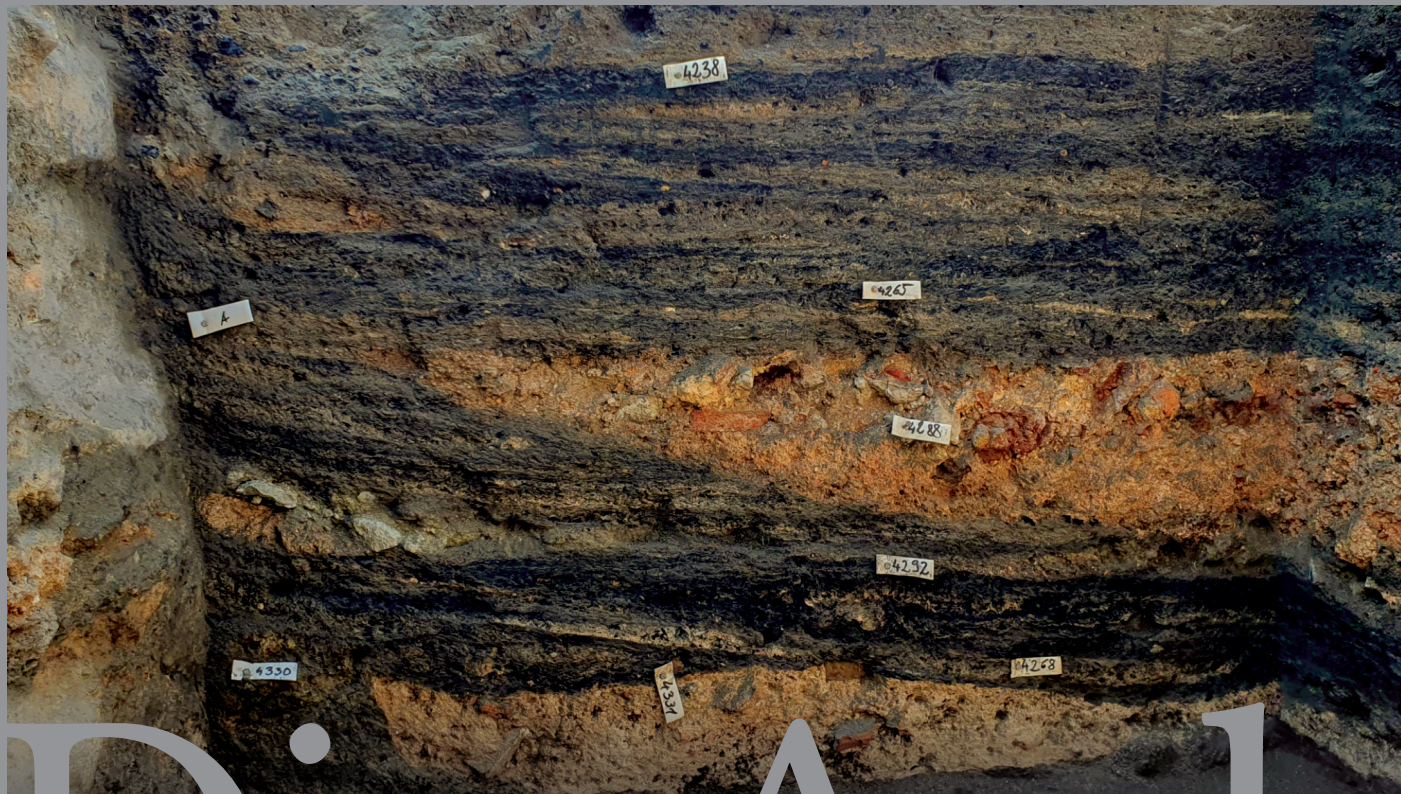


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The concept of the ancient homeland of the Fenno-Ugric-speaking peoples
in light of complex research

Interpretation possibilities of Middle Neolithic cave usage patterns

The Neolithic finds from the 2019 excavation in the Baradla Cave in Aggtelek

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Abstract: The more than 150-year research of the Baradla Cave in Aggtelek continued with a rescue excavation in 2019, carried out by a team from the Institute of Archaeological Sciences of the Eötvös Loránd University, and reaching the more difficult-to-access inner parts of the cave system. This paper presents the preliminary results of the evaluation of the pottery, stone and animal bone record of the Middle Neolithic Bükk culture, collected during this excavation. Outlining the special natural atmosphere of the cave and surveying its unusual effect on the people venturing there represent a pivotal addition enabling the contextual interpretation of the finds. In addition, a brief overview is given of the diverse ways of how caves were used throughout Europe, organised according to three main aspects (economic, burial, and ritual), which may help get one closer to understanding the prehistoric use of the Baradla Cave.

Keywords: Baradla Cave, Middle Neolithic, Bükk culture, cave archaeology

The Baradla–Domica Cave system

The Aggtelek–Rudabánya Karst Region—formerly Gömör–Tornai Karst—covers approximately 60,000 hectares between the Sajó and Bódva rivers. It is geographically homogeneous and divided into rocks, arms, troughs, sinkholes, and karst springs. More than 700 caves are hidden in this area.¹

The Baradla-Domica cave system stretches on both sides of the present-day Hungarian–Slovak border (Fig. 1). The southern part, which is in northeast Hungary today, is known as the Aggtelek Karst, while the northern part, the Slovak Karst, is in the southeastern part of Slovakia.² It has long been a question whether the two parts are connected. The first researchers in 1808 believed the answer to be yes,³ but decisive evidence was obtained only in 1929, when researchers successfully reached the Baradla Cave from the Slovakian side and proved the cave system up to the Devil’s Hole (Čertova diera) to be longer than 25 km (25,868 m) and forms a single geographical, genetic, and hydrological unit.⁴ The connection between the parts is also clearly reflected by the archaeological material.⁵

1 MÓGA – BELLA 2015, 63.

2 GRUBER *et al.* 2012, 125; GRUBER – GAÁL 2015, 11.

3 GYURICZA – GAÁL 2015, 93.

4 GYURICZA – GAÁL 2015, 11; HOLL 2007, 1; GRUBER – GAÁL 2015, 11–12.

5 Many researchers have been working in different parts of the cave from the end of the 19th century, including Baron Jenő Nyáry (his book, published in 1881, is still relevant as a unique summary), Ottokár

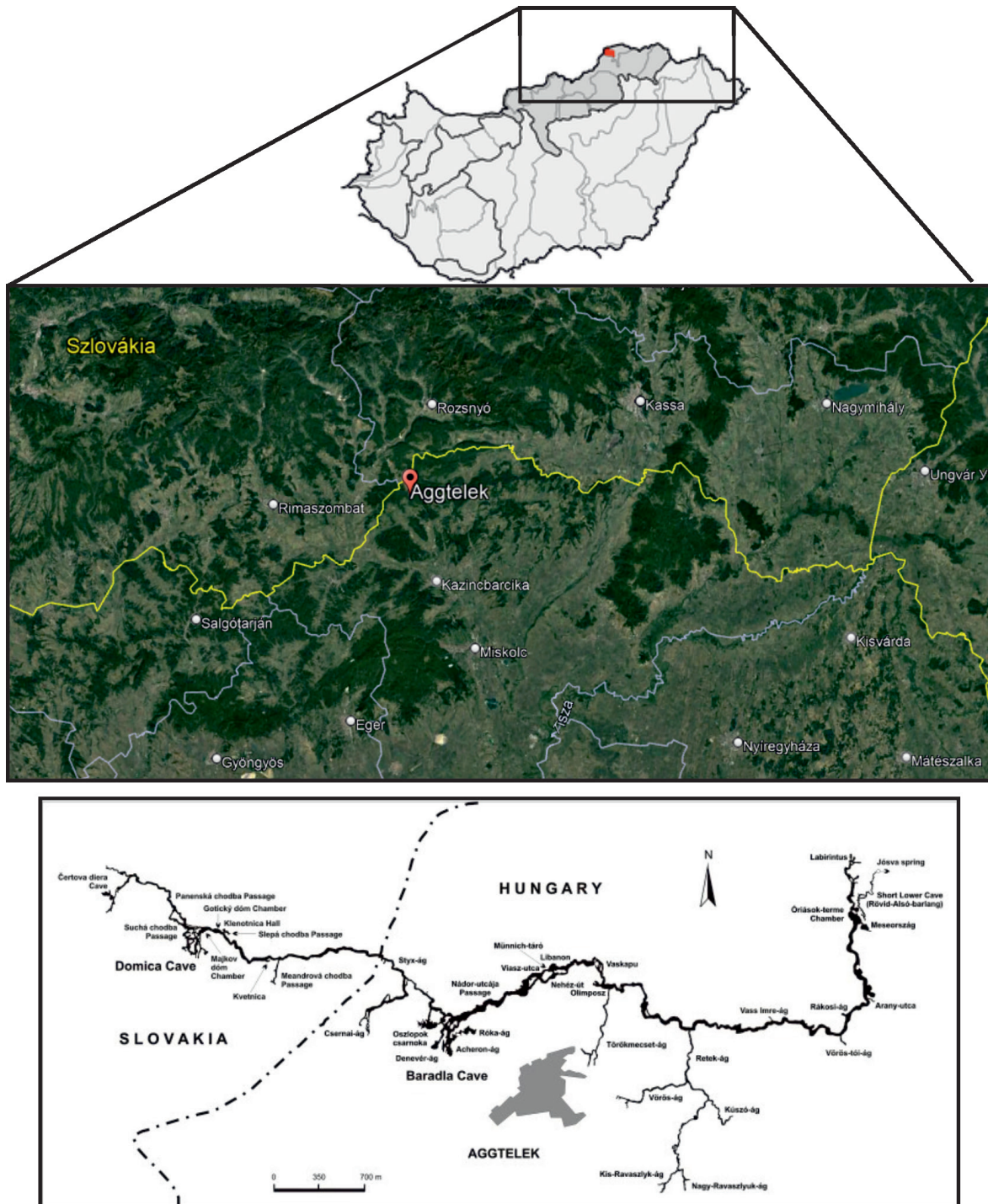


Fig. 1. Map of the Baradla-Domica Cave system (https://epa.oszk.hu/03100/03192/00021/pdf/EPA03192_karsztfejlodes_2016_21_187-201.pdf).

The Styx, the cave's temporary stream (with significantly reduced activity today) flows through the entire cave system towards the west and resurfaces at the Jósua Spring in Jósvafő.⁶

Kadić, Károly Siegmeth, Lajos Márton, László Vértes, József Korek, Pál Patay, Erzsébet Patek, Tibor Kemenczei, Jan Lichardus, Gábor Rezi Kató and many more. For a more detailed overview of the research history of the site, see [HOLL 2007](#), 2–6, [LACZI 2011](#), 41–75.

⁶ GRUBER – HAVIAROVÁ 2015, 183, 185.

73

The cave system has eleven known entrances today, several of which are man-made. The main entrance at Aggtelek (the most important for the 2019 excavations) is at 332 m a.B.s.l., at the bottom of a steep and extremely spectacular cliff (Fig. 3.1).⁷ The entrance is relatively narrow. Stones fallen from above could have made entering the cave difficult or even block the entrance.⁸ In addition to collapse, the debris accumulated at the entrances attests to fragmentation caused by the stretching effect of roots and frost. The elevations visible today right of the entrance were once connected parts; most strata in them were destroyed during landscaping (earlier, those arriving here had to climb these mounds and descend to the entrance). The debris accumulated outside also entered the cave, forming a long, spreading slope of debris that one meets upon entering the cave.⁹

Chronology

The earliest human presence in the Baradla–Domica cave system has been dated to the second half of the Middle Neolithic: finds of the Tiszadob group, a young Alföld Linear Pottery Culture (ALPC) unit, were discovered there, while the entire area of the cave also abounds with Bükk-style find material.¹⁰ After a relatively long hiatus, the cave was used again in the Bronze Age, and Iron Age finds were also discovered there.

The radiocarbon age of the oldest burials dated to the transition of the Tiszadob and Bükk complexes (5303 (95.4 %) 5057 cal BC and 5296 (95.4 %) 5046 cal BC) may also mark the time when the Bükk style emerged. The sample taken from a grave with Bükk AB-style pottery in Sajószentpéter-Kövecses proved to be older than expected (5293 (95.4%) 5026 cal BC). This result can be interpreted in many ways: perhaps the innovations in pottery decoration spread at dissimilar paces in diverse regions, or the development of the decorative style was much faster than assumed before. It is also possible that the stylistic phases outlined based on the characteristics of the pottery decoration do not match the Bükk A–C typochronological phases.¹¹

The radiocarbon data obtained from samples from a Late Neolithic–formative Tisza environment at Felsővadász-Várdomb, as well as the discovery of late Szakálhát fragments at Bükkaranyos-Földvár corroborate previous assumptions that the Bükk culture persisted into the beginning of the Late Neolithic.¹² Overall, we need more absolute data from closed contexts to date the beginning, internal periods, and end of the Bükk style, which may have emerged at different times on each site.

Apart from the usual samples, the cave provides a unique source for radiocarbon dating. Human presence (firing) left marks not only in the close areas of the fires but also in the stalactite. These marks appear as dark or black layers of non-carbonated organic compounds and carbon particles (soot) produced by wood burning at approximately 400 °C. Samples taken from these layers in the Domica Cave were AMS dated to 5350 (68.2 %) 5220 cal BC (Dom S2) and 4670 (68.2 %) 4540 cal BC (Dom S1), respectively;¹³ Baradla Cave is also suitable for such measurements (Fig. 3.2).

7 GRUBER – GAÁL 2015, 13.

8 GAÁL *et al.* 2015, 157.

9 Find material from the Late Bronze Age, the La Tène Period and the Árpád Age were also found in the layers above the Neolithic settlement, but features related to these could not be observed; see REZI KATÓ 2015, 335–336.

10 HOLL 2007, 279.

11 CSENGERI 2013, 207–210; CSENGERI 2015, 136.

12 CSENGERI 2013, 210.

13 The several hundred-year gap allows several interpretations. Communities using Bükk style pottery may have been present in the cave for many centuries, but there may have been differences in the intensity of use and the areas they actually used within the cave. It is also possible that the use was

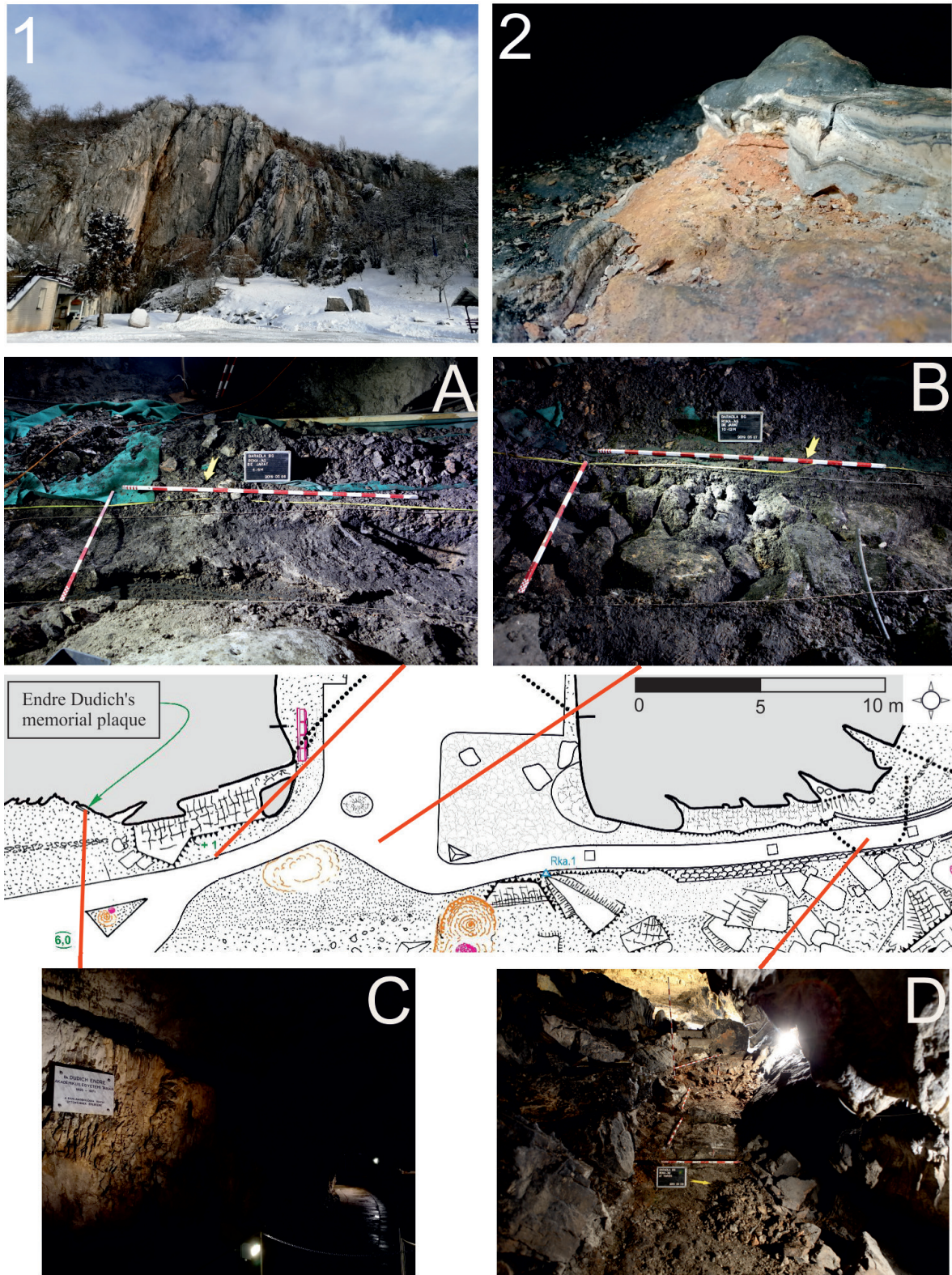


Fig. 3. The main entrance (1) and the traces of prehistoric cave use (2). The *Bejárat* and the *Áttörés* on the survey map of the Aggtelek section of the Baradla Cave. A – *Bejárat* 4–6 m, B – *Bejárat* 10–12 m, C – memorial plaque of Endre Dudich, D – *Áttörés*.

The 2019 excavation¹⁴

This paper presents an evaluation of the Middle Neolithic Bükk-style pottery and the related stone and animal bone record recovered from the Baradla Cave by a rescue excavation preceding a walkway's renovation in 2019.¹⁵ The fieldwork, led by Gábor V. Szabó, Balázs Holl, and Artúr Ádám Nyírő, was carried out in multiple sessions between April and July. The affected part of the cave included all spaces from the *Teknősbéka-terem* [Turtle Room] to the room of the former *Biológiai labor* [Biological Laboratory], starting approximately 150 m from the main entrance in Aggtelek and involving four main zones (Fig. 2):

- 1) *Bejárat* [Entrance], a 16 m long section leading from the Dudich memorial plaque in the flatter and lower part of the *Teknősbéka-terem* to the *Biológiai labor*;
- 2) *Áttörés* [Breakthrough], a 10 m long footpath leading through the rubble of huge stones 2–3 m above the entrance in the *Teknősbéka-terem*;
- 3) *Folyosó* [Corridor], a 30 m long, gradually narrowing corridor after a left turn at a right angle;
- 4) *Biológiai labor* [Biological Laboratory], a large room, 20 m long and 8 m wide on average.

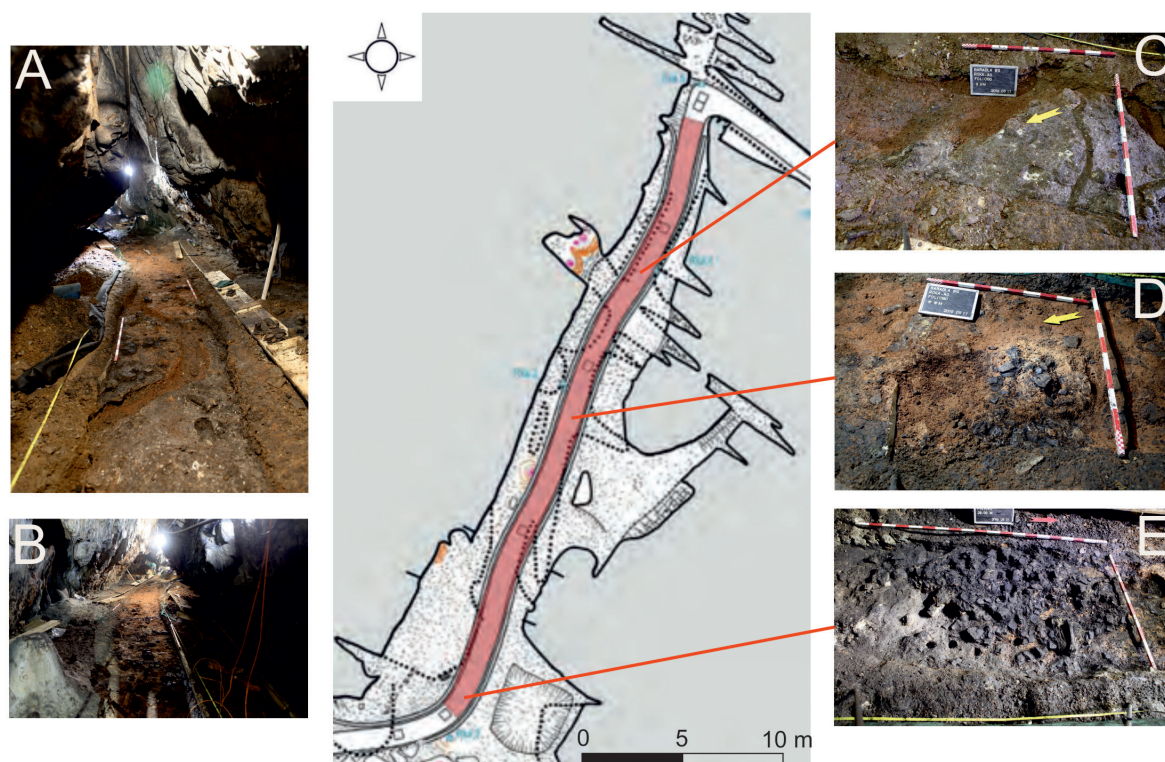


Fig. 4. The *Folyosó* on a survey map of the Aggtelek section of the Baradla Cave. A – photo taken from the south, B – photo taken from the north, C – 8–9 m, D – 15–16 m, E – 28–30 m.

intermittent (chronological data indicate separate periods with gaps between them). Because fragments related to all phases of the Bükk style were found in the cave, the author considers the first hypothesis to be more likely; however, many more samples from areas closer to the most used parts are needed to prove that. We need absolute data from the settlements (especially from closed contexts, e.g., burials) for a broader understanding of how the cave was used; see [GRADZIŃSKI et al. 2007](#), 41–43; [CSENGERI 2013](#), 207.

¹⁴ For a more detailed description of the archaeological work and the cave, see [Nyírő et al. 2022](#).

¹⁵ This article is a shortened and edited version of the author's MA thesis completed in 2022.

These zones follow each other directly. The width of the excavated area in the first three varied between 1 and 2 m. The fourth zone, *Biológiai labor*, was almost completely excavated; the material was collected in 1 m wide areas. The trenches were deepened to 30–40 cm or more; the removed layers included ones containing the archaeological material.¹⁶

A part of the concrete pavement laid in the 1960s—without any preliminary excavation—had already been demolished, but experts managed to determine the original location of the findings cemented to the bottom of the concrete slabs.

Description of the main locations¹⁷

Bejárat

A zone with a heavily rugged but roughly flat floor densely strewn with rocks; it might have been much more uneven in prehistoric times (Fig. 3.A–C). Significant fill layers attest to the 20th-century landscaping works in this area. Red Pleistocene gravel sediment was found in the trench at a relative depth of 30–40 cm, covered by Holocene layers containing mainly Neolithic and Bronze Age artefacts. While vertically, the finds of the two eras were mixed, they could be separated horizontally at certain points of the metre-wide trenches.

Áttörés

This area rich in stone rubble (Fig. 3.D). Large-scale landscaping also disturbed this part; the finds were recovered from a 30–40 cm thick, loose layer of stones and clay under a layer of redeposited stone rubble. It is unknown whether they were there to start with or got there, into a secondary position, with the stone rubble. They could have also been moved by the floods of the cave stream in the *Róka-ág*. Some of them certainly ‘belong here’, as confirmed by the continuous black layer observed under one of the stone blocks in an area of 50 × 20 cm that could be followed in the rest of the trench.

Folyosó

A 40–50 cm thick fill layer with a 5 cm-thick stalactite layer underneath was found at the end of the *Folyosó* towards the *Biológiai labor* (between 0–9 m) (Fig. 4). It did not contain any archaeological find or feature. Originally, this section may not have lacked finds: perhaps the items deposited there (if there were any), not embedded in clay, perished faster than those in other parts of the *Folyosó*, or the periodic stream flowing out of the *Biológiai labor* may have had a sinkhole in this section and washed them away. During the excavation from the 9th metre towards the south, the trench was deepened to a red gravel and clay layer, above which a thin (max. 10 cm thick), black strip with Middle Neolithic and Late Bronze Age finds could be observed.

The features discovered in the *Folyosó* included stake holes (the positions of which have been documented). Their scatter and that of the find material became more dense at 32 metres.¹⁸ A small fireplace or fire trace was found at 30 metres, with a spot containing animal bones and perhaps matching pottery fragments nearby (between 24 and 25 metres; see Fig. 29).

16 The thickness of the strata in the Baradla Cave varies greatly: while rooms like *Pitvar* and *Csontház* have soil layers thicker than a metre, the typical layer thickness in *Denevér-ág* and *Róka-ág* is no more than a couple of centimetres (KOREK – PATAY 1958, 20).

17 I am reporting the excavation information based on the diary of Artúr Ádám Nyírő: *The archaeological works carried out in Baradla Cave between April and July 2019*.

18 NYÍRŐ *et al.* 2022, 33.

Biológiai labor

It opening from the northern end of the *Folyosó*, can be approached through a narrow, 10 m-long passage widened by controlled explosions (Fig. 5). Based on its morphological characteristics, it can be assumed that in prehistoric times, it was so narrow that one could get through it only crawling or on all fours. A cave stream flows through the hall from north to south, and one has to go against the current to get to the hall. There is no way to tell now whether the stream was there in the Neolithic and, if yes, what its average water output could have been. It was certainly active in the 1800s; its former bed and the high bank, bordered by the cave wall, were discovered west of the current stream. A stone rubble fill appeared almost everywhere under the former concrete pavement on the shore next to the riverbed. It contained Bükk-style pottery fragments at several places, which were found amongst and under the stones.

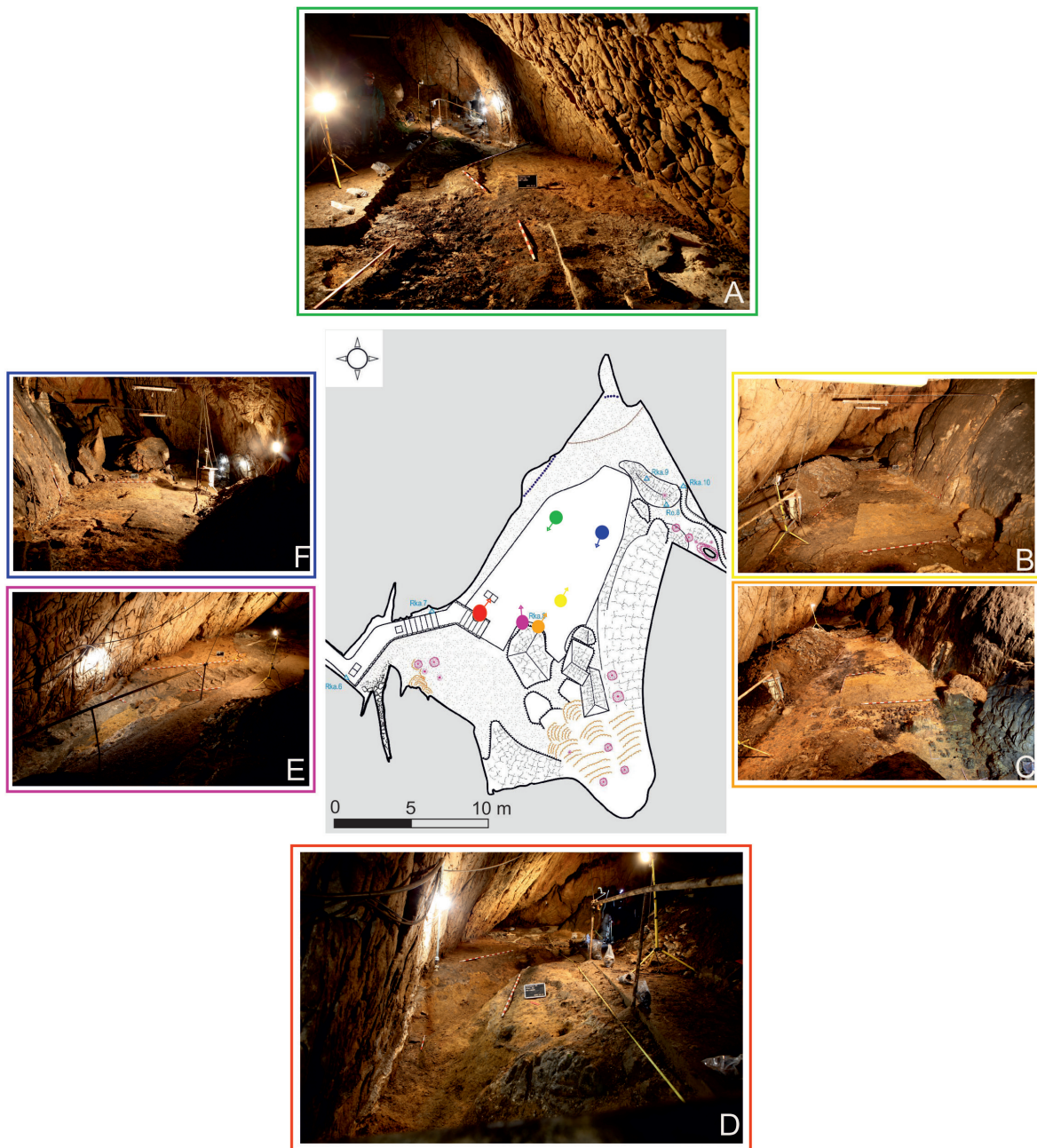


Fig. 5. A–F – The *Biológiai labor* on a survey map of the Aggtelek section of the Baradla Cave (colour points with arrows indicate the location and direction of the photos with matching frames).

An intact Neolithic layer was found under a 10–30 cm thick travertine (freshwater limestone) ‘shell’ at the northern end of the room (Fig. 6).¹⁹ This natural layer protected the artefacts from mixing but contributed to accelerating the fragmentation of the artefacts.²⁰ The black, high-viscosity clay contained a large amount of decomposed organic matter (decayed plant remains, charcoal particles) and much soot. This dark layer was present only in places, while elsewhere the surface consisted of mostly yellow-brown, sometimes reddish clay. Archaeobotanical samples were taken from the dark layer, which yielded plant remains characteristic of this period, mainly wheat and barley (mainly hulled barley and free-threshing wheat) and some pulses.²¹

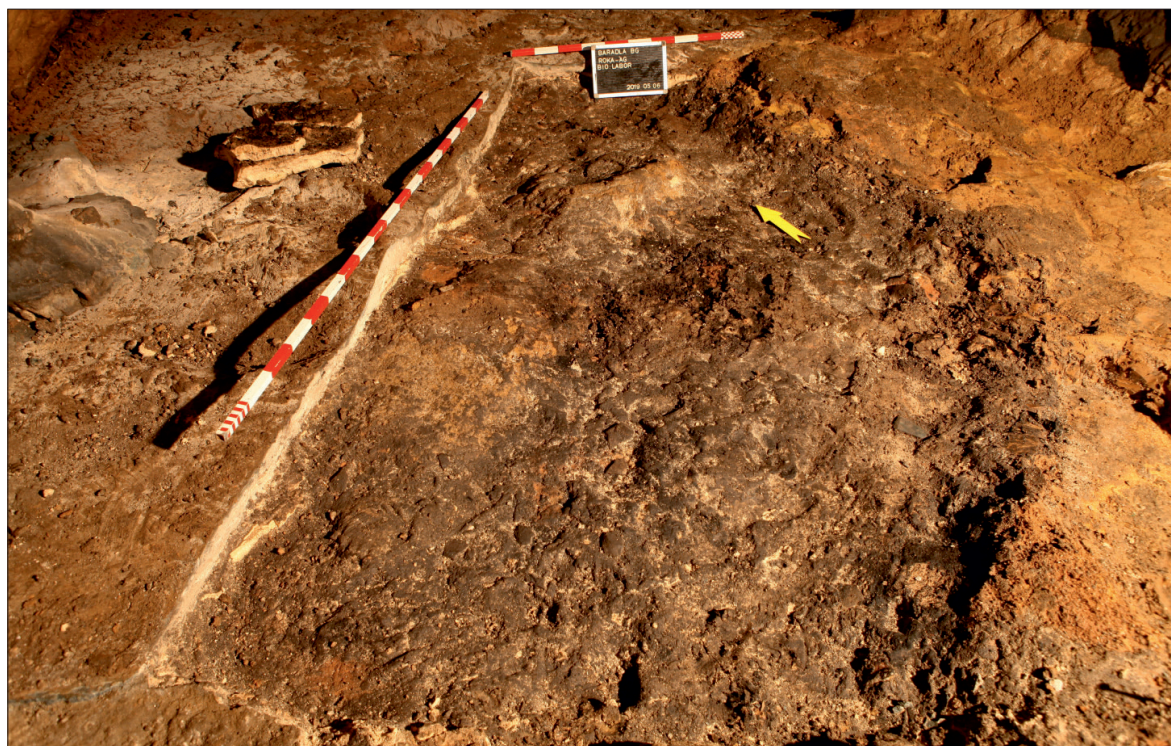


Fig. 6. The travertine layer at the northern end of the *Biológiai labor* and the Neolithic layer preserved under it (photo: G. V. Szabó).

An interesting phenomenon unfolded above the travertine layer in the bed of the stream, where a dark layer rich in Neolithic pottery fragments appeared again, raising the question of whether there were two Neolithic horizons between which the limestone layer formed. The answer is probably less exciting: the floor level of the room was raised with dark soil that already contained archaeological finds; this soil was likely extracted from the higher parts of the room, which now only consist of yellow-brown, reddish clay. This course of events is also proven by the fact that while there were fragments cemented to the bottom of the travertine, nothing was embedded into its top, i.e. the travertine shell and the soil layer above it came into contact long after the formation of the former had been completed.²² The soil under the oldest travertine layer (starting at 7 m) was black and oily, consisting of 0.5–2 mm thick microlayers, indicating perhaps repeated activities, presumably related to animal skin.

19 Early researchers noted that stalactite formations covered the Neolithic layers in other areas of the cave (KOREK – PATAY 1958, 20).

20 MERVEL 2023, 40.

21 MERVEL 2023, 41.

22 These finds were packed separately.

A building stood once at the south-southwestern end of the hall; the area under its concrete foundation was also excavated (Fig. 7). The black layer appeared under about half of the building, under the 0.5–1 m² large tetarates (natural travertine or calc tuff basins). The stalactite layer contained well-preserved ceramic fragments, a couple of chipped stone tools, and pieces of red ochre.



Fig. 7. The place of the former building located at the southern end of the *Biológiai labor* (photo: G. V. Szabó).

Fragments of relatively large, collapsed liquid storage vessels, once placed on stalactite blocks, were observed next to the western wall of the room at the intersection of the stream bed and the side-walk near the excavation profiles. Whether they had been placed intentionally to where they were discovered is a question; they could also be transported there by the current because they were sitting on top of mixed layers rich in archaeological finds. However, they were relatively intact upon discovery, which suggests that they were brought there directly. Eight sherd clusters were also observed during the subsequent further demolition of the stream bed in the southern zone and other parts of the *Biológiai labor*.

The three large upright stones in the southeastern part of the room add greatly to its atmosphere. An L-shaped trench was opened around the *Nagy-kő* [Big Rock] (a huge rock at the centre of the

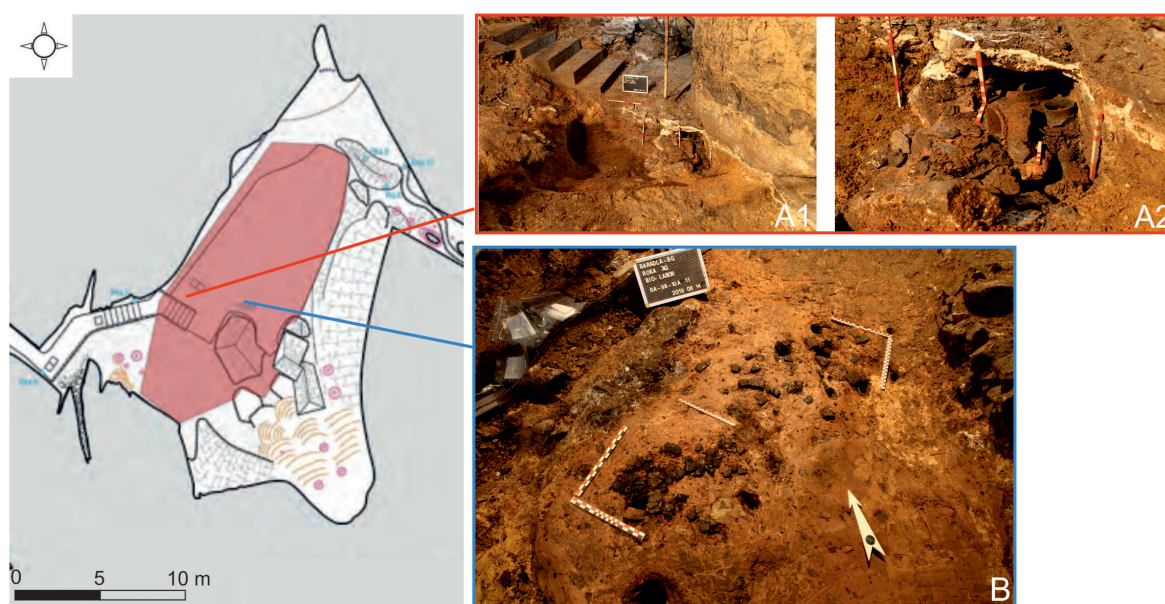


Fig. 8. Potsherd clusters discovered in the *Biológiai labor*. A – OBJ 8/STR 638, OBJ 9/STR 639, B – 8A-11A.

room²³); it contained four potsherd clusters and 51 stake holes. The area under the *Nagy-kő* was also cleaned, and it became clear that the rock contacts the floor at three points with a 20–50 cm high gap between them where people once slotted in vessels and animal bones (these finds were not collected). The *Nagy-kő* rests on a 0.5 m high, 2 m² large stone slab with a flat, almost straight surface next to it. The third stone is positioned 1 m to the east and 0.5 m to the north of *Nagy-kő*. Three spouted vessels were hidden in the 1 × 0.5 m stalactite pool between the rocks. Pottery clusters and stake holes were scattered around all three rocks, indicating perhaps that they may have played an important role in the room.

The features in the *Biológiai labor* can be divided into two groups: more than 400 stake holes and potsherd clusters. Two such clusters were found in the first two metres of a basin at the entrance of the room under the old concrete walkway (Fig. 8.A; the northern is OBJ 8/STR 638, the southern is OBJ 9/STR 639), and eleven more in other parts of the *Biológiai labor*, mostly on the bank of the stream (Fig. 8.B; 1A–11A).



Fig. 9. Map of the *Biológiai labor* (stake holes are marked in purple) and photos of the stake holes in different phases of excavation (photos by G. V. Szabó, graphics by B. Holl).

The soil stains of the 5–15 cm wide stake holes with a square, angular, or triangular profile and rounded corners appeared immediately under the concrete or after removing the black layer. They were concentrated mainly in the central and western parts of the *Biológiai labor* but also observed in other zones, clearly starting with the Neolithic layers (Fig. 9). During the excavation, more than 420 of them were recorded in this room alone, and 201 more in the *Folyosó*. Most were filled up with black soil,²⁴ while some were empty, closed by a ceramic fragment or clay plug. They were 40–50 cm deep, cutting through the stalactite layer in the clay. The field team attempted to create one with a broken spade handle and a piece of stone suitable for hammering; it required a significant effort.

The hundreds of stake holes cannot be linked to a single construction at any location; they also vary in shape and size. They could be part of a raised trackway, bridge, scaffolding, or platform; however, the available information is insufficient to identify any such structure. The simplest interpretation is that they held stakes used as torches, which did not necessarily have to be in the same place—but why would anyone go through cutting through the rock-hard travertine layer for that? However, there were perhaps some long-lasting torches, the stable fixing of which was a primary consideration. The assumption that they belonged to animal herds or pens²⁵ does not seem appropriate in the case of either the *Folyosó* or the *Biológiai labor* as accessing these is difficult, and even though the *Biológiai labor* is spacious, the *Folyosó* and the section after it—nowadays only accessible because it was widened by explosions—are extremely narrow, where even people have to crawl.

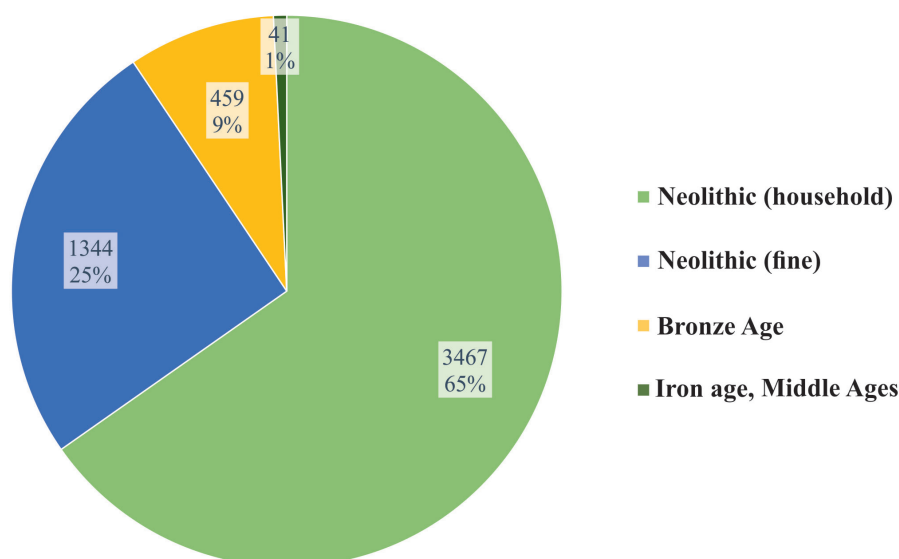


Fig. 10. Age distribution of pottery fragments (no. of pieces).

The character of the four main sections differs greatly. *Bejárat* and *Áttörés* are spacious and open, with a high ceiling, while the subsequent *Folyosó* is considerably narrower and narrows further down inwards (northwards). After taking a sharp right turn at the end of *Folyosó*, one gets into a narrow but now passable section, from which the spacious *Biológiai labor* can be reached by taking a left turn. The top of this large room's eastern, stalactite-covered wall slopes outwards, leaving visitors with a powerful impression enhanced by the peculiar play of lights and shadows on the cracks and drippings on the surface when illuminated (especially by the dancing flames of torchlight).

One may progress from the north-eastern part of the *Biológiai labor* to another large room at the end of the *Róka-ág* through a narrow gap, heading upstream and following a relatively narrow but

²⁴ NYÍRŐ *et al.* 2022, Fig. 17.

²⁵ HOLL 2007, 23.

slightly widening path between huge rocks and stalactite formations.²⁶ The room contains Bronze Age and Neolithic vessels, presumably placed there to collect water. Today, these vessels are coated in a layer of stalactite. The flat clay floor in the back of this cave room is poor in findings, which makes its interpretation as an entrance unlikely.²⁷ Today, one can enter the cave system at ten points, of which the one of the *Denevér-ág* and the main entrance at Aggtelek were definitely in use already in prehistoric times.²⁸

Landscaping inside the cave in the 20th century disturbed and destroyed it extensively, removing significant amounts of finds from their original contexts and fragmenting many. The excavation yielded only limited information about the first three sections (*Bejárat*, *Áttörés*, and *Folyosó*); future research of the finds left untouched on both sides of the metre-wide trench may be of help with their general interpretation. Luckily enough, the well-defined unit represented by the *Biológiai labor* was almost fully explored, providing a record suitable for evaluation.

Pottery finds

The processing of the Middle Neolithic pottery record has followed the framework published by Jan Lichardus in his 1974 monograph,²⁹ enabling the analysis of vessel forms, special decorative elements, and complex decorations.³⁰ Types not classified by Lichardus also appear in the record; an expansion of Lichardus's system by Piroska Csengeri upon evaluating the find material of Felsővadász-Várdomb has been used to classify these.³¹

A total of 5,311 pottery fragments were recovered during the rescue excavation; 1% (41 pcs) belong to the Early Iron Age and the Middle Ages, respectively, 9% (459 pcs) to the Bronze Age, while the rest (90%, 4,811 pcs) is Neolithic. The proportion of household ware to decorated fine pottery within the Neolithic record is 72% (3,467 pcs) to 28% (1,344 pcs) (Fig. 10).

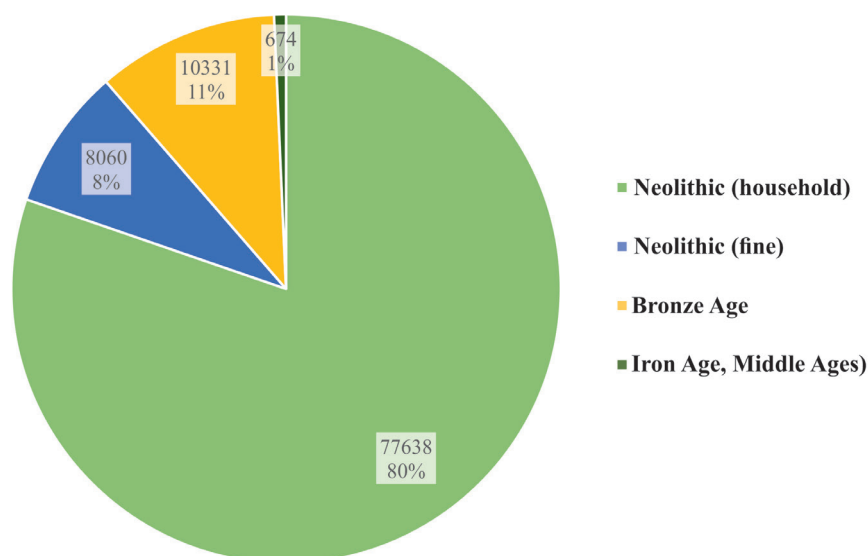


Fig. 11. Age distribution of pottery fragments (weight in grams).

26 NYÍRÓ 2019, 28.

27 HOLL 2007, 12.

28 NYÍRÓ 2019, 6–7.

29 Although some of his findings have become outdated since (especially those relying on S. Šiška's results), this book provides a suitable starting point even today; see PIATNIČKOVÁ 2010, 245.

30 LICHARDUS 1974, 22–40.

31 CSENGERI 2011, 75–98.

The discovered sherds weigh more than 96 kg (96,664 g), the Neolithic finds accounting for 88 % (it is worth noting that while fine pottery fragments make 28% of the find material by number, their total weight is only 8% of the total weight as they are generally thin and light; see Fig. 11). The finds were usually collected in 1 × 1 m squares (Figs 12–13).³²

One can only estimate how many vessels were originally deposited in these parts of the cave. In lack of features with distinct perimeters, the pieces of a vessel could be scattered several metres apart on the surface, which makes reconstruction significantly more difficult than usual. Moreover, several fragments have heavily worn, eroded surfaces, further diminishing prospects of success in finding connections between them.

Decorated fine pottery

The group contains vessels with thin walls (0.35–0.6 cm average wall thickness) made of fine, rich, untempered clay with occasional fine gravel particles or clay tempered with diverse materials.³³

Only tempering agents visible to the naked eye were recorded during the processing of the pottery record. Roughly half of the fragments are tempered, mainly with fine, crushed pottery (true grog) or fine gravel; it must be noted that in some cases, calcite coating and the taphonomic alterations caused by the clayey cave soil hindered observation greatly (Fig. 14). In general, the fragments' surfaces consist of a thin (100–300 µm),³⁴ fine, burnished layer in diverse colours, predominantly grey, grey-brown, (dark) brown, or brown-grey, some dark grey or black. Fragments with a lighter colour scheme—light brown, light grey, or pale red-brown—are less frequent. Some heavily eroded sherds are in pretty bad condition, and their original colour cannot be told anymore, which hinders greatly their matching with other fragments (Fig. 33.4).

Most fragments (76%) come from the walls of vessels; rim fragments make up 15%, while bottom fragments 9% (129 pcs) of the site's Neolithic pottery record (Fig. 15).

Typical vessel forms of fine pottery

Bomb-shaped vessels (Ed-01) are predominant in the record in all phases of the Bükk culture (Fig. 16). The type has several variants, including narrower ones (Fig. 31.2, Fig. 32.1) and ones with a less inverted rim (Fig. 33.1). Some specimens have a rounded bulging rim. Their rim diameter ranges from 4.2 to 19 cm, with an average of 10–13 cm. The 4–6 cm wide round, flat base of most is concave, with a heavily eroded ring around the edge where it touched the ground. Some vessels had a rounded upper part instead of a straight one, typical of bomb-shaped vessels (Ed-01.2); these were classified into a separate subcategory, Ed-01.2 (Fig. 33.5).

The second most common type of Bükk-style decorated pottery is hemispherical vessels (Ed-02; Fig. 33.3, Fig. 34.4), also used in all phases of the culture. The diameter of their rims is 12–16 cm; the bottom of only one could be measured (6 cm).

Only two fragments represent spherical vessels (Ed-03) in the material; one of them has a 19-cm-wide round rim. The only conical bowl fragment (Ed-04) was found in a secondary position (dis-

32 These squares identify the findspots of the artefacts in the figures even if they were packed in 0.5 m sections. The squares in the *Biológiai labor* are only indicative, representing all pottery fragments in the respective one-metre-wide section of the bank.

33 Petrographic analyses aimed at distinguishing between types of raw material have already been carried out on pottery from several Bükk sites, including the Baradla Cave; see SZILÁGYI *et al.* 2008, 27–35, 38–40.

34 SZILÁGYI *et al.* 2008, 115–117.

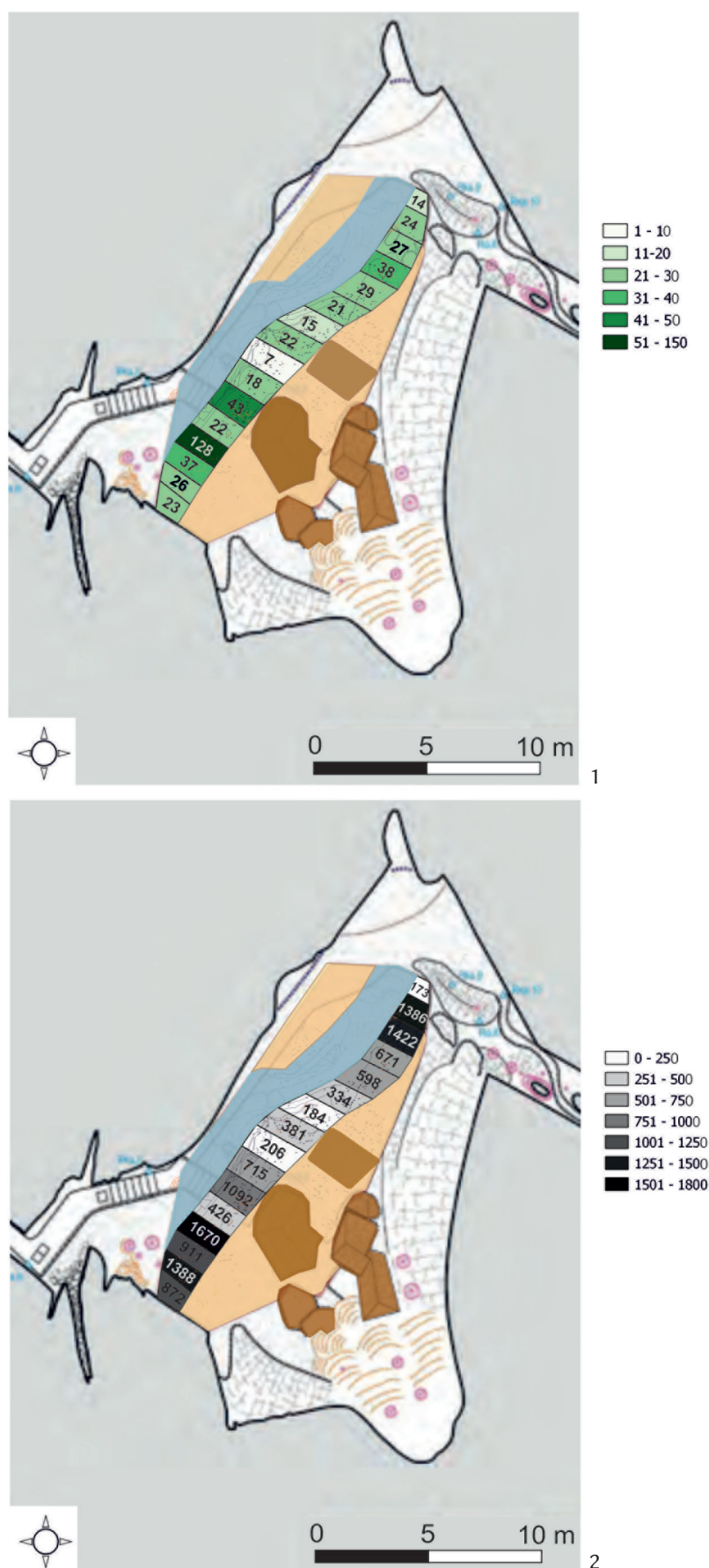
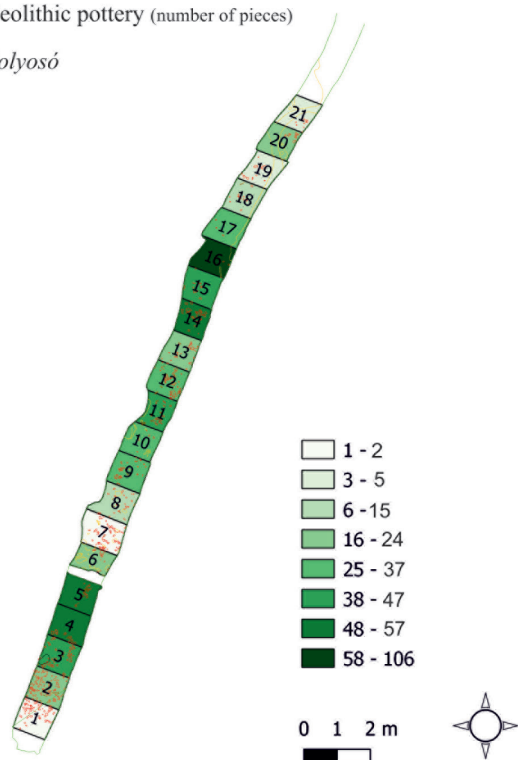


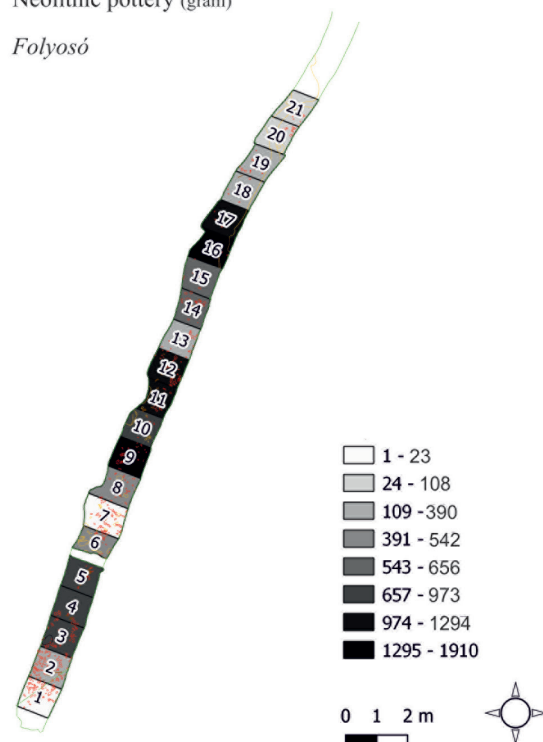
Fig. 12. Distribution of Neolithic pottery fragments in the *Biológiai labor*. 1– by count, 2 – by weight.

Neolithic pottery (number of pieces)

Folyosó

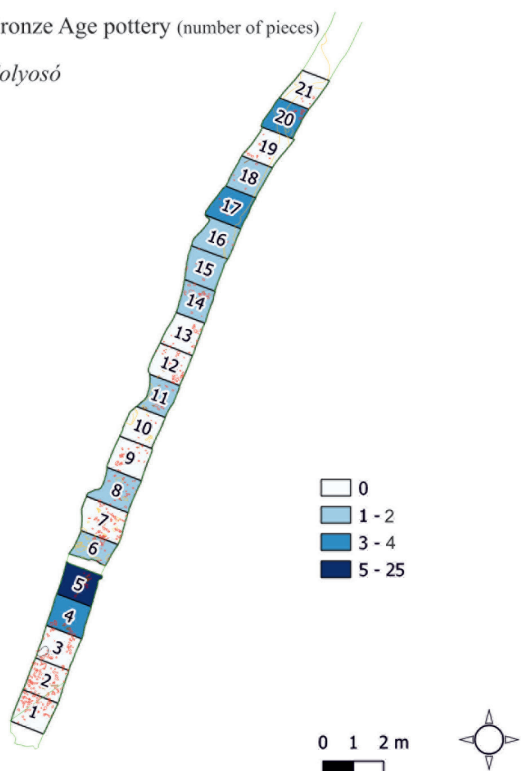
1

Neolithic pottery (gram)

Folyosó

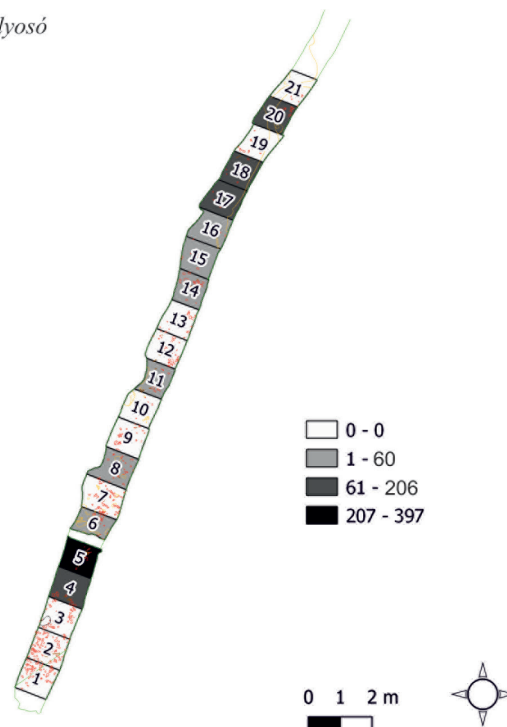
2

Bronze Age pottery (number of pieces)

Folyosó

3

Bronze Age pottery (gram)

Folyosó

4

Fig. 13. Distribution of pottery fragments in the *Folyosó*. Middle Neolithic by count (1) and weight (2), Bronze Age by count (3) and weight (4).

located by previous landscaping) in the *Biológiai labor*. Fragments of deep bowls have also been identified in the record (Ed-05; Fig. 31.5).

Three fragments could be assigned to the bowl/cup category (Ed-07). Two of these have slightly curved sides, while the third piece is a fragment of a more open cup, illustrating the great diversity of shapes this category includes.

Bowls with cylindrical necks and spherical bodies (Ed-08) are referred to by Piroska Csengeri as spouted amphora-shaped vessels. As pottery obtained from the Baradla Cave was heavily fragmented, vessels with a fitting shape but no spout were included in this category, while spout fragments were classified into a separate one (Ed-14).

The side fragment of perhaps a biconical vessel (Ed-11) with a possible suspension hole under the rim of 10 cm diameter was found in the *Folyosó* (Fig. 42.4). Biconical vessels first appeared in the area in the material of the Tiszadob group of the young ALPC.³⁵ Such vessels often have a pair of opposite holes under the rim and are usually decorated with a (Tiszadob- or Bükk-style) incised pattern; they could be used to store paint.³⁶ They appear in increased proportions in the pottery record of Phase IV of Domica Cave, parallel with a decrease in the number of (hemi)spherical forms.³⁷

The vast majority of fragments (78.34 %) could not be linked to a specific vessel shape (Ed-13; 1,052 pcs). Based on their profiles, most could have been (hemi)spherical vessels. Eleven fragments of at least nine vessels could be identified as necked vessels (Ed-15); the differences in the decoration of the neck and belly and the transition zone between these vessel parts are clearly discernible on them. A single fragment can be classified as a funnel-necked vessel (Ed-16).



Fig. 14. The influence of cave taphonomy on different artefact types.

35 KALICZ – MAKKAY 1977, 46.

36 CSENGERI 2013, 86.

37 LICHARDUS 1974, 63.

The decoration of fine pottery

It is reasonable to start this part with an overview of the Bükk-style incised pottery decoration and ornaments made using other techniques (applied and painted).

There were great differences in the design of the densely incised decoration in the find material. In the earliest phase, line bundle patterns of at least four parallel lines were incised one by one with a free hand (Fig. 17.1). In the following phases, however, decorations became increasingly more intricate, consisting of even fifteen or more parallel lines in the youngest materials. Drawing such patterns required special tools with one or more teeth (pattern combs), which could be made from bone;³⁸ besides, potters could use straws for circles. Based on the alignment of the line bundles, potters sometimes made an underdrawing in the form of a continuous line at the inner (lower) edge of the future line bundle (Fig. 17.5,11), while in other cases, the patterns were created without a guide. Sometimes the incised parts of the pattern match precisely (Fig. 17.4,7,10), and sometimes not at all (Fig. 17.3,5,6,9).

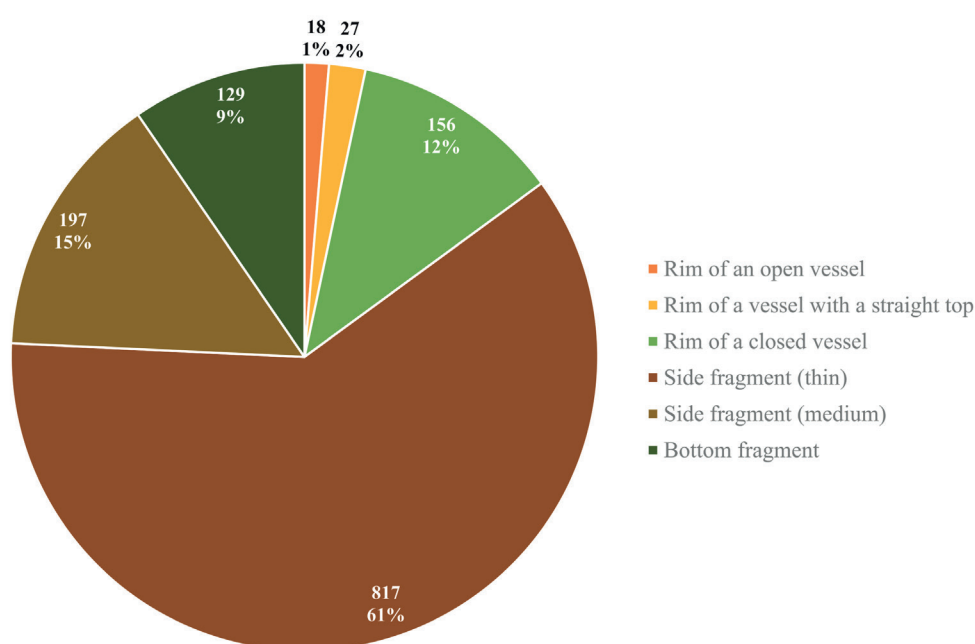


Fig. 15. Distribution of Bükk-style fine pottery fragments by vessel part (n=1344).

Two ways were used to create more complex line bundles: repeating the comb pattern several times, always following the outermost line of the previous line, or drawing lines in the gaps between the first set of lines, making the pattern twice as dense (Fig. 17.8). The most dense patterns (Fig. 17.2) were perhaps made with a single, wide pattern comb with 20–30 teeth.³⁹ Sometimes the lines fade away, are unfinished, or meander, indicating perhaps that they were applied with a tool made of a material more flexible than bone (Fig. 17.5,11).

Every vessel responds to an existing demand comprising practical and cognitive elements. In the case of decorated vessels, this basic demand was much more complex since decoration represents an extra investment of work (and sometimes other resources).⁴⁰ Aesthetic labour encompasses a experience and a complex knowledge of know-how, ideology, and standards set towards material

38 LICHARDUS 1968, 71.

39 CSENGERI 2013, 78.

40 SEBŐK 2018, 26–27.

objects through which society can communicate important phenomena, ideas, and concepts.⁴¹ The regularities emerging from recurrent elements in the decorations of individual artefacts indicate that the makers shared, in addition to technical⁴² and visual knowledge, a considerable set of other cognitive elements. Vessels could be used to express social identity, position, or function or even be related to their part in ritual practice. The more significant and important the meaning they had, the longer the time and larger the area where they appeared in a more or less unchanged form.⁴³

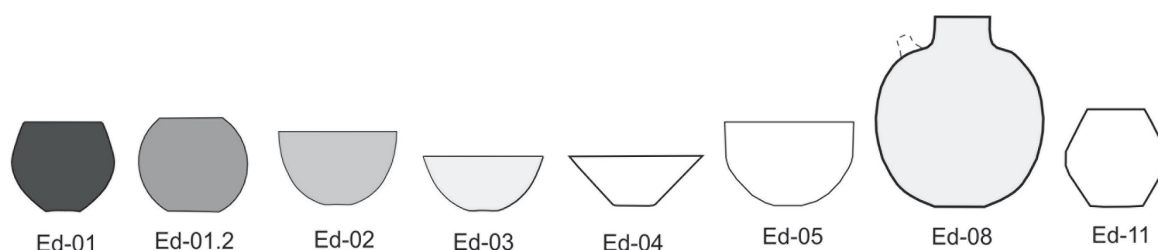


Fig. 16. Characteristic fine pottery forms; shading indicates their frequency in the record of the cave (the darker, the more frequent).

Bükk-style pottery decoration is extremely complex; without being familiar with the concepts behind the appearing designs, a new system, independent of the original one, had to be developed for selecting and recording data in order to analyse its regularities. This was started by breaking down the pattern into components and examining each with an eye to its context in the design, including its position on the vessel.⁴⁴

Following the classification developed by Jan Lichardus, which also appears in Piroska Csengeri's work, the following main categories were distinguished: rim decorations (*Randverzierung*, P), decorative triangles (*Schmuckdreiecke*, H), decorative styles (*Verzierungsstil*, S), bottom decorations (*Verzierung in Bodennähe*, F), intermediate decorations (*Zwischenverzierung*, K) and other decorations (a type within *Ergänzungsverzierung*, E).⁴⁵

Rim decorations

Altogether 126 fragments bear decoration under the rim (Fig. 18.1). These are simple patterns repeating a single motif, mostly a spiral (37 pcs; Fig. 31.3, Fig. 33.3). They come in a variety of designs with diverse directions and different numbers of lines. Decorations of hatched (23 pcs; Fig. 33.5) and dot lines (24 pcs; Fig. 33.6) appear in approximately equal proportions. Considerably less frequent are those consisting of straight lines (9 pcs; Fig. 34.4a), zigzags (8 pcs), circles (6 pcs), or arches (6 pcs). Eight fragments feature a grid pattern, another two a closed S-meander band of overlapping but not touching basic motifs (Fig. 36.2), while one has a checkered band under the rim (Fig. 36.6).

41 WENGROW 2001, 170.

42 The important question is, who made these vessels? Neolithic people are believed to have made their own pottery vessels (non-specialised production), and the differences in workmanship quality, even if the vessels were created according to the same rules, are partly due to each person involved in pot-making having different skills. In terms of decoration, the vessel surface could even become a field of competition, where individuals with considerable skills could show off. Decorated vessels can, therefore, be interpreted as individual creations incorporating elements of a shared set of rules (WENGROW 2001, 174; FÜZESI 2016, 220; SEBŐK 2018, 30–31).

43 SEBŐK 2018, 26–30; WENGROW 2001, 177.

44 STROBEL 1997, 27.

45 LICHARDUS 1974, 33–40; CSENGERI 2013, 87–98.

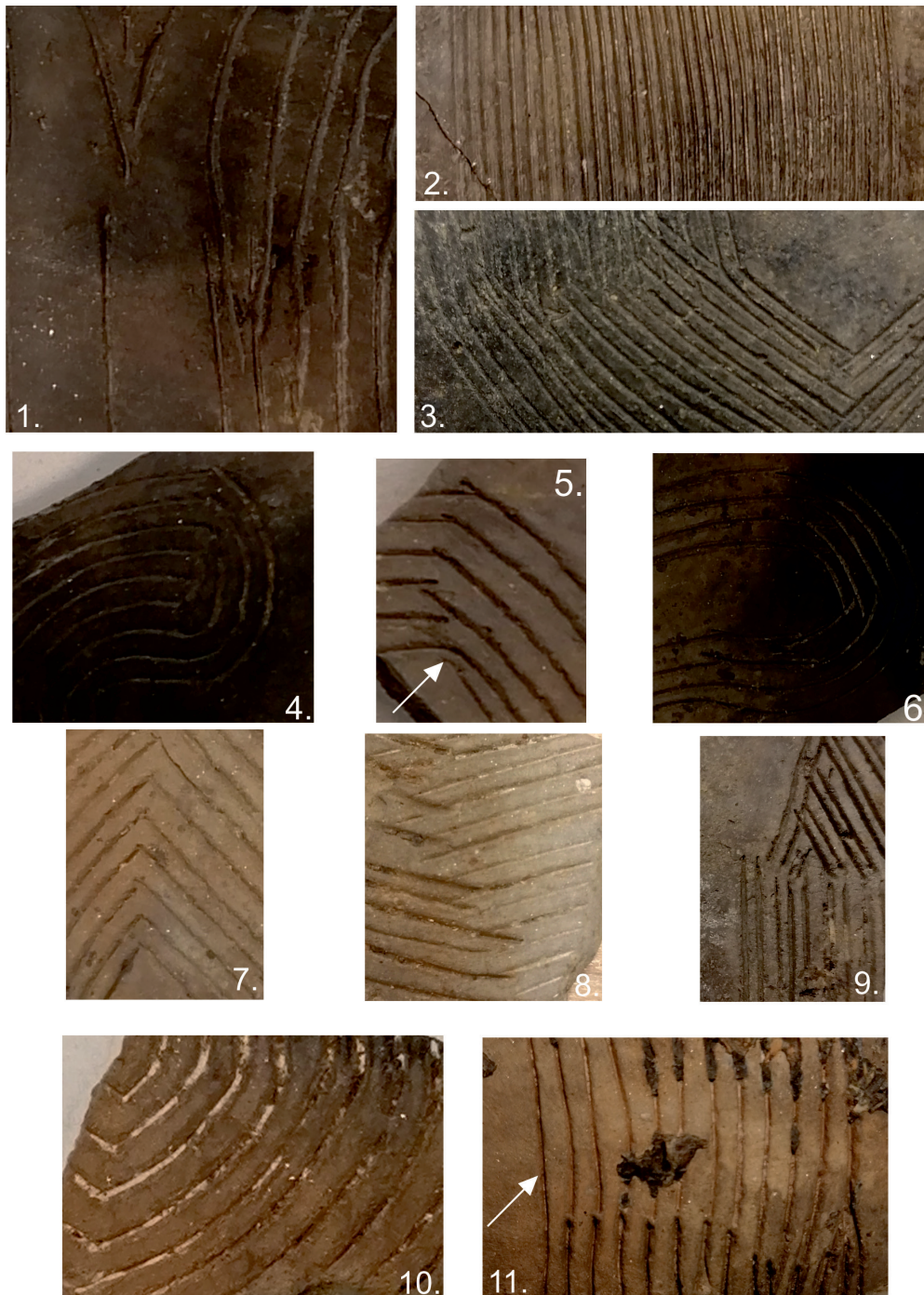


Fig. 17.1–11 – Difference in the execution of Bükk-style fine pottery decoration.

Simple rim decorations are often arranged in 3–5 bands or zones (Fig. 33.6) repeated in dissimilar rhythms: while the basic motif is always repeated continuously in the two terminal bands, there may be larger gaps between two motifs in the zones in between (Fig. 36.1).

The rim decoration of 51 fragments combines two base motifs, most frequently zigzag and dot lines (10 pcs). Spiral variants appear combined with zigzag (5 pcs), dot (4 pcs; Fig. 35.1) and incised (4 pcs) lines. Wavy lines are relatively rare; they are combined with dotted lines in three cases, and once with zigzags. Circles are paired up with hatched (3 pcs), dot (1 pc; Fig. 36.5), or simple lines (1 pcs). The base motifs alternate within a band on eight sherds. Other combinations appear on a single fragment each (Fig. 31.4, Fig. 33.4, Fig. 40.2).

The rim decoration of four vessels was divided into fields (P-03); of these, the rim of one was hatched (P-05). The rim of the only hemispherical bowl with a pointed rim was covered in a complex pattern (Fig. 31.6).

Altogether eleven rim fragments featured a hatched rim (P-05; Fig. 34.6), and the rim decoration of two was made using a sgraffito-like bas-relief technique. Some interesting rim decorations are shown in the upper part of Fig. 19.

While rim decoration played a lesser role in the early phases of the Bükk pottery style (it was not added to every vessel), it gained more ground and became more varied later, only to become simplified again in the final phase of the culture.⁴⁶ The rim of most decorated pottery finds from Baradla features a simple pattern repeating a single motif, most of which are typical of Bükk Phase AB.⁴⁷ The large number of spirals,⁴⁸ a motif that became popular later than the straight and wavy lines and dot patterns, also points to a phase after the earliest period (Bükk A).

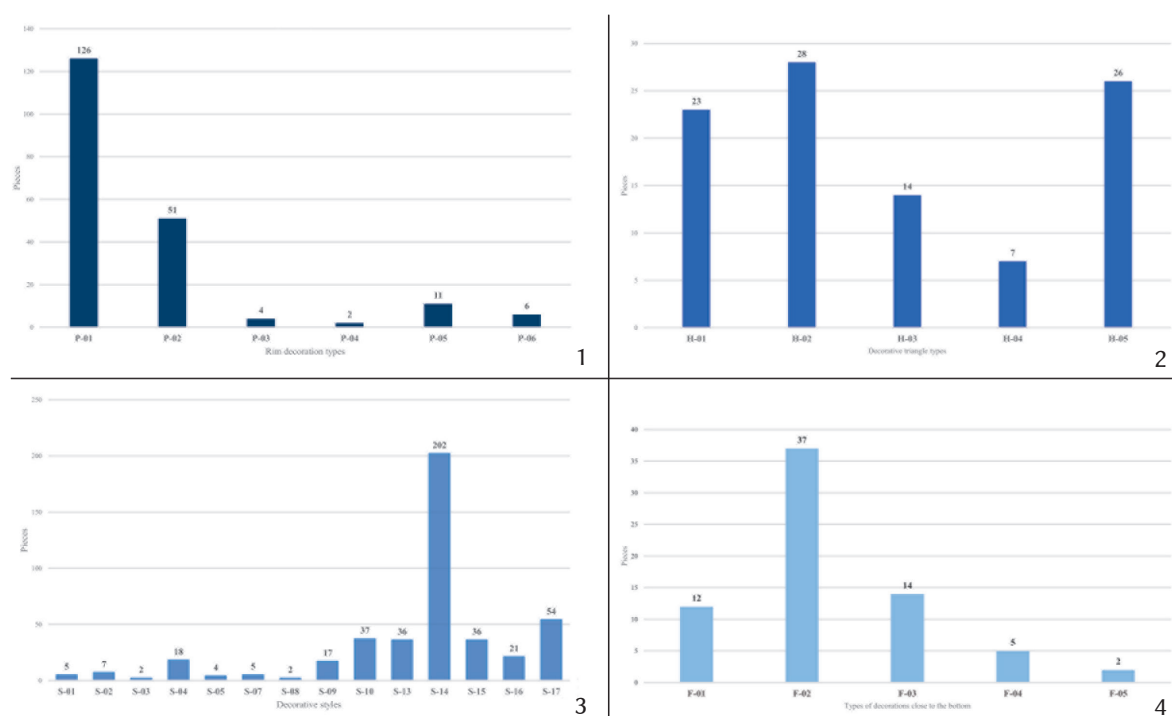


Fig. 18. Distribution of decoration types on Bükk-style fine pottery. 1 – rim decorations (n=200), 2 – decorative triangles (n=98), 3 – main motifs (n=444), 4 – patterns on the bottom (n=70).

Decorative triangles

Decorative triangles hang from the bottom of the decorated bands or zones under the rim, extending between the fields of the main pattern.⁴⁹ The find material contained 98 pieces with such a pattern (Fig. 18.2), of which only the frame and nothing of the fill pattern persisted in 26 cases (H-05). The fill pattern of the triangles consisted of a single motif in most cases (H-02): vertical or oblique hatching (10 pcs), zigzags variations (9 pcs; Fig. 31.5), grid (6 pcs; Fig. 32.2), or chessboard pattern

⁴⁶ LICHARDUS 1974, 64.

⁴⁷ CSENGERI 2013, 92.

⁴⁸ LICHARDUS 1974, 64.

⁴⁹ The name is somewhat misleading as these fields are not always triangular but sometimes have a truncated triangular or narrow rectangular shape: LICHARDUS 1974, 37.

(3 pcs; Fig. 35.1). Another 23 vessels featured nested triangle motifs (H-02; Fig. 34.4). The triangles on a vessel are sometimes filled with different patterns (Fig. 37.2).

Triangles with a heterogenous fill comprising diverse motifs (H-03) appear on fourteen fragments, including ones closely similar (but not identical) to some finds published by J. Lichardus. These motifs included a vertical spiral in four cases, as well as other pieces with spirals and diverse filling motifs (Fig. 33.9). The variety of decorative triangles within a bomb-shaped vessel can be observed in fragments 1a and 1b in Fig. 35.

A divided decorative triangle (H-04) filled with diverse motifs and a negative pattern was observed in seven cases, including a hemispherical bowl with an empty H against a hatched background (Fig. 33.3). There is a vertical row of empty diamonds in the middle of a densely hatched hanging triangle (Fig. 36.2).

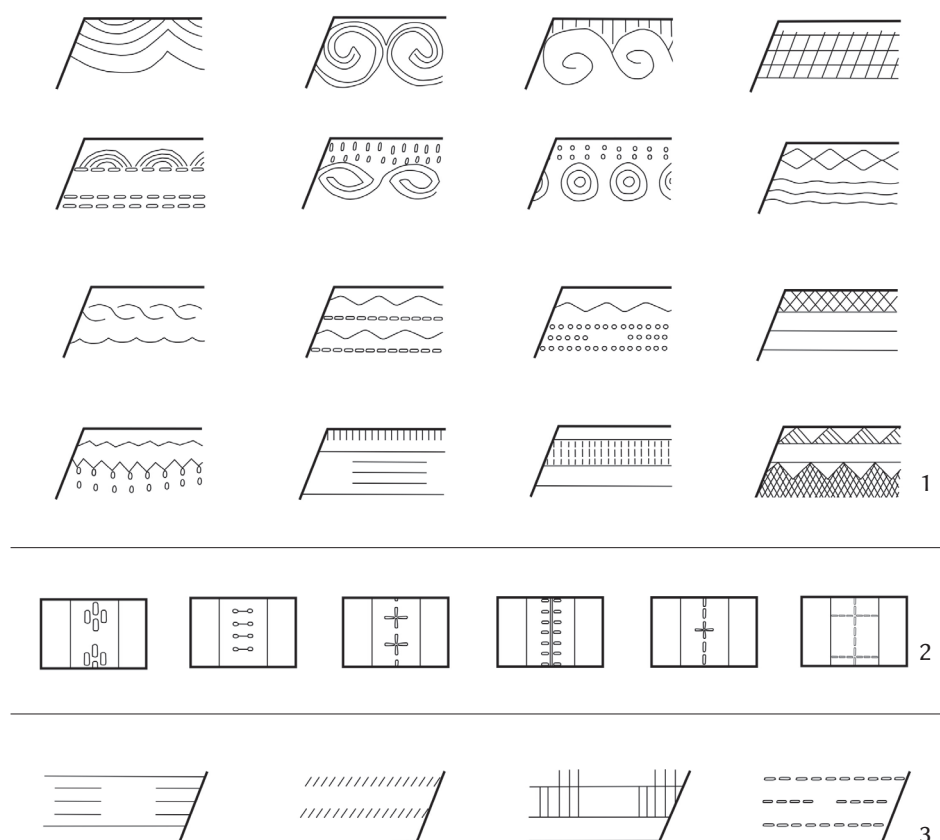


Fig. 19. A selection of complex patterns. 1 – rim decorations, 2 – auxiliary decorations, 3 – decorations close to the bottom.

It cannot be decided whether the dense zigzag fill interrupted by an empty horizontal band belongs to a decorative triangle on one of the fragments (Fig. 34.5). The vessel's rim is adorned with a circular band of clumsy running spirals (in the form of flat, intertwining S-scroll motifs) and a zigzag line below them. Interestingly, the inner side of the rim is also decorated (with a circular row of small hatched hanging triangles).

The decorative triangles are an important element of the Bükk pottery decoration; they play the biggest roles in style variants β and γ , are less important in α and δ , occur extremely rarely in ϵ , and are completely absent in η .⁵⁰

50 LICHARDUS 1974, 36.

The find material contains mostly pieces with less complex decoration; however, adding up the spirals and negative decorations on vessels with diverse motifs reveals that style variants β and γ ,⁵¹ typical of Bükk Phase B, are also significantