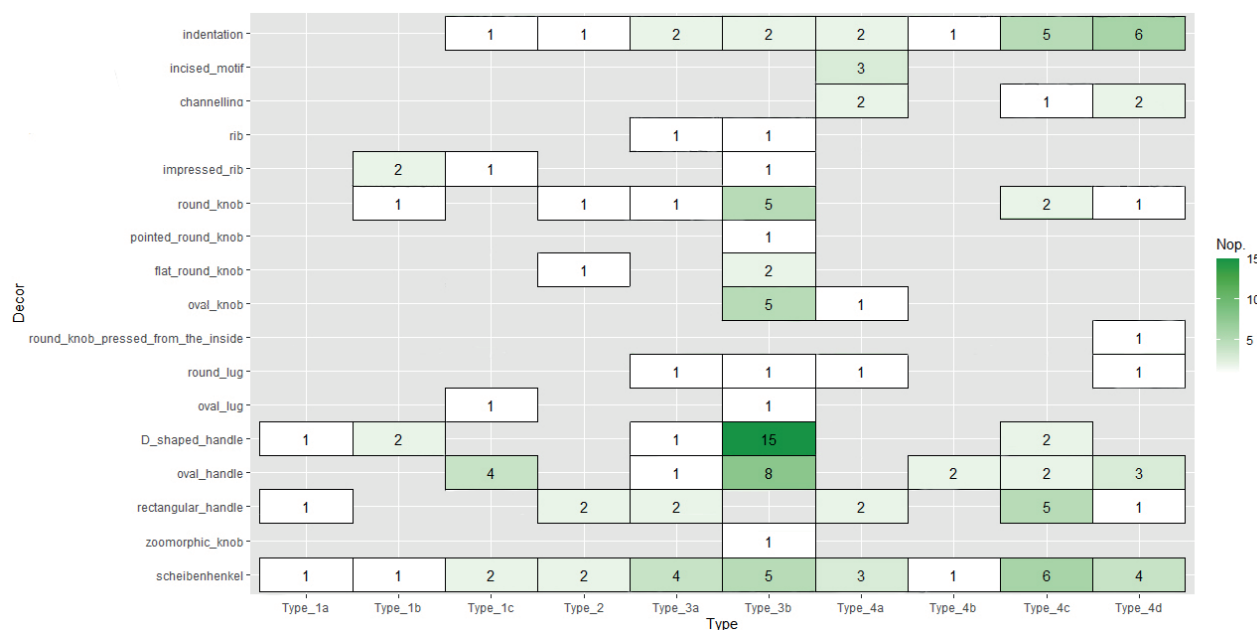


Fig. 13. Correlation between decoration and vessel types. Type 1a = small storage vessel; Type 1b = large storage vessel; Type 1c = liquid storage vessel; Type 2 = cooking vessel; Type 3a = small multifunctional vessel; Type 3b = large multifunctional vessel; Type 4a = communal serving vessel; Type 4b = communal liquid serving vessel; Type 4c = individual serving vessel; Type 4d = individual liquid serving vessel

13. kép. Az edénydíszek és -típusok összefüggései. Type 1a = kisméretű tárolóedény; Type 1b = nagyméretű tárolóedény; Type 1c = folyadéktároló edény; Type 2 = főzőedény; Type 3a = kisméretű multifunkciós edény; Type 3b = nagyméretű multifunkciós edény; Type 4a = közösségi tálalóedény; Type 4b = közösségi folyadéktálaló edény; Type 4c = egyéni tálalóedény; Type 4d = egyéni folyadéktálaló edény

(or sometimes burnished) interior, a closed rim, and a relatively long, funnel conical neck. Their average wall thickness is 0.9 cm, and rim diameter 14.6 cm, which likely played a role in securing their contents. Liquid storage vessels typically have globular bodies or composite bodies with compact globular shoulder. Storage vessels are sometimes decorated with oval or D-shaped handles, or impressed ribs.

Cooking vessels are coarse and generally stout, with a more open mouth, an often impressed rim, a rounded base, and a relatively light colour. In some cases, traces of carbonization appear on the inner surface of these necked oval and tall composite-shaped vessels with globular shoulder. The average wall thickness of cooking vessels is 1.1 cm, rim diameter 18.1 cm, and base diameter 12.2 cm. Cooking vessels are rarely decorated, save for some rectangular handles.

Multifunctional vessels likely played an important role in prehistoric household pottery sets, as it seems logical to expect the existence of vessels designed to serve more than one purpose. For example, medium-sized pots could have been used for cooking or storing products (Skibo, Schiffer 2008, 10; Skibo 2013, 4–5; Forte 2022, 31; Vuković, Bikić 2022, 58). Multifunctional vessels generally have semi-smooth

material, smoothed surface, and a relatively simple design, suggesting that crafters did not put much effort into making them. Small multifunctional vessels (T3a) are generally open, with a rounded rim and base, and a mainly conical and half-globular body. Their average wall thickness is 0.8 cm, rim diameter 13.3 cm, and base diameter 8.4 cm. These pieces were likely used for storing smaller amounts of material, for individual consumption, or in cooking processes that did not involve heating. Large multifunctional vessels (T3b) typically have a slightly rectangular or rounded rim, sometimes decorated with impressions, a rounded or sharp base. These often necked pieces had oval bodies or tall composite bodies with globular shoulder. Their average wall thickness is 1.1 cm, rim diameter 16.2 cm, and base diameter 13.4 cm. Large multifunctional vessels could have been used as storage or cooking pots. Multifunctional vessels – especially the larger examples – are regularly decorated, mostly with D-shaped or oval handles, and round or oval knobs.

Serving vessels were generally made of fine material and feature a particularly careful design, as potters put emphasis on their aesthetic value. They were often fired to a dark colour, burnished, and decorated, as

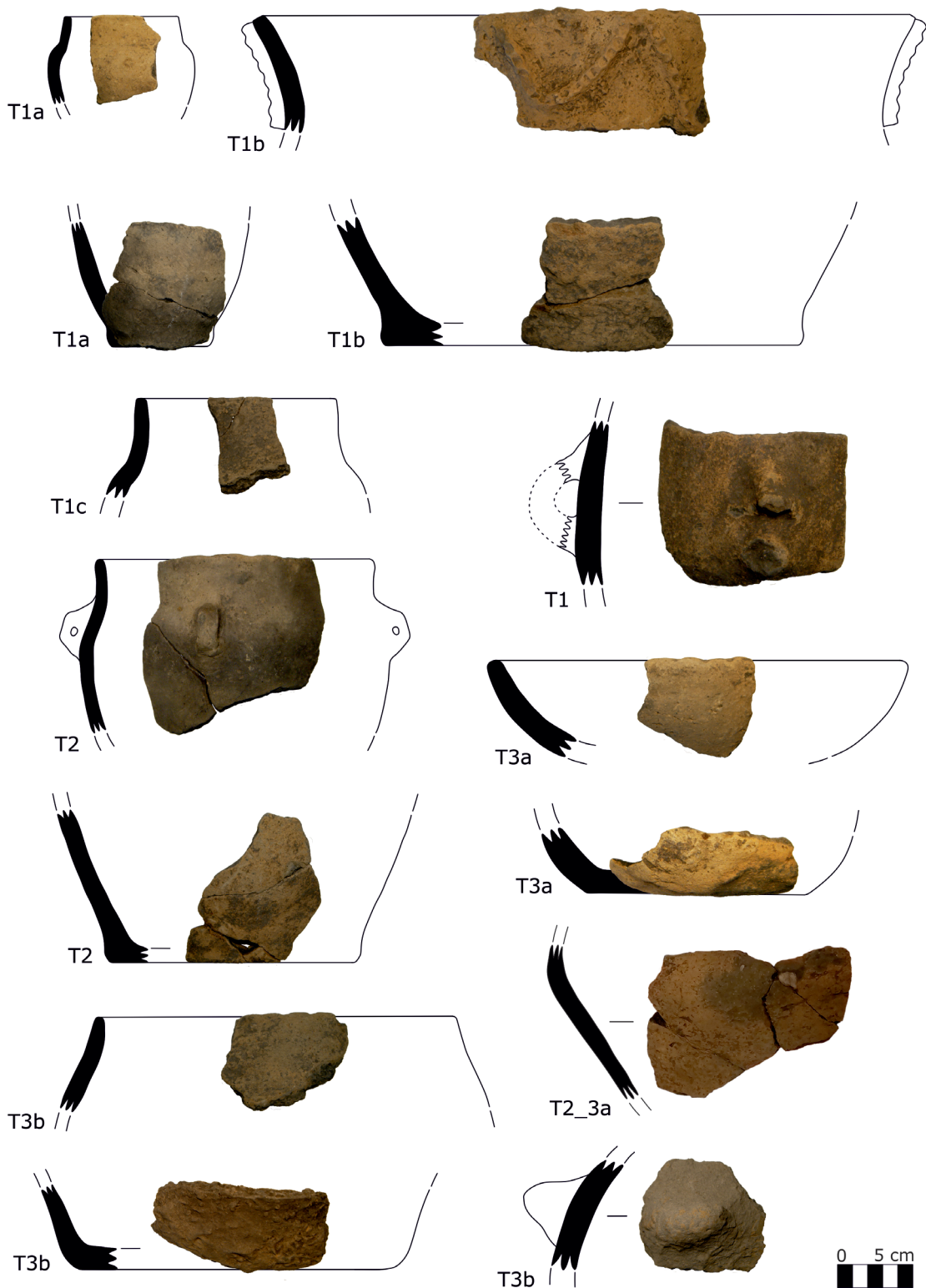


Fig. 14. Examples of fragment types (rim, base, and body) and the associated functional categories. Type 1 = storage vessel; Type 1a = small storage vessel; Type 1b = large storage vessel; Type 1c = liquid storage vessel; Type 2 = cooking vessel; Type 2 and Type 3a = cooking vessels and small multifunctional vessel; Type 3a = small multifunctional vessel; Type 3b = large multifunctional vessel

14. kép. Edénytöredékek (perem-, alj- és oldaltöredékek) a funkcionális kategóriák szerinti besorolással. Type 1 = tárolóedény; Type 1a = kisméretű tárolóedény; Type 1b = nagyméretű tárolóedény; Type 1c = folyadéktároló edény; Type 2 = főzőedény; Type 2 and Type 3a = főzőedény és kisméretű multifunkciós edény; Type 3a = kisméretű multifunkciós edény; Type 3b = nagyméretű multifunkciós edény

their appearance likely played an important symbolic role during communal meals (Hally 1986, 275–276; Rice 1987, 240). Communal serving vessels (T4a) tend to be amongst the larger ones, and come with a rectangular or slightly rectangular rim, and a sharp base. They were generally necked shapes with com-

pact globular or tall composite bodies with compact globular shoulder. Their average wall thickness is 1 cm, rim diameter 18.5 cm, and base diameter 15.3 cm. In their case, it was important that their relatively large capacity made them fit for serving multiple people. Communal liquid serving vessels (T4b)

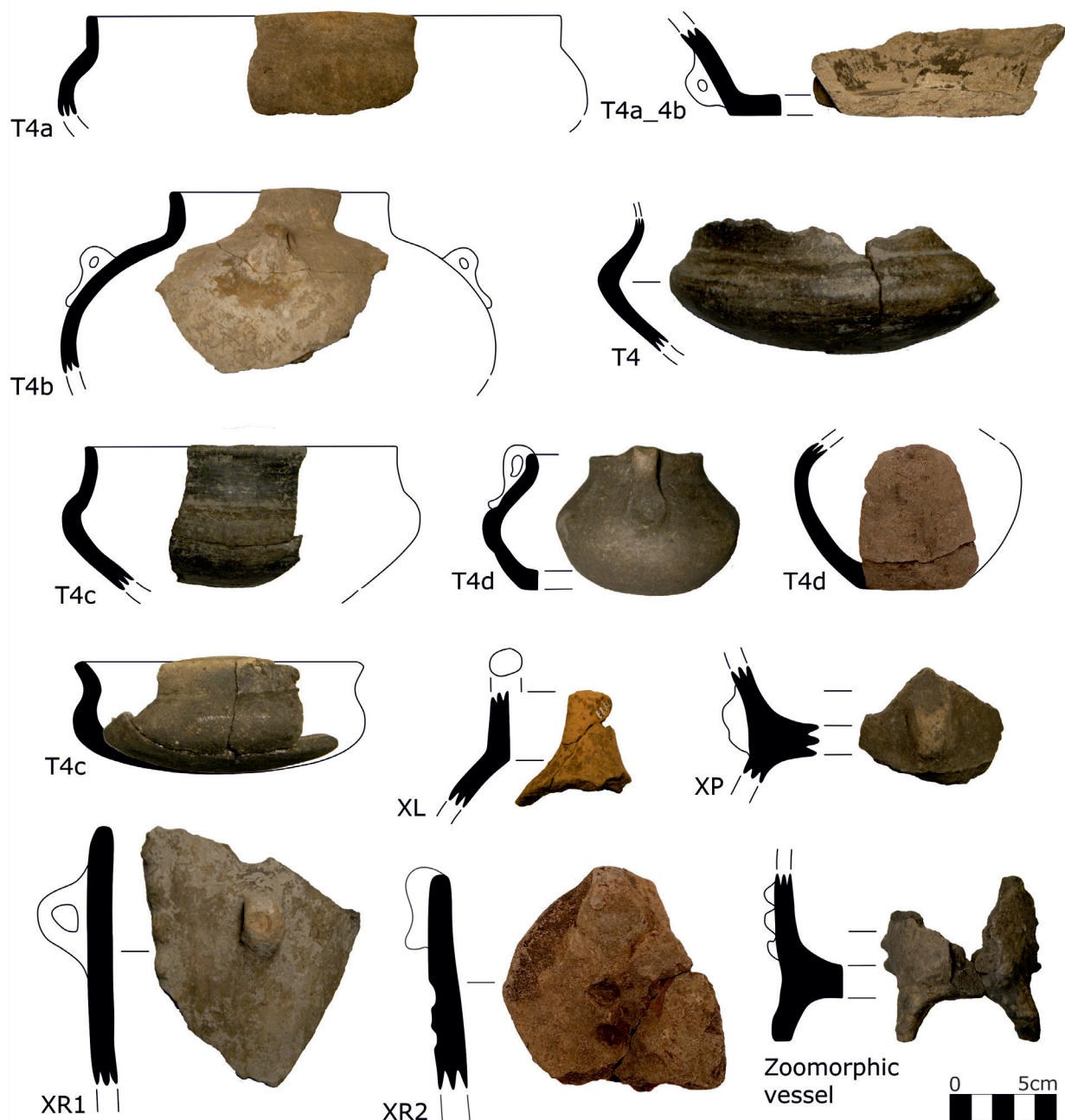


Fig. 15. Examples of fragment types (rim, base, and body) and the associated functional categories. Type 4 = serving vessel; Type 4a = communal serving vessel; Type 4a and Type 4b = communal serving and communal liquid serving vessel; Type 4b = communal liquid serving vessel; Type 4c = individual serving vessel; Type 4d = individual liquid serving vessel; XL = lid; XP = pedestalled vessel; XR1 = simple rectangular vessel; XR2 = double rectangular vessel

14. kép. Edénytöredékek (perem-, alj- és oldaltöredékek) a funkcionális kategóriák szerinti besorolással. Type 4 = tálalóedény; Type 4a = közösségi tálalóedény; Type 4b = közösségi folyadéktálaló edény; Type 4a and Type 4b = közösségi tálaló és közösségi folyadéktálaló edény; Type 4c = egyéni tálalóedény; Type 4d = egyéni folyadéktálaló edény; XL = fedő; XP = csőtálpas edény; XR1 = négyszögletes edény; XR2 = kétosztatú négyszögletes edény

were also finely made, have a rectangular rim, and a sharp base. To protect their contents, they generally have closed shapes with a funnel conical neck, globular and composite bodies with compact globular shoulder. Their average wall thickness is 0.9 cm, rim diameter 13.1 cm, and base diameter 15.3 cm. Individual serving vessels (T4c) have a rounded rim and base, and were shaped to have a flat, open body. These generally necked pieces have compact globular shapes or composite shapes with compact globular shoulder. Their average wall thickness is 0.7 cm, rim diameter 13.4 cm, and base diameter 7.2 cm. Individual liquid serving vessels (T4d) have a rectangular or slightly rectangular rim, a rounded base, and generally closed shape, with necked compact globular or globular bodies. Their average wall thickness is 0.7 cm, rim diameter 8.9 cm, and base diameter 7.2 cm. Serving vessels, particularly individual serving vessels, are typically decorated with channelling and indentations, rectangular handles, and *Scheibenhenkels*.

Results of knapped stone analysis

Based on the 74 knapped stones representing a wide range of techno-typological categories, the settlement was a place where gathered chunks of raw material were shaped into cores, and semi-finished and finished products were also produced (Fig. 16). Some pieces feature traces of heavy use, and some could be associated with the final stage of the knapped stone tools life, disposal, which also took place within the site.

Amongst the main technological categories, most finds could be connected with the early stages of raw material exploitation and core shaping. Different types of tools, mainly unretouched ones, are also frequent in the assemblage. Small flakes and bladelets, likely used in composite tools, indicate that the community had a complex range of tools at their disposal.

The raw material composition of the knapped stone assemblage was also analysed (Fig. 17). Flints and glassy or microcrystalline raw materials with a high SiO₂ content are the most suitable for stone knapping (T. Biró 1984, 52). Seven types of raw material were identified, the most common of them being limnositicite, a siliceous rock formed mainly in post-volcanic activities, when silica-rich solutions permeate various rocks and sediments (T. Biró 2008, 19). The limnositicite found at Gelej-Husztly-Arkay-dűlő likely originated from the area of the nearby Kács, an accessible source (Schréter 1916). This material, although quite inconsistent in quality, was brought to the site in larger

blocks and was used to produce a wide array of products, e.g., small flakes and bladelets used in composite tools, as well as retouched tools, such as scrapers. Two types of obsidian, a non-crystallized volcanic stone from the Prešov-Tokaj Mountains, were found at the site. Carpathian 1-type is translucent and genuinely glass-like, and can be found in the area of Kašov and Cejkov (Slovakia). There were two subgroups of Carpathian 2: a compact, black variant with a shiny fracture surface, likely originating from around Tolcsva and Erdőbénye, and a greyish and graphite-like variant that probably came from around Mád and Erdőbénye (T. Biró 2008, 18–19). While most obsidian pieces are small flakes and bladelets – which is consistent with the observed patterns of obsidian use in the Copper Age (T. Biró 1988, 272) – a large, strongly hydrated Carpathian 2-type nodule was also found. Retouched tools made of flint were also unearthed at the site. Flint is a tertiary neritic sedimentary stone (T. Biró 2008, 20), its yellowish-brown striped and white-spotted variant, the so-called Jurassic flint from the Kraków area, appears in the assemblage (T. Biró 1984, 52). This is a quite common long-distance raw material in the Late Neolithic and Early Copper Age (T. Biró 1989, 24; Pelisiak 2006). Only one tool, a side scraper, was made of quartz porphyry, a cinereous paleo-volcanic raw material with a fluidic fabric (T. Biró 1984, 46; T. Biró 2008, 23), likely originating from around Bükkszentkereszt. Sporadic occurrences of silicified tuff from the Mátra and Tokaj Mountains (T. Biró 1984, 47) have also been identified in the analysed material, as well as a single piece of chert, a sedimentary flint (T. Biró 2008, 20), in the form of a core-shaping flake.

Results of the analysis of daub fragments

Overall, 588 daub fragments weighting 10,910 grams were analysed. Their comparative analysis revealed predominance of amorphous fragments, but their lowest total weight of all three categories marks that these are highly fragmented, small pieces (Fig. 18). In contrast, the wattle-impressed pieces are larger, possibly because they were discarded near the built structures they once belonged to.

Discussion

As presented above, several remarks can be made about the Gelej community's lifestyle based on the analyses of the pottery set and the patterns of stone tool production and use. Although traces of wattle-

and-daub buildings were not identified, based on the daub fragments, their existence might still be considered.

The pottery set includes a wide variety of vessels designed to fulfill all emerging needs of the community. Due to the limitations of the statistics-based functional reconstruction, obtaining detailed results with the separation of several functional categories was only possible when the examined fragment class provided enough data. Still, the comparison of the

number of fragments in each category is informative (Fig. 19). The pottery assemblage included a decent amount of storage vessel fragments, mostly from large ones. Despite these vessels having a relatively long lifespan of 5 to 6 years (Vieugué et al. 2016, 104–105), they obviously 'produced' more fragments due to their size. In contrast, the high proportion of cooking vessel fragments is due to intensive use and shorter lifespan, as these vessels, regularly exposed to high thermal and mechanical stress, were likely

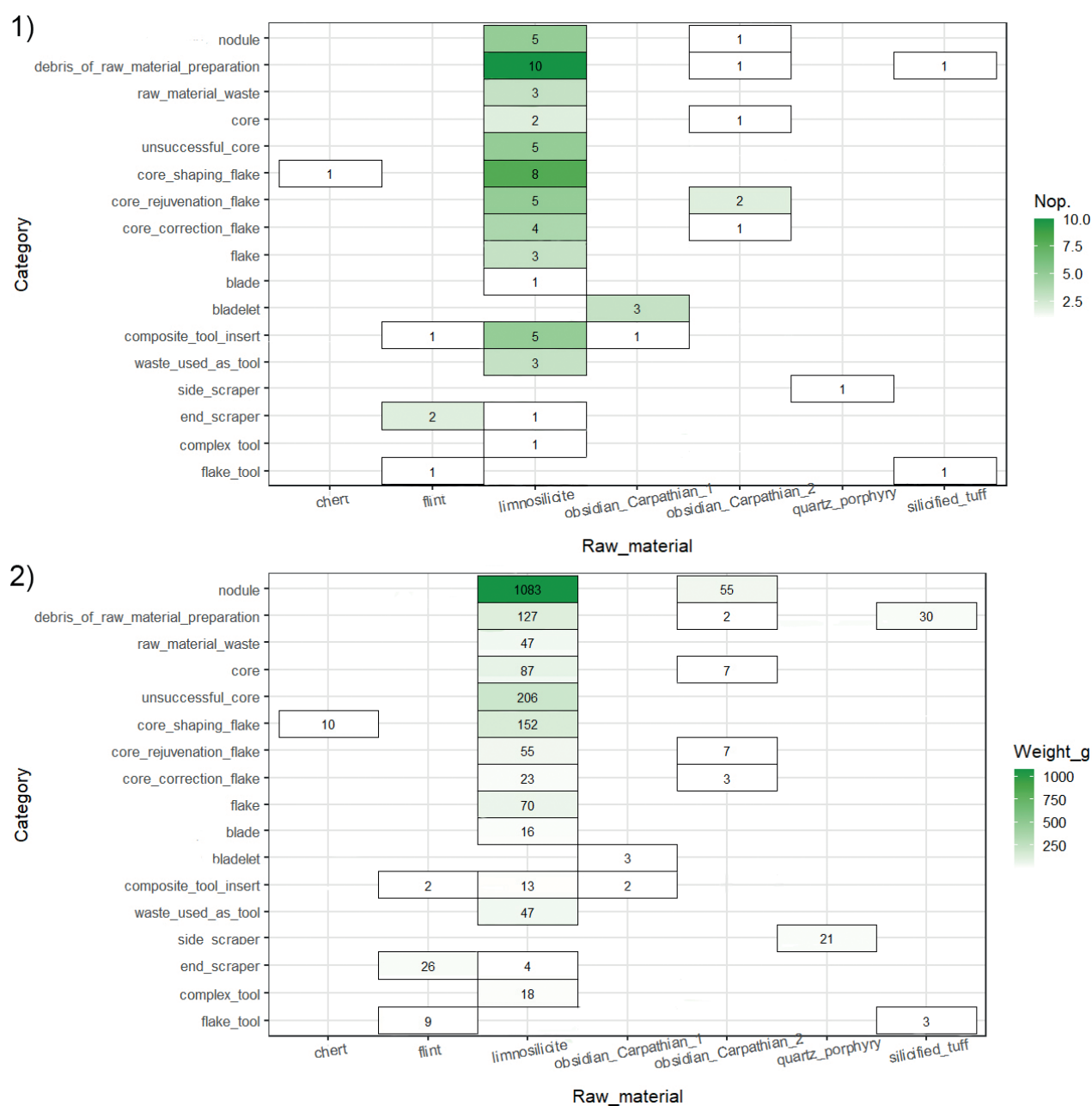


Fig. 16. Correlation between knapped stone techno-typological categories and raw materials. 1: Comparison based on number of pieces (N = 74), 2: comparison based on weight (SUM = 2,128 g)

16. kép. A pattintott kövek techno-típológiai kategóriáinak és nyersanyagfajtáinak összefüggései. 1: Darabszámok szerinti összehasonlítás (N = 74), 2: tömeg szerinti összehasonlítás (SUM = 2.128 g)

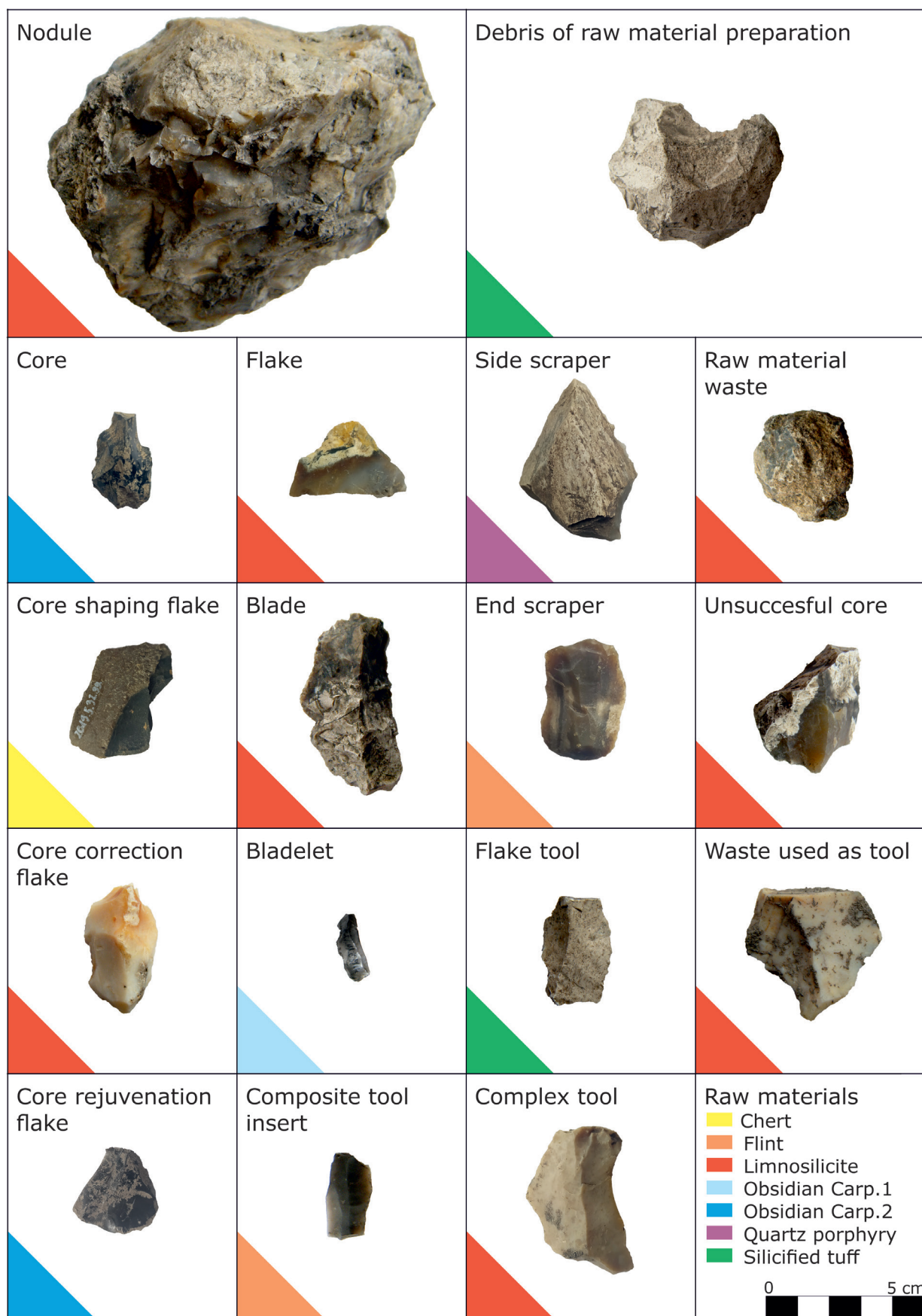


Fig. 17. Techno-typological categories of knapped stones and their raw materials
 17. kép. A pattintott kövek techno-tipológiai kategóriái és a nyersanyaguk

in use for only less than a year (Palaguta 2022, 287–288). The outstandingly high proportion of multifunctional vessels hints at two things. On the one hand, the existence of this group highlights the limitations of such functional studies: when every fragment is involved in the analysis, many will be linked to the generally coarse, nondescript ‘household pottery’ category. On the other hand, the existence of multifunctional vessels shows prehistoric communities’ flexibility in vessel usage: they surely had pieces with roles changing on actual demand (Skibo 2013, 4–5; Forte 2022, 31; Vuković, Bikić 2022, 58). The lack of a careful design implies that potters likely did not put much effort into making these vessels but focused instead on making them in large quantities. Despite the decent amount of communal serving vessels, types of individual serving vessels dominate fine pottery, hinting at their frequent and intense use and maybe even at their symbolic importance in communal settings.

The site seems to have been the venue of intense

and diverse knapped stone tool production, with the processing of limnosilicite and the use of limnosilicite tools being its most important aspect. The large quantity of raw material fragments and core-shaping flakes are evidence of local processing: large chunks of local limnosilicite were brought here, which knappers tested and sorted before making several different types of tools from the suitable nodules. Most tools are unretouched, and composite tools with small flake or bladelet inserts were likely common. While limnosilicite clearly dominates the lithic industry of the site, indicating that this raw material met all demands, the few pieces of long-distance raw material suggest that the Gelej community was part of wider exchange networks. Obsidian was perhaps also worked locally into smaller tools, but it is unlikely that the pieces made of Jurassic flint from the Kraków area were manufactured on the site.

The total weight of the collected daub fragments (a little less than 11 kg) was not high, considering especially the calculations of Pál Patay, who estimated that the construction of a ‘typical’ Hunyadihalom house required around 15–25 m³ of daub (Patay 2005, 54). The low amount of daub remains likely attests to the small number of wattle-and-daub structures, or that most were not exposed to fire, and thus, their remains disappeared more easily. Therefore, no relevant conclusions could be drawn on the built structures of the settlement.

Spatial distribution of the finds

Distribution patterns of pottery types, knapped stones, and daub fragments were mapped to assess any potential tendencies in their distribution. Pottery types were analysed based solely on results of the detailed classification to mitigate the distortion caused by the limitations of type recognition to the largest possible extent. Independence tests revealed a statistically significant correlation between the features and the distribution of pottery types (p -value = 0.007207) (Fig. 20). However, this is not the case for the find material collected from the trenches (p -value = 0.2096), the artificial units of which may include material from different features and depositional events. Therefore, this analysis relied primarily on the distribution patterns seen in the features. It is important to state that the analysed spatial patterns do not represent the actual venue of use, but that of disposal. Nevertheless, a few tendencies were observable.

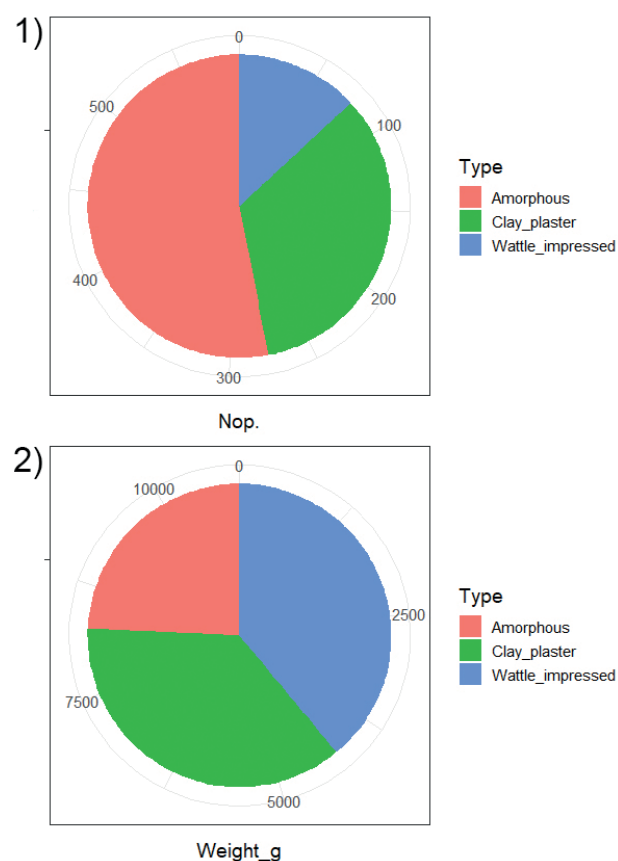
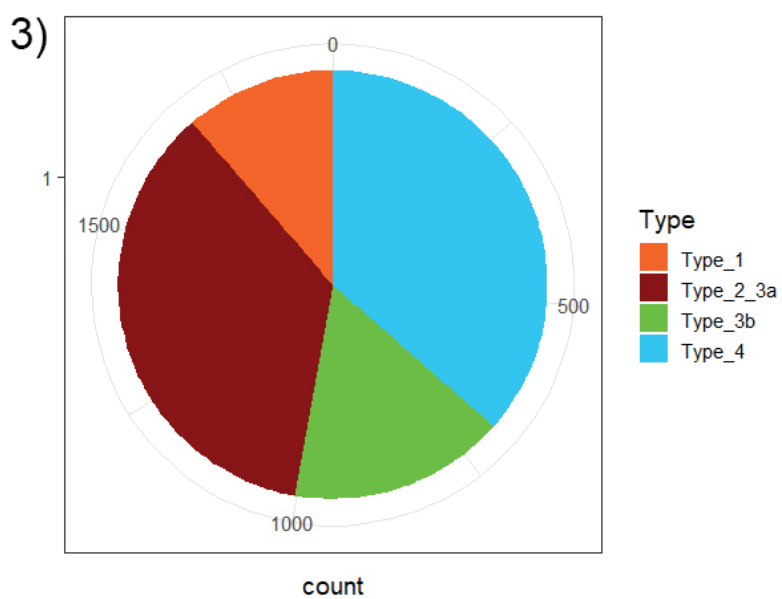
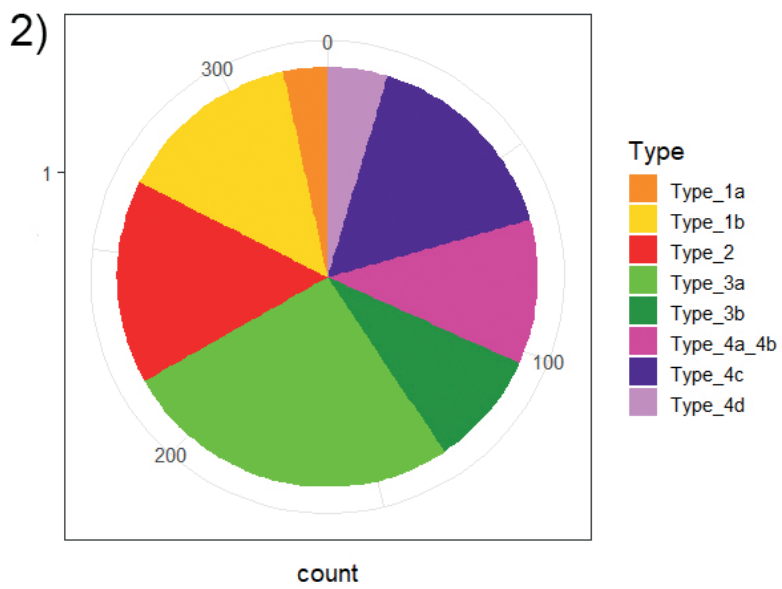
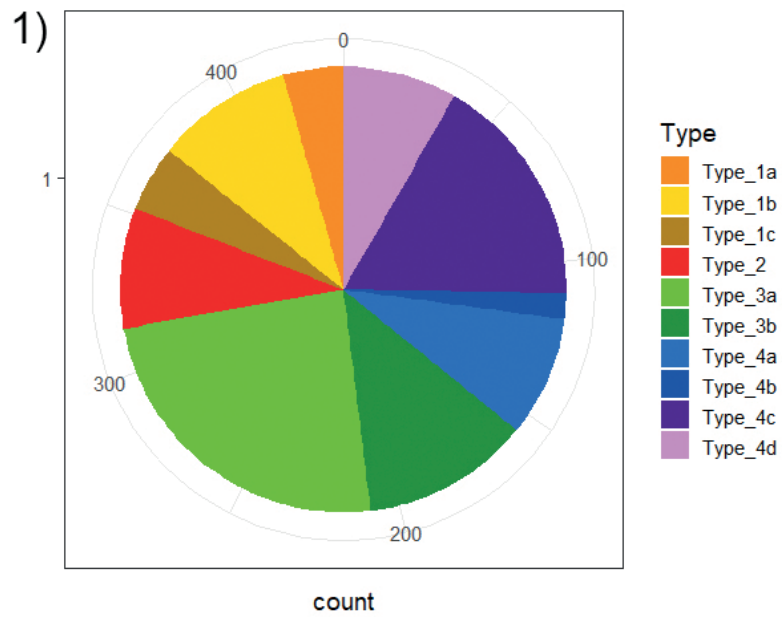


Fig. 18. Proportions of daub types. 1: Based on number of pieces (N = 588). 2: Based on weight (SUM = 10,910 g)
18. kép. Paticstípusok aránya. 1: Darabszámok szerinti összehasonlítás (N = 588). 2: Tömeg szerinti összehasonlítás (SUM = 10910 g)



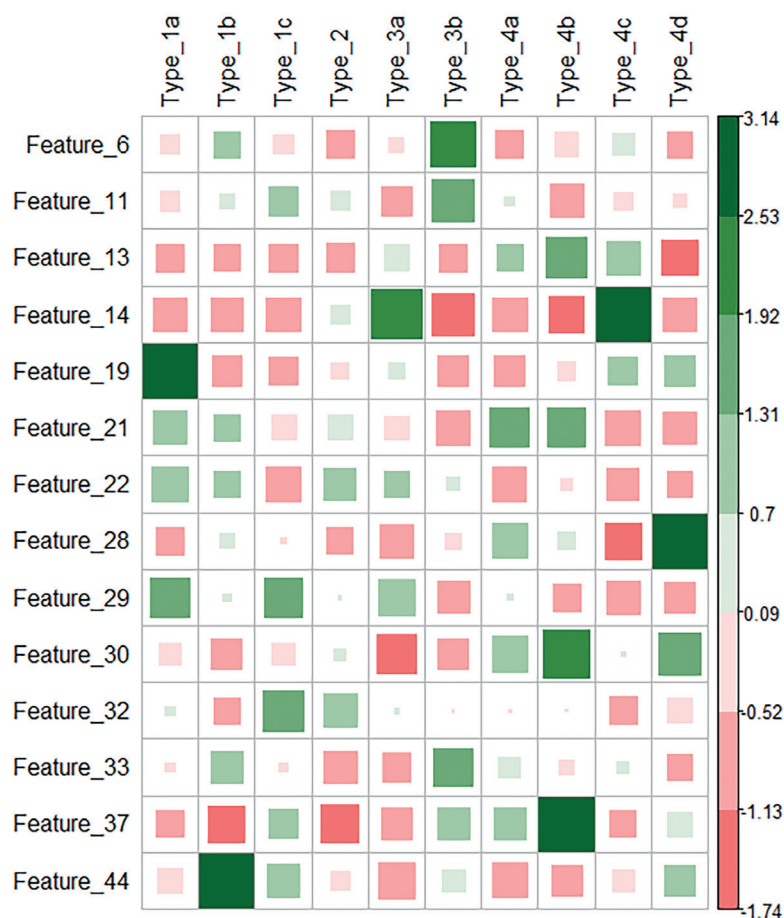


Fig. 20. Correlation plot of the chi-square analysis of individual vessel types and features. Residuals show the strength and orientation of the correlation between vessel types and features (dark green = strong positive association; white = no correlation; dark red = strong negative association). Type 1a = small storage vessel; Type 1b = large storage vessel; Type 1c = liquid storage vessel; Type 2 = cooking vessel; Type 3a = small multifunctional vessel; Type 3b = large multifunctional vessel; Type 4a = communal serving vessel; Type 4b = communal liquid serving vessel; Type 4c = individual serving vessel; Type 4d = individual liquid serving vessel

20. kép. Khí-négyzet analízis korrelációs diagramja a részletes edénytípusok és az objektumok összefüggéseiről. A reziduálisok az edénytípusok és objektumok közti korreláció erősségét és irányát mutatják (sötétzöld = erős pozitív kapcsolat; fehér = nincs kapcsolat; sötétpiros = erős negatív kapcsolat). Type 1a = kisméretű tárolóedény; Type 1b = nagyméretű tárolóedény; Type 1c = folyadéktároló edény; Type 2 = főzőedény; Type 3a = kisméretű multifunkciós edény; Type 3b = nagyméretű multifunkciós edény; Type 4a = közösségi tálalóedény; Type 4b = közösségi folyadéktálaló edény; Type 4c = egyéni tálalóedény; Type 4d = egyéni folyadéktálaló edény

- ◁ Fig. 19. Proportions of vessel types within fragment classes. Type 1 = storage vessel; Type 1a = small storage vessel; Type 1b = large storage vessel; Type 1c = liquid storage vessel; Type 2 = cooking vessel; Type 2 and Type 3a = cooking vessel and small multifunctional vessel; Type 3a = small multifunctional vessel; Type 3b = large multifunctional vessel; Type 4 = serving vessel; Type 4a = communal serving vessel; Type 4a and Type 4b = communal serving and communal liquid serving vessel; Type 4b = communal liquid serving vessel; Type 4c = individual serving vessel; Type 4d = individual liquid serving vessel. 1: Ratio of vessel types based on rim fragments (N = 435). 2: Proportions of vessel types based on base fragments (N = 320). 3: Proportions of vessel types based on body fragments (N = 1,897)
19. kép. Edénytípusok arányai a töredékosztályokon belül. Type 1 = tárolóedény; Type 1a = kisméretű tárolóedény; Type 1b = nagyméretű tárolóedény; Type 1c = folyadéktároló edény; Type 2 = főzőedény; Type 2 and Type 3a = főzőedény és kisméretű multifunkciós edény; Type 3a = kisméretű multifunkciós edény; Type 3b = nagyméretű multifunkciós edény; Type 4 = tálalóedény; Type 4a = közösségi tálalóedény; Type 4a and Type 4b = közösségi tálaló és közösségi folyadéktálaló edény; Type 4b = közösségi folyadéktálaló edény; Type 4c = egyéni tálalóedény; Type 4d = egyéni folyadéktálaló edény. 1: Edénytípusok aránya a peremtöredékek közt (N = 435). 2: Edénytípusok aránya az aljtöredékek közt (N = 320). 3: Edénytípusok aránya az oldaltöredékek közt (N = 1.897)

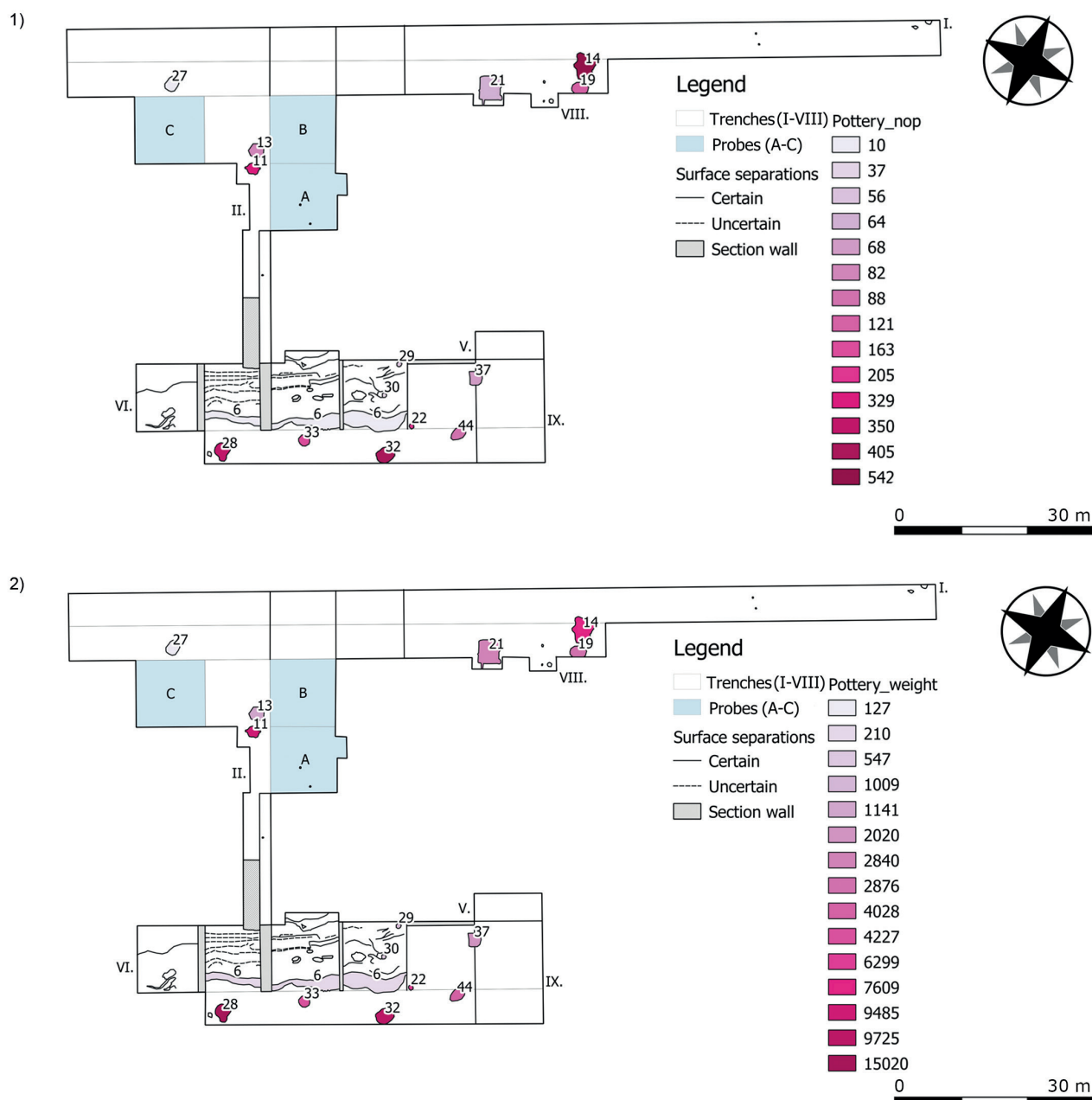


Fig. 21. Distribution of pottery in different features. 1: Coloured by number. 2: Coloured by weight (g)
 21. kép. Kerámiaanyag szóródása a különböző objektumokban. 1: Kerámiatöredékek darabszáma szerint színezve.
 2: Kerámiatöredékek tömege (g) szerint színezve

The overall distribution of pottery fragments included a few concentrations, mostly in the southern parts of the site – for example, Feature 28 held more than 15 kg of pottery (Fig. 21). Besides the southern part of the site, the area of Feature 14 in the northern part was also a depositional hub where many vessel types appeared. However, it must be kept in mind, that the area between the southern and northern parts of the site – save for a narrow trench – was not excavated, and also that the construction and use of the Csörsz Ditch possibly destroyed several features.

The scatter of vessel types correlates with the overall concentration of pottery fragments: more fragments mean more types. However, a few tendencies are worth pointing out. Small storage vessels (T1a) predominate in Feature 19, while large storage vessels (T1b) are the most numerous in Features 11, 28, and 44. In this case, we might assume that the large storage vessels were used close to these pits and their large fragments were disposed in them. The occurrence of large storage vessels across the settlement suggests an even distribution of storage hubs, ensur-

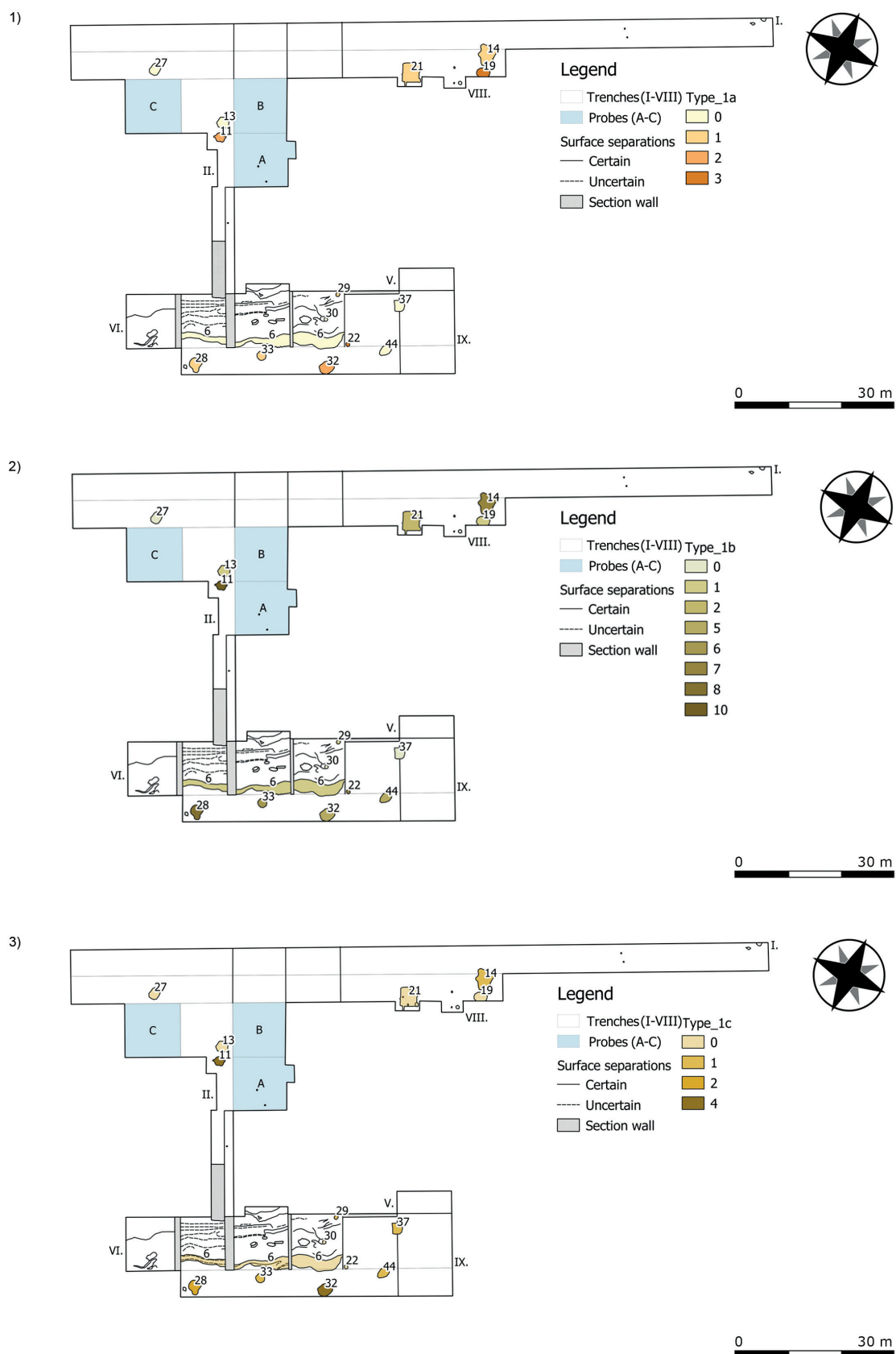


Fig. 22. Distribution of storage vessel fragments in different features. Type 1a = small storage vessel;

Type 1b = large storage vessel; Type 1c = liquid storage vessel

22. kép. Tárolóedények töredékeinek szóródása a különböző objektumokban. Type 1a = kisméretű tárolóedény;

Type 1b = nagyméretű tárolóedény; Type 1c = folyadéktároló edény

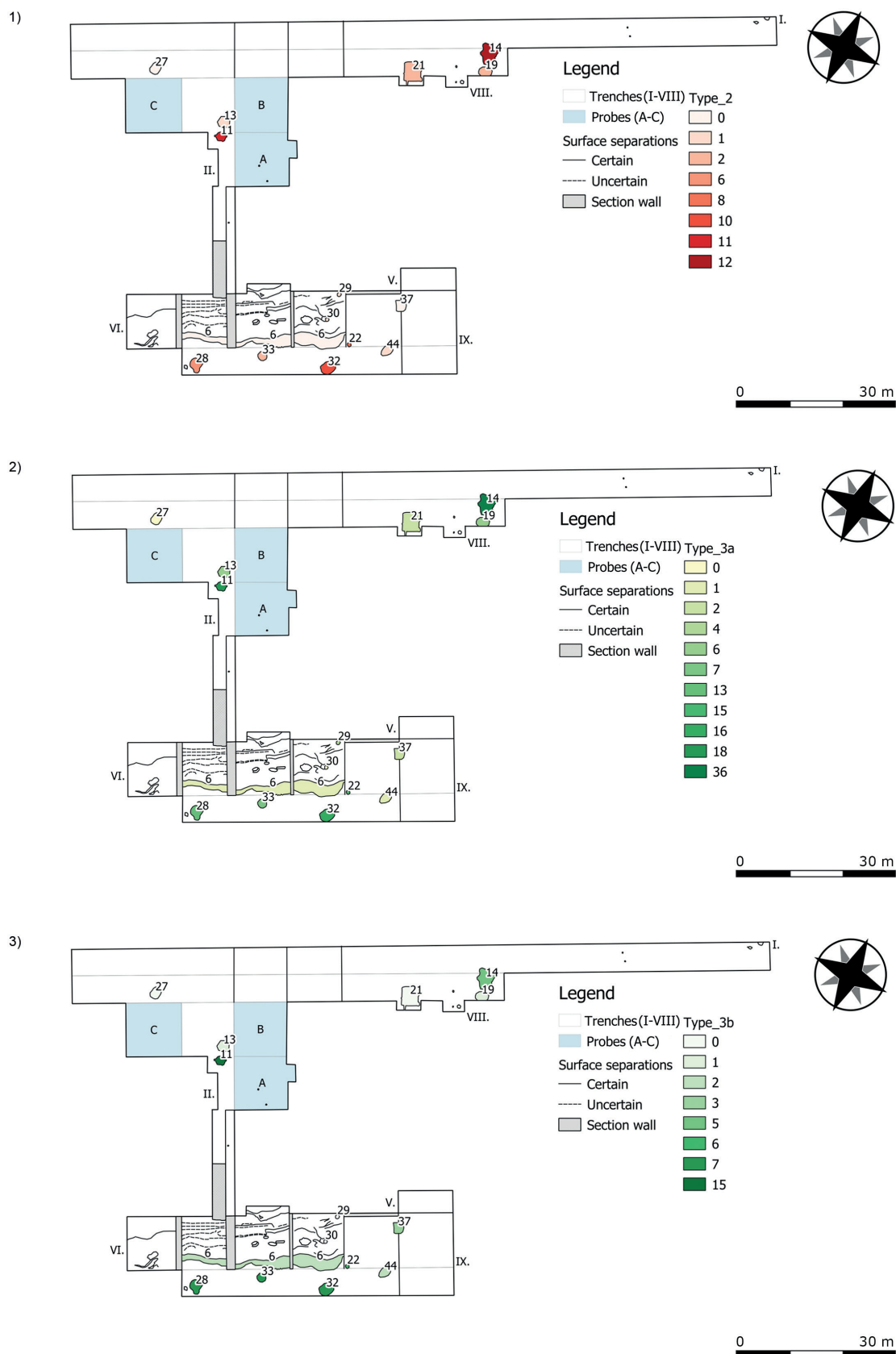


Fig. 23. Distribution of cooking and multifunctional vessel fragments in different features. Type 2 = cooking vessel; Type 3a = small multifunctional vessel; Type 3b = large multifunctional vessel

23. kép. Főző- és multifunkciós edények töredékeinek szóródása a különböző objektumokban. Type 2 = főzőedény; Type 3a = kisméretű multifunkciós edény; Type 3b = nagyméretű multifunkciós edényif

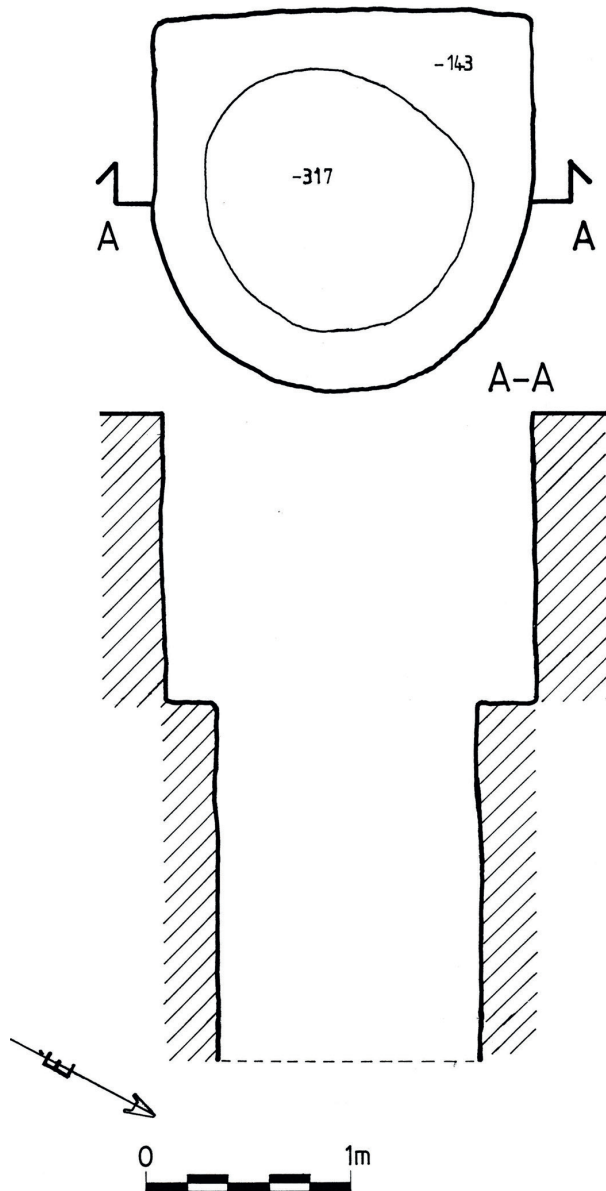


Fig. 24. Photo and drawing of Feature 37, a well
24. kép. A 37. objektum, a kút fényképe és rajza

ing equal access to the stored products, thus likely minimising social tension caused by the control of resources (DeBoer 1988, 2; Hendon 2000). Liquid storage vessels (T1c) are few and most fragments were found in Features 32 and 37, the latter being a well (Fig. 22). Features 22 and 32 in the southern part of the settlement contained most cooking vessels (T2), Features 14 and 29 the most small multifunctional vessels (T3a), and Features 11 and 33 the most large multifunctional vessels (T3b). All these types were widely and intensively used, thus their fragments could be found in large numbers in most pits. Because of this, we cannot state that these observed tendencies clearly highlight past activity zones (Fig. 23). Similarly, serving vessels were also found in every feature, with no obvious tendencies in distribution. Communal serving vessels (T4a) are the most associated with Feature 28 and 30, and communal liquid serving vessels (T4b) with Feature 30 and 37. These results correlate with the function of Feature 37, a well, which only contained a few vessels (68 pieces, weighting 2,020 g in total), but most of which are associated with liquid storage, transportation, and serving. These vessels were likely dropped into the well accidentally, during use. The relatively many stray finds in the close area of the well might indicate that it was a 'high traffic area' within the settlement (Fig. 24). Individual serving vessels (T4c) are mostly associated with Features 14 and 32, while individual liquid serving vessels (T4d) with Features 28 and 30 (Figs. 25–26).

Compared to the distribution of pottery fragments, the distribution of knapped stones shows clearer tendencies (Fig. 27). The vast majority of knapped stones came from a single pit, Feature 14, which contained a large pile of stone (weighting over 1 kg in total), and included raw material chunks, knapping debris, flakes, cores, and retouched and unretouched tools. Based on the placement, i.e. that the various stones were piled up at the middle of the pit, it is unlikely that this was a designated place for stone knapping, but rather for a one-time deposition (Fig. 28). Although the considerations applied to the selection of this knapped stone assemblage remain unclear, its placement was clearly intentional, thus it can be considered a structured deposition (Faragó et al. 2021, 64). Several pieces produced by perhaps several people and representing several stages of the *chaîne opératoire* were collected and placed into the pit together, in a single event and maybe for a specific reason.

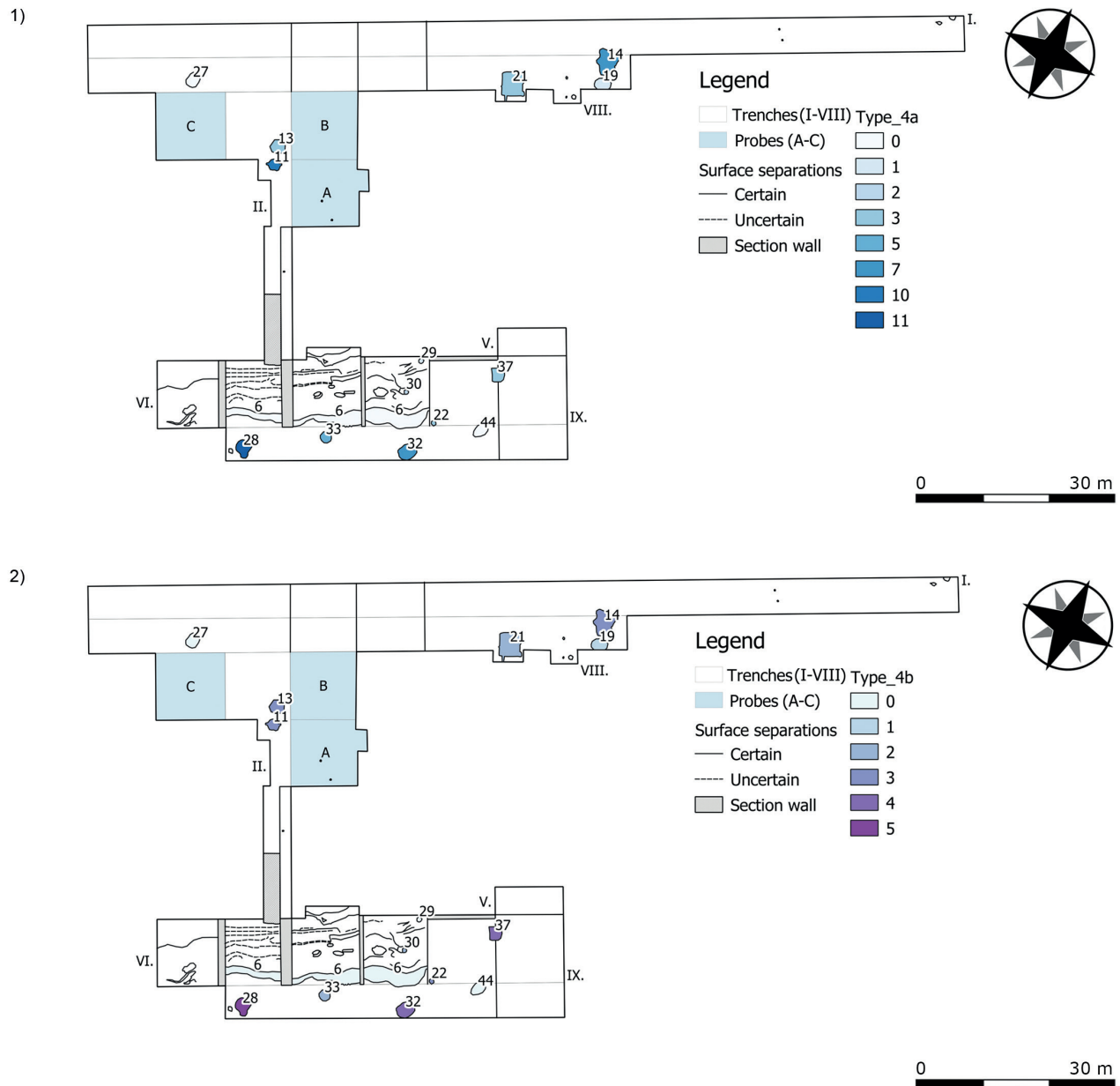


Fig. 25. Distribution of serving vessel fragments in different features. Type 4a = communal serving vessel; Type 4b = communal liquid serving vessel

25. kép. Tálalóedények töredékeinek szóródása a különböző objektumokban. Type 4a = közösségi tálalóedény; Type 4b = közösségi folyadéktálaló edény

Daub fragments, especially larger, wattle-impressed ones and pieces of clay plastering, were probably deposited close to the built structures they originally belonged to (Fig. 29). If so, their presence might hint at some kind of wattle-and-daub structures in the vicinity of Features 11 and 13, and 14 and 33, which is in loose correlation with the even distribution of presumed storage hubs. Due to the low quantity of daub finds, no supposed houses can be located precisely, and it can only be determined that built structures were present in the area.

Summary

The study presented the analysis of different types of finds from a settlement of the MCA Hunyadihalom culture at Gelej-Husztly-Arkay-dűlő. Due to the small size of the excavated area and extensive disruption of later ages, only 12 MCA features and four younger ones with Hunyadihalom finds could be identified. Even so, the applied methodology allowed for drawing several important conclusions. The statistics-based functional reconstruction

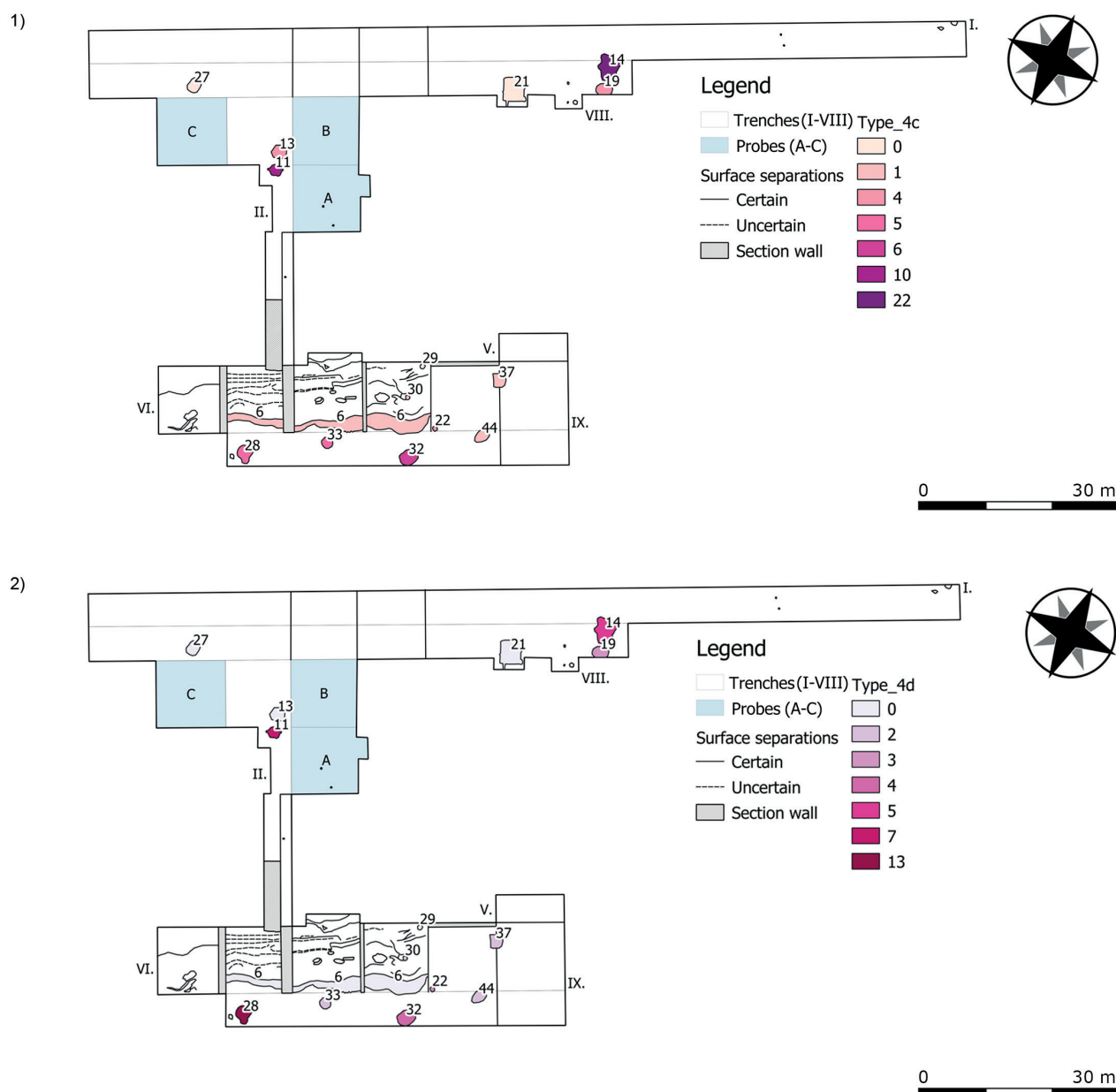


Fig. 26. Distribution of serving vessel fragments in different features. Type 4c = individual serving vessel;
Type 4d = individual liquid serving vessel

26. kép. Tálalóedények töredékeinek szóródása a különböző objektumokban. Type 4c = egyéni tálalóedény;
Type 4d = egyéni folyadéktálaló edény

proved to be especially fruitful in the examination of the highly fragmented pottery material, allowing 90.6% of the sherds to be included – in contrast, only 31.6% of the fragments bore typologically assessable information. The techno-typological classification of the knapped stones provided insight into the process of stone tool production and usage. The remains of wattle-and-daub buildings suggest that although no post holes were excavated, built structures probably stood on the settlement.

Although there is no detailed data on the time-

frame and lifespan of the settlement, it was certainly inhabited around 3964–3826 calBC (1σ). We have no information on the actual size of the community that lived here either. The settlement likely extended beyond the excavated area, and the complexity of its life cannot be fully grasped, however, its loose, low-intensity inner structure indicates a hamlet-like arrangement. Such hamlets, established close to small streams and inhabited by extended family units, were common since the ECA. The MCA witnessed a shift towards more complex settlement structures

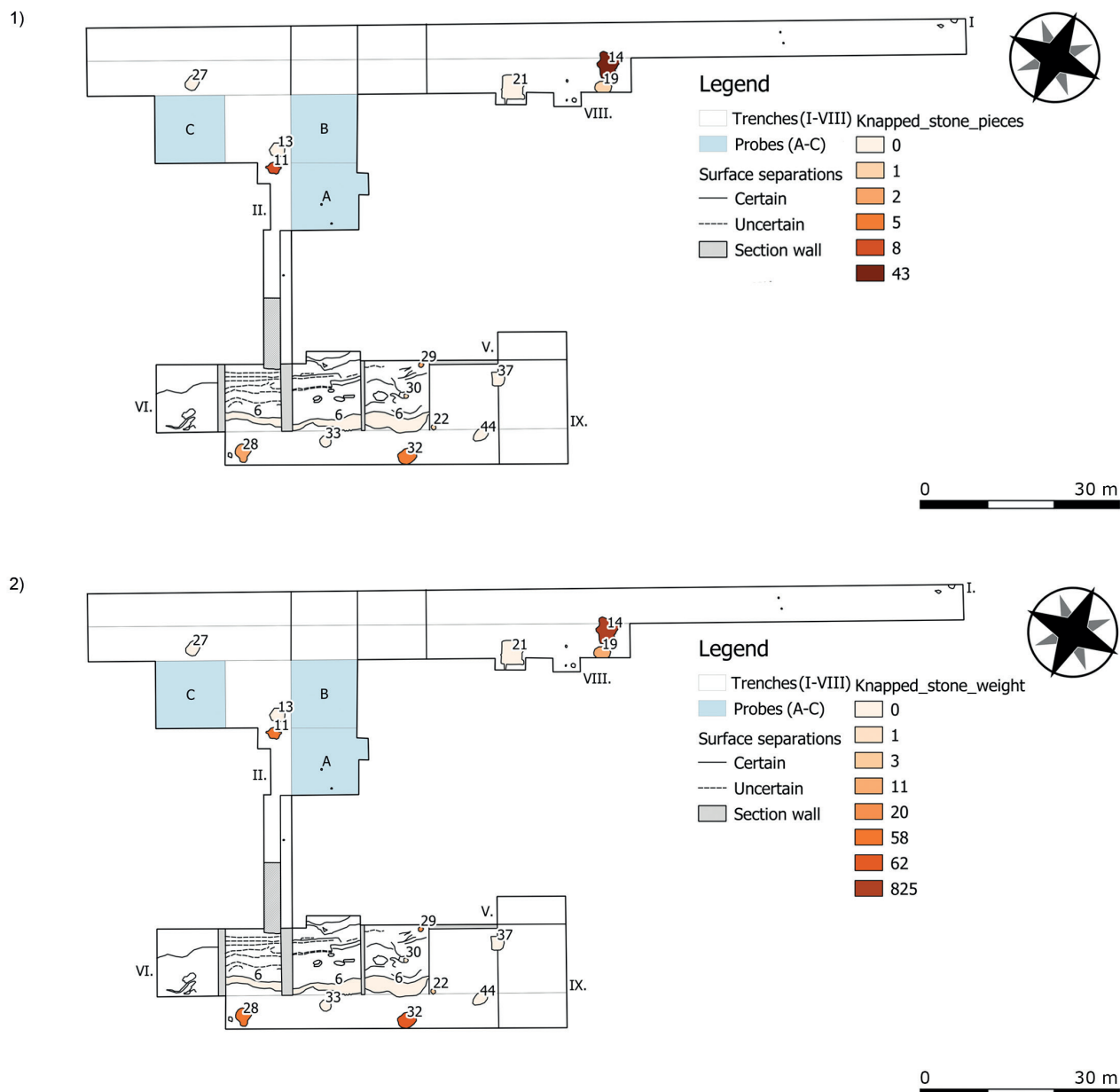


Fig. 27. Distribution of knapped stones in different features. 1: Coloured by number. 2: Coloured by the weight (g)
 27. kép. Pattintott kövek szóródása a különböző objektumokban. 1: Töredékek darabszáma szerint színezve. 2: Töredékek tömege (g) szerint színezve

(e.g., Tiszalúc-Sarkadpuszta), which suggest that the strong socio-political ties between the dispersed groups directed them towards closer cooperation. Regardless of this tendency, hamlets likely remained an important venue for the self-sustainment of agropastoralist households, who, as the example of Gelej attests, conducted all necessary household activities within these boundaries (Gyucha 2009, 112–117; Parkinson et al. 2021, 382–386). They created wattle-and-daub structures, dug a well to provide fresh water, and acquired raw material to produce knapped stone tools at the settlement. The composition of

the pottery set suggests that the life here was well-established and people were self-sufficient: produce was stored in large ceramic containers and prepared using diverse cooking techniques, then ate during communal meals, which provided a venue for further social bonding and even representation of status.

The results and patterns discussed above allow for reconstructing, at least to some extent, the waste depositional strategy of the Gelej community. Pottery use was intense at the site, the observed distribution of pottery fragments was rather uneven, which might suggest that waste was likely collected



Fig. 28. Pile of knapped stones in Feature 14
28. kép. Pattintott kövek sűrűsödése a 14. objektumban

on dumps over a relatively long period of time (Kalla 2013, 19–20) and periodically disposed of in larger quantities into unused pits. The pieces of large storage vessels were likely discarded in pits close to their original place of use, while smaller and generally more mobile vessels could have been deposited further off. Based on the scatter of pottery types, venues of storage were distributed evenly across the settlement, marking perhaps an intent to provide members of the community with equal access. Feature 37, a well, recorded the signs of some small everyday accidents: while people were drawing water from it, they sometimes dropped liquid storage/transportation/serving vessels into it. Pottery concentration in the close area of the well was high, suggesting it was likely a social hub. The vast majority of knapped stones were deposited together in Feature 14, but the reason behind this action remains unclear. The deposition was likely intentional and cannot be considered evidence of the exclusivity of knapped stone tool production in the northern part of the settlement. Daub fragments were likely deposited close to the place where the buildings originally stood: based on their scatter, perhaps some wattle-and-daub structure stood in the vicinity of Features 13 and 11, and 14 and 33. Convenience likely fundamentally determined the disposal practice of pottery and daub fragments, while the context of the unearthed knapped stones hints at more intentional activity.

The study demonstrates that a synergic evaluation of several types of finds to reconstruct the associated past activities may yield important results even in the case of small and perhaps only partially

excavated settlements. This is especially important in the case of the Hunyadihalom culture, where not many settlements are known, and the inner structures of which display vast differences. In this manner, Gelej-Husztly-Arkay-dűlő can perhaps be interpreted as one of the smaller and less structured, self-sufficient, hamlet-like settlements connected to the wider social and trade networks of the MCA.

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Appendix I: Description of the features

Hunyadihalom features

Features 11 and 11/A. Feature 11/A appeared as a light grey soil stain with many Hunyadihalom-style fragments in the topsoil layer at 20–30 m in Trench II. This greyish patch, likely not a feature but rather a natural soil formation phenomenon (Feature 11/A), could not be followed in the yellow subsoil, but a large pit (Feature 11) was found under it, which also contained many MCA fragments. 200 × 155 cm.

Feature 13. Appeared on the surface as a faint soil stain. Medium-sized, round, relatively deep pit at 10–20 m in

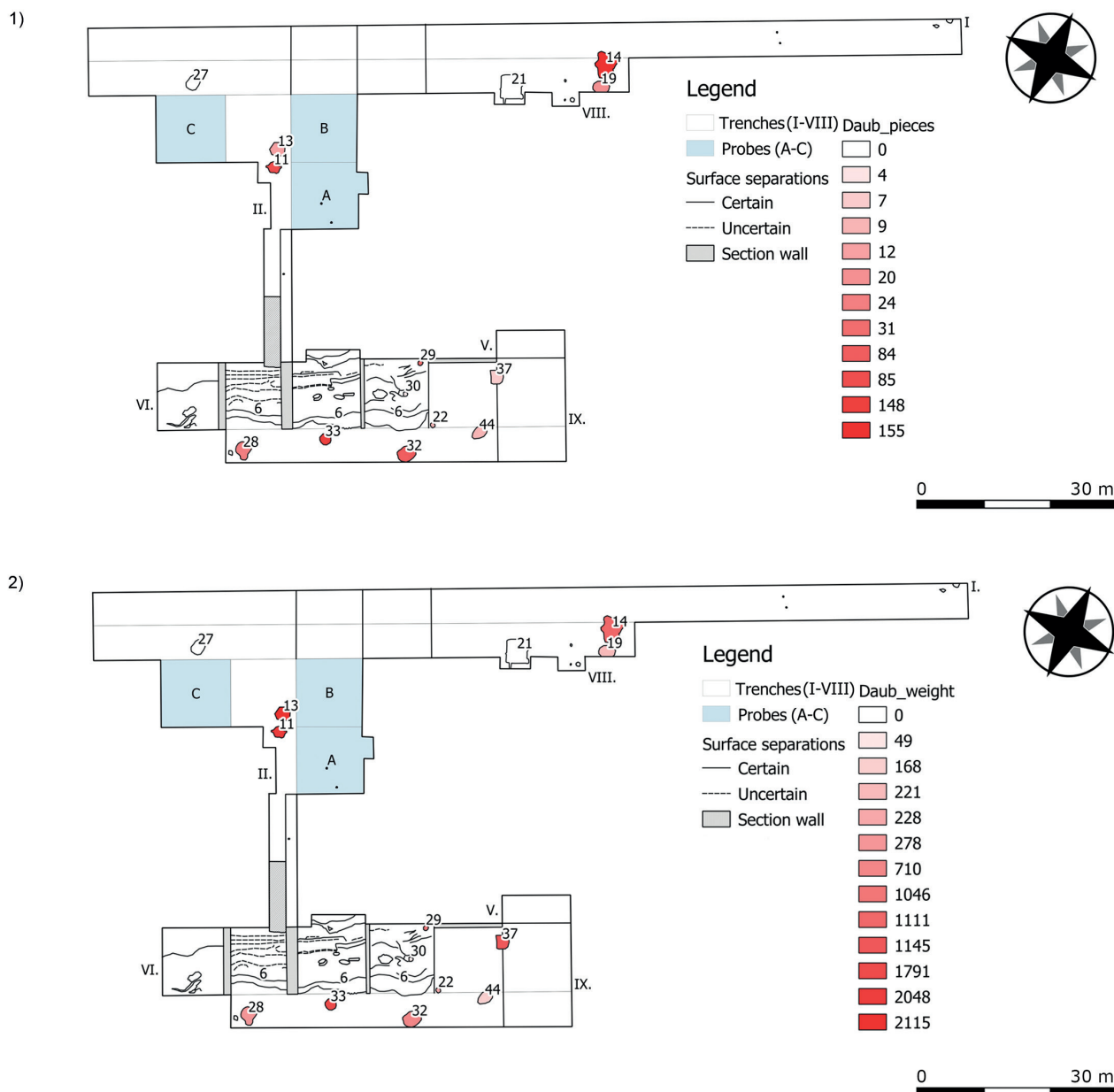


Fig. 29. Distribution of daub fragments in different features. 1: Coloured by number. 2: Coloured by weight (g)

29. kép. Paticstörödékek szóródása a különböző objektumokban. 1: Törödékek darabszáma szerint színezve.

2: Törödékek tömege (g) szerint színezve

Trench II. 156 × 150 cm, depth: 55 cm.

Feature 14. Appeared on the surface as a black soil stain. Large amorphous pit with a significant amount of MCA pottery and a large pile of knapped stones at 80–90 m at the boundary of Trenches I and VIII. 300 × 400 cm.

Feature 19. Relatively large, amorphous pit at 80–90 m in Trench VIII. 225 × 148 cm.

Feature 22. Small pit with no discolouration in the subsoil at 20–30 m in Trench V. It yielded an exceptionally large quantity of MCA pottery, including a whole vessel. 65 × 70 cm.

Feature 28. Amorphous, shallow pit at 0–10 m in Trench IX. 220 × 290 cm, depth: 11 cm.

Feature 29. Relatively small, round pit in the northern part of Trench V. Diameter: 70 cm.

Feature 30. Round pit at 10–20 m in Trench V. Diameter: 57–58 cm.

Feature 32. Appeared on the surface as a soil stain with potsherds. Round, moderately deep pit abounding with MCA pottery at 20–30 m in Trench IX. 270 × 250 cm, depth: 34 cm.

Feature 33. Appeared on the surface as a soil stain with many potsherds. Round, shallow pit at 10–20 m in Trench IX. 177 × 160 cm, depth: 12 cm.

Feature 37. Round, deep well at 30 m in Trench V. Its shaft narrowed down considerably at a depth of about

1.5 m, but no traces of inner lining could be detected. Its find material comprised animal bones and Hunyadihalom-style pottery fragments. It could not be fully excavated due to high groundwater level. Diameter: 187–190 cm, depth: 317 cm.

Feature 44. Oval, moderately deep pit with a deeper and a shallower part in Trench IX. 166 × 187 cm, depth: 33 cm.

Features of younger historical periods with Hunyadihalom-style fragments

Feature 2. Likely a medieval house with remains of a hearth and a single Hunyadihalom-style fragment in its

find material. 168 × 240 cm.

Feature 6. A smaller ditch, parallel to the *Csörsz Ditch*, with only a few MCA fragments in its find material. 2,700 × 52–234 cm.

Feature 21. Rectangular medieval house, with a relatively large number of scattered MCA finds. 330 × 310 cm, depth: 10 cm.

Feature 27. Medieval structure with a few Hunyadihalom-style fragments. 159 × 192 cm.

Notes

- 1 The site lies on the border between two villages, Gelej and Csincse, therefore it appears under different names in different databases. The HNM Archaeology Database refers to it as Gelej-Husztly-Arkay-dűlő (NRAS ID: 16487; <https://archeodatabase.hnm.hu/en/node/33271> [last accessed on 12.03.2025]), while the database of the Herman Ottó Museum refers to it as M3 Csincse-Site 17. In this article, we use the name Gelej-Husztly-Arkay-dűlő.
- 2 The paper is based on the MA dissertation of Zsuzsa Hegedűs, submitted to ELTE in 2021 (Hegedűs 2021).
- 3 It must be noted that according to the field documentation, Feature 25 also yielded MCA pottery, which, however, could not be found in the Herman Ottó Museum, similarly to Feature 34, probably an MCA phenomenon.
- 4 Note that FAMD was used mainly to visualise the results and clustering was not based on its comparison of variables. Types (previously assigned based on the results of k-means and hierarchical/k-prototype clustering) were involved as an active variable, so that the characteristics linked to them showed clear correlation.

REFERENCES

- Agresti, A. 2007: An Introduction to Categorical Data Analysis. Hoboken. <https://doi.org/10.1002/0470114754>
- Allison, P. M. 2002: Introduction. In: Allison, P. M. (ed.), The Archaeology of Household Activities. London, 1–18. <https://doi.org/10.4324/9780203014929>
- T. Biró, K. 1984: Őskőkori és őskori pattintott kőeszközeink nyersanyagának forrásai – Istochniki Syr'ja kamennyh orudij epohi kamnja v Vengrii – Sources of lithic raw materials for chipped implements in Hungary. *Archaeologiai Értesítő* 111, 42–52.
- T. Biró, K. 1988: Distribution of lithic raw materials on prehistoric sites. An interim report. *Acta Archaeologica Academiae Scientiarum Hungaricae* 40, 251–274.
- T. Biró, K. 1989: A lengyeli kultúra dél-dunántúli pattintott kőeszköz-leletanyagainak nyersanyagáról – On the raw material of the chipped stone industry of South-Transdanubian Lengyel culture sites. *Communicationes Archaeologicae Hungariae* 1989, 22–30.
- T. Biró, K. 2008: Kőeszköz-nyersanyagok Magyarország területén. A Miskolci Egyetem Közleménye A sorozat, *Bányászat* 74, 11–37.
- Bittner, B. 2016: A bedőlt falak néma falak? A lenyomatos paticskok vizsgálatának lehetőségei a késő neolitikumban az Alföldön – The fallen walls are silent walls? The possibilities of imprinted daub research in the Late Neolithic Hungarian Plains. *Tisicum, a Jász-Nagykun-Szolnok megyei múzeumok évkönyve* 25, 33–40.
- Blaton, R. E. 1994: Houses and Households. A Comparative Study. Interdisciplinary Contributions to Archaeology. New York. <https://doi.org/10.1007/978-1-4899-0990-9>

- Bognár-Kutzián, I. 1963: The Copper Age Cemetery of Tiszapolgár–Basatanya. *Archaeologia Hungarica* XLII. Budapest.
- Bognár-Kutzián, I. 1969: Probleme der mittleren Kupferzeit im Karpatenbecken. *Študijské Zvesti Archeologického Ústavu Slovenskej Akadémie Vied* 17, 31–60.
- Bognár-Kutzián, I. 1972: The Early Copper Age Tiszapolgár Culture in the Carpathian Basin. *Archaeologia Hungarica* XLVIII. Budapest.
- Bognár-Kutzián, I. 1973: The Relationship between the Bodrogkeresztúr and the Baden Cultures. In: Chropovský, B. (ed.), *Symposium Über die Entstehung und Chronologie der Badener Kultur*. Bratislava, 31–50.
- Brukner, B. 1970: Die Necropole in Vajsa. Ein neuer Beitrag zur Kulturellen und chronologischen Determinierung des Äneolithikums Südostpannoniens. *Archaeologia Iugoslavica* 11, 1–14.
- Brummack, S. 2015: New radiocarbon dates from Eastern Slovakia. The cases of Malé Raškovce and Barca Baloty. In: Hansen, S., Raczky, P., Anders, A., Reingruber, A. (eds.), *Neolithic and Copper Age between the Carpathians and the Aegean Sea. Chronologies and Technologies from the 6th to the 4th Millennium BCE*. *Archäologie in Eurasien* 31. Bonn, 1–19.
- Buko, A. 2008: Ceramology: What is it and why? *Archaeologia Polona* 46, 15–27.
- Costin, C. L. 1991: Craft specialization: Issues in defining, documenting, and explaining the organization of production. *Archaeological Method and Theory* 3, 1–56.
- Craig, O. E., Chapman, J., Figler, A., Patay, P., Taylor, G., Collins, M. J. 2003: ‘Milk Jugs’ and other myths of the Copper Age of Central Europe. *European Journal of Archaeology* 6, 251–265. <https://doi.org/10.1177/146195710300600303>
- Danis, G. 2005: A Borsodi-Mezőség: Egy Táj Története a Régi Helynevek Tükrében. Szeged.
- DeBoer, W. R. 1988: Subterranean storage and the organization of Surplus: The view from Eastern North America. *Southeastern Archaeology* 7/1, 1–20.
- Ecsedy, I. 1973: Újabb adatok a tiszántúli rézkor történetéhez – On the factors of the Copper Age development in Eastern Hungary. *Békés Megyei Múzeumi Közlemények* 2, 3–27.
- Everitt, B. S., Landau, S., Leese, M., Stahl, D. 2016: *Cluster Analysis*. Chichester. <https://doi.org/10.1192/bjp.120.557.474>
- Fábián, Sz., Csippán, P., Daróczi-Szabó, M. 2013: Hajléktalan badeniek? Háztartások lokalizációjának lehetőségei Balatonkeresztúr-Réti-dűlő késő rézkori lelőhelyén – Homeless Baden people? The possibilities of the localization of households on a Late Copper Age site at Balatonkeresztúr-Réti-dűlő. MOMOSZ VII. Őskoros Kutatók VII. Összejövétele, 2011. március 16-18. Százhalombatta, Matrica Múzeum. *Ősrégészeti Levelek* 13, 104–138.
- Faragó, N., Mester, Zs., Király, A. 2021: The knapped stone assemblage from Boldogkőváralja in the light of a new statistical evaluation. *Studies commemorating Jacques Tixier. Litikum* 7–8, 55–70. <https://doi.org/10.23898/litikuma0025>
- Fischl, K. 1995: Előzetes jelentés a Csörsz-árok kutatásáról Csincsén. *Somogyi Múzeumok Közleményei* 11, 33–46.
- P. Fischl, K., Holló, Zs., Lengyel, Gy., Lugosi, P., Szűcs, T. 2000: Rézkori zoomorf edény Csincséről – Zoomorphic vessel from the Copper Age found at Csincse. *Herman Ottó Múzeum Évkönyve* 39, 95–102.
- Forte, V. 2022: Use activities, wear mechanisms and residues: The use alterations variability on pottery in light of the latest research advancements. In: Vuković, J., Bikić, V. (eds.), *Pottery Function and Use: A Diachronic Perspective*. Belgrade, 13–35.
- Forte, V., Nunziante Cesaro, S., Medeghini, L. 2018: Cooking traces on Copper Age pottery from Central Italy: An integrated approach comprising use wear analysis, spectroscopic analysis and experimental archaeology. *Journal of Archaeological Science: Reports* 18, 121–138. <https://doi.org/10.1016/j.jas-rep.2017.12.052>

- Foster, C. P., Parker, B. J. 2012: Introduction: Household archaeology in the Near East and beyond. In: Parker, B. J., Foster, C. P. (eds.), *New Perspectives on Household Archaeology*. Winona Lake, 1–12.
- Gyucha, A. 2009: A Multi-scalar approach to settlement pattern analysis: The transition from the Late Neolithic to the Early Copper Age on the Great Hungarian Plain. In: Thurston, T., Salisbury, R. (eds.), *Re-imagining Regional Analysis: The Archaeology of Spatial and Social Dynamics*. Newcastle upon Tyne, 100–129.
- Hally, D. J. 1986: The identification of vessel function: A case study from Northwest Georgia. *American Antiquity* 51/2, 267–295. <https://doi.org/10.2307/279940>
- Hartigan, J. A., Wong, M. A. 1979: Algorithm AS 136: A K-means clustering algorithm. *Applied Statistics* 28, 100–108. <https://doi.org/10.2307/2346830>
- Hegedűs, Zs. 2021. A Hunyadihalom-kultúra egy lelőhelyének településrégészeti vizsgálata – M3 Csincse–17. lelőhely. Master's Thesis. Eötvös Loránd University, Budapest.
- Hegedűs, Zs., Kalli, A., K. Tutkovics, E. 2023: Tell-tale fragments: The pottery use of a 6000-year-old community at Bükkábrány – Beszédes cserepek: Egy 6000 éves közösség kerámiahasználata Bükkábrány határában. *Hungarian Archaeology* 12/4, 1–9. <https://doi.org/10.36338/ha.2023.4.2>
- Hegedűs, Zs., Kreiter, A., Viktorik, O., Máté, L., Kalli, A., K. Tutkovics, E. 2025: The use of statistical tools in the reconstruction of pottery function. A case study from the Middle Copper Age Carpathian Basin. *Journal of Archaeological Science: Reports* 61, Article 104922. <https://doi.org/10.1016/j.jasrep.2024.104922>
- Hendon, J. A. 2000: Having and holding: Storage, memory, knowledge, and social relations. *American Anthropologist* 102/1, 42–53. <https://doi.org/10.1525/aa.2000.102.1.42>
- Henrickson, E. F., McDonald, M. M. A. 1983: Ceramic form and function: An ethnographic search and an archaeological application. *American Anthropologist, New Series* 85/3, 630–643. <https://doi.org/10.1525/aa.1983.85.3.02a00070>
- Holló, Zs., Lengyel, Gy., Mester, Zs. 2001: Egy magyar kőeszköz életútja. Magyar kifejezések a technológiai vizsgálatokhoz 1. *Ősrégészeti Levelek* 3, 51–57.
- Holló, Zs., Lengyel, Gy., Mester, Zs., Szolyák, P. 2004: Egy pattintott kőeszköz vizsgálata. Magyar kifejezések a technológiai vizsgálatokhoz 3. *Ősrégészeti Levelek* 6, 62–80.
- Horváth, L. A. 1994: Beiträge zur Chronologie der Mittleren Kupferzeit in der Grossen Ungarischen Tiefebene. *Acta Archaeologica Academiae Scientiarum Hungaricae* 46, 73–105.
- Inizan, M. L., Reduron-Ballinger, M., Tixier, J. 1991: Technology and Terminology of Knapped Stone. *Nanterre*.
- Kalicz, N. 1980: Újabb adatok a rézkori hunyadihalmi csoport időrendjéhez. *Szolnok Megyei Múzeumok Évkönyve* 1979–1980, 43–62.
- Kalla, G. 2013: A háztartások régészete mint kutatási probléma – Household archaeology as a research problem. MOMOSZ VII. Őskoros Kutatók VII. Összejövétele, 2011. március 16–18. Százhalombatta, Matrica Múzeum. *Ősrégészeti Levelek* 13, 9–36.
- Kalli, A., K. Tutkovics, E. 2017: Rocky times. Archaeological research on the area of the Bükkábrány Lignite Mine in the valley of the Csincse Stream – Meddő idők. Régészeti kutatások a Csincse-patak völgyében a bükkábrányi lignitbánya területén. *Hungarian Archaeology* 6/1, 1–12.
- Kovács, K., Márkus, G., Váczi, G. 2006: 173. Hajdúböszörmény, Ficsori-tó-dűlő. Régészeti kutatások Magyarországon 2005, 247–248.
- Kovács, T. 2005: Paticsok: a kerámia és az üledék között. *Archeometriai Műhely* 2, 24–30.
- Kramberger, B. 2015: Forms, function, and use of Early Eneolithic pottery and settlement structures from Zgornje Radvanje, Slovenia. *Documenta Praehistorica* 42, 231–250. <https://doi.org/10.4312/dp.42.16>
- Lê, S., Josse, J., Husson, F. 2008: FactoMineR: An R Package for Multivariate Analysis. *Journal of Statistical Software* 25/1, 1–18. <https://doi.org/10.18637/jss.v025.i01>

- Mazzucato, C. 2019: Socio-material archaeological networks at Çatalhöyük a community detection approach. *Frontiers in digital humanities* 6/8. <https://doi.org/10.3389/fdigh.2019.00008>
- McQuitty, L. L. 1966: Similarity analysis by reciprocal pairs for discrete and continuous data. *Educational and Psychological Measurement* 26/4, 825–831. <https://doi.org/10.1177/001316446602600402>
- Mészáros, P., Paluch, T. 2009. Egy középső rézkori település részlete Maroslele határában – Part of a Middle Copper Age settlement in the vicinity of Maroslele. *Móra Ferenc Múzeum Évkönyve, Új Folyam* 2, 23–39.
- Palaguta, I. 2022: The structure of archaeological and functional ceramic assemblages of Cucuteni–Tripolye sites: Precucuteni, Cucuteni A – Tripolye A, BI periods. In: Vuković, J., Bikić, V. (eds.), *Pottery Function and Use: A Diachronic Perspective*. Belgrade, 279–299.
- Parkinson, W. A., Gyucha, A., Yerkes, R. W. 2021: The end of the Neolithic and the dawn of the Copper Age. In: Parkinson, W. A., Gyucha, A., Yerkes, R. W. (eds.), *Bikeri. Two Copper Age Villages on the Great Hungarian Plain*. *Monumenta Archaeologica* 46. Los Angeles, 381–387. <https://doi.org/10.2307/j.ct-v2b07vr9.24>
- Patay, P. 1979: A Tiszavalk-tetesi rézkori temető és telep II. A telep – Kupferzeitliches Gräberfeld und Siedlung von Tiszavalk-Tetes. *Folia Archaeologica* 30, 27–53.
- Patay, P. 2005: Kupferzeitliche Siedlung von Tiszalúc. *Inventaria Praehistorica Hungariae* XI. Budapest.
- Patay, P. 2008: A bodrogkeresztúri kultúra belső időrendjéről – Über der innere Chronologie der Bodrogkeresztúr-Kultur. *Archaeologiai Értesítő* 133, 21–48. <https://doi.org/10.1556/archert.133.2008.1.2>
- Patay, R. 2004: Középső rézkori temetkezések és telepnyom Mezőkövesd, Patakra járó-dűlőből. *Herman Ottó Múzeum Évkönyve* 43, 33–57.
- Pelisiak, A. 2006: The exploitation and distribution of flints from the central part of Polish Jura in the Late Neolithic times. *Analecta Archaeologica Ressorviensia* 1, 73–86.
- Porčić, M. 2012: De facto refuse or structured deposition? House inventories of the Late Neolithic Vinča culture. *Starinar, Scientific Journal of the Institute of Archaeology in Belgrade* 62, 19–43. <https://doi.org/10.2298/sta1262019p>
- Posit Team 2022: RStudio: Integrated Development Environment for R. Posit Software, PBC, Boston. <http://www.posit.co/> (last accessed: 10.11.2024).
- R CoreTeam 2022: R: A language and environment for statistical computing. R Foundation for Statistical Computing, Vienna. <https://www.R-project.org/> (last accessed: 10.11.2024).
- Raczky, P. 1988: A Tisza-vidék kulturális és kronológiai kapcsolatai a Balkánnal és az Égeikummal a neolitikum, rézkor időszakában. Újabb kutatási eredmények és problémák. *Szolnok*.
- Raczky, P. 1991: New data on the southern connections and relative chronology of the „Bodrogkeresztúr-Hunyadi halom” Complex. In: Lichardus, J. (ed.), *Die Kupferzeit Als Historische Epoche: Symposium Saarbrücken Und Otzenhausen 6-13.11.1988*. Bonn, 329–346.
- Raczky, P., Siklósi, Zs. 2013: Reconsideration of the Copper Age chronology of the eastern Carpathian Basin: A Bayesian approach. *Antiquity* 87/336, 555–573. <https://doi.org/10.1017/S0003598X00049127>
- Rani, T. 2002: Mesoamerican house lots and archaeological site structure: Problems of inference in Yaxcaba, Yucatan, Mexico, 1750–1847. In: Allison, P. M. (ed.), *The Archaeology of Household Activities*. London, 78–100.
- Rice, P. M. 1987: *Pottery Analysis. A Sourcebook*. Chicago, London. <https://doi.org/10.7208/chicago/9780226923222.001.0001>
- Roman, P. 1971: Strukturänderungen des Endäneolithikums im Donau-Karpaten-Raum. *Dacia* 15, 31–136.
- Roux, V. 2019: *Ceramics and Society. A Technical Approach to Archaeological Assemblages*. Cham. <https://doi.org/10.1007/978-3-030-03973-8>

- Schiffer, M. B., Hollenback, K. L., Skibo, J. M., Walker, W. H. 2010: Behavioral Archaeology: Principles and Practice. London. <https://doi.org/10.4324/9781315541242>
- Schréter, Z. 1916: Néhány adat a borsod-hevesi Bükk-hegység ősrégészetéhez – Beiträge zur Archäologie des Borsod-Heveser Bükkgebirges. *Barlangkutatás* 4, 86–88.
- Shaw, I. 2012: The archaeology of refuse disposal in New Kingdom Egypt: Patterns of production and consumption at El-Amarna. *Talanta. Proceedings of the Dutch Archaeological and Historical Society* 44, 315–333.
- Siklósi, Zs., Szilágyi, M. 2021: Culture, period or style? Reconsideration of Early and Middle Copper Age chronology of the Great Hungarian Plain. *Radiocarbon* 63/2, 585–646. <https://doi.org/10.1017/RDC.2020.115>
- Simán, K. 2000: Az őskőkori pattintott kőeszköz gyártása és szakkifejezései – Manufacture of Palaeolithic stone tools and the technical terms. *Folia Archaeologica* 48, 7–26.
- Šiška, S. 1972: Gräberfeld der Lažňany-Gruppe in der Slowakei. *Slovenská Archeológia* 20/1, 107–176.
- Skibo, J. M. 2013: Understanding Pottery Function. *Manuals in Archaeological Method, Theory and Technique*. New York. https://doi.org/10.1007/978-1-4614-4199-1_1
- Skibo, J. M., Schiffer, M. B. 2008: People and Things. A Behavioral Approach to Material Culture. New York. <https://doi.org/10.1007/978-0-387-76527-3>
- Smith, M. F. J. 1988: Function from whole vessel shape: A method and an application to Anasazi Black Mesa, Arizona. *American Anthropologist, New Series* 90/4, 912–923. <https://doi.org/10.1525/aa.1988.90.4.02a00090>
- Sørensen, M. L. S. 2015: 'Paradigm Lost' – on the state of typology within archaeological theory. In: Kristiansen, K., Smejda, L., Turek, J. (eds.), *Paradigm Found. Archaeological Theory Present, Past and Future. Essays in Honour of Evžen Neustupný*. Oxford, Philadelphia, 84–94. <https://doi.org/10.2307/j.ctvh1dpc1.10>
- Szakmány, Gy. 2008: Kerámia nyersanyagok, kerámiák a mai Magyarország területén a neolitikumtól a XVIII. század végéig. *A Miskolci Egyetem Közleménye A sorozat, Bányászat* 74, 49–90.
- Török, Gy. 1935: Bronzkori telep a Hunyadi-halomban. *Dolgozatok a Magyar Királyi Ferencz József Tudományegyetem Archaeologiai Intézetéből* 10, 153–156.
- Tóth, J., Kókai, S., Rakonczai, J., Dövényi, Z., Becsei, J., Gulyás, L. 2012: Kelet-Magyarország. In: Dövényi, Z. (ed.), *A Kárpát-Medence Földrajza*. Budapest, 812–891. <https://doi.org/10.1556/9789630598026>
- Vieugué, J., Garfinkel, Y., Barzilai, O., van den Brink, E. C. M. 2016: Pottery function and culinary practices of Yarmukian societies in the late 7th millennium calBC: First results. *Paléorient* 42/2, 97–115. <https://doi.org/10.3406/paleo.2016.5722>
- Voss, B. L., Allen, R. 2010: Guide to ceramic MNV calculation qualitative and quantitative analysis. *Technical Briefs in Historical Archaeology* 5, 1–9.
- Vuković, J., Bikić, V. 2022: Pottery function in the archaeology of the Continental Balkans: An overview. In: Vuković, J., Bikić, V. (eds.), *Pottery Function and Use: A Diachronic Perspective*. Belgrade, 37–66.
- Whittaker, J. C. 1994: *Flintknapping: Making and Understanding Stone Tools*. Austin. <https://doi.org/10.7560/790827>
- Wilk, S. 2017: New data about chronology of the impact of the Hunyadihalom-Lažňany horizon on Younger Danubian cultures north of the Carpathian Mountains. *Recherches Archéologiques Nouvelle Serie* 8, 7–27.

A HUNYADIHALOM-KULTÚRA LELŐHELYE GELEJ-HUSZTY-ARKAY-DŰLŐ LELŐHELYEN

Összefoglalás

A tanulmány egy 1994-ben, Gelej-Husztly-Arkay-dűlő lelőhelyen feltárt, a Hunyadihalom-kultúrához köthető telep anyagának feldolgozását mutatja be. Bár a lelőhely a kultúrában általánosnak tekinthető, szórt és kevésbé struktúrált települési képet mutat – összesen 12 objektum és nagy mennyiségű szórványanyag jelzi a középső rézkori megtelepedést –, az alkalmazott módszerek mégis lehetővé tették, hogy részletes képet vázoljunk fel ennek a közösségnek az életéről. A rendelkezésre álló egy darab nem AMS radiokarbon adat alapján a lelőhely 3964–3826 calBC (1 σ) körül létezhetett, ami a Hunyadihalom-kultúra korai időszakára tehető. A kerámiaanyag feldolgozása az anyag mindösszesen 31,6%-át értelmezni képes tipológiai megközelítés mellett egy statisztikai módszerekre alapozó funkcionális rekonstrukciós módszerrel történt, melynek köszönhetőn a töredékek 90,6%-a értelmezhetővé vált. A pattintott kőanyag vizsgálata technotipológiai megközelítéssel történt, amit kiegészített a nyersanyagtípusok meghatározása – ennek segítségével a telepen zajló eszközkészítés és -használat számos aspektusát fel lehetett tárni. A paticstöredékek feldolgozása is megtörtént, ezek alapján feltételezhetjük, hogy felmenő falú építmények is állhattak a telepen. A különböző módszerekkel történő leletanyag-feldolgozás eredményei háztartásrégészeti szempontokat figyelembe véve kerültek kiértékelésre, elsősorban azt szem előtt tartva, hogy minden régészeti kontextusból előkerülő anyagi maradvány komplex társadalmi folyamatok eredményeként keletkezett, és ezek a folyamatok – bizonyos mértékig legalábbis – rekonstruálhatóak.

Az eredmények alapján az i.e. 4. évezred elején Gelej határában egy kisebb, a Hunyadihalomra jellemző anyagi kultúrát hordozó közösség hozott létre egy valószínűleg hosszabb ideig használt telepü-

lést. Ennek teljes kiterjedéséről nincsen adatunk, de az, hogy a feltárás magterületétől mintegy 90 méterre húzott kutatóárokából is kerültek elő rézkori szórványleletek, feltételezi, hogy talán nagyobb lehetett a telep. Az itt élő közösség tagjai vesszőfonott, agyaggal bevont épületeket építettek, kutatástak az ivóvízellátás biztosítására, helyben készítették lokális nyersanyagokból a kőeszközeiket, és kerámiakészletüket úgy állították össze, hogy minden szükségletüket kielégítse. Ez utóbbi összetételéből arra is következtethetünk, hogy jelentős élelemtermelő tevékenységet is végeztek, a terményeket nagyméretű edényekben tárolták, ételeiket változatos konyhatechnikákkal készítették el, valamint fontosak lehettek számukra a közösségi étkezések, mint a csoportkohéziót megerősítő események. A lelettipusok szóródásából valamilyen szintig rekonstruálni lehet a közösség hulladékkezelési stratégiáit is: a kerámiaanyagok szóródása egyenetlen, néhány objektumra koncentrálódik, amiből arra következtethetünk, hogy szemétdombokon gyűjthették a törött, használhatatlan edényeket, és ezek anyagát meghatározott időközönként helyezték el a gödrökben. A paticstöredékek szóródásából a felmenő falú épületek esetleges helyére lehet következtetni: valószínűleg állhatott egy ilyen struktúra a 13. objektum közelében például. A kőanyagok eldobásában egy érdekes jelenséget lehetett megfigyelni: a nyers-anyagdarabokat, technológiai hulladékokat, és kész eszközöket is összegyűjtötték valamilyen okból, és ezeket egy kupacban, a 14. objektumban deponálták. Annak ellenére, hogy az anyagi nyomok arra utalnak, hogy a közösség teljes mértékben önellátó volt, mégis aktív részese volt a középső rézkori kiterjedt szociális és kereskedelmi hálózatoknak, ahogy arra például a távolsági kőeszköz-nyersanyagok megléte is utal.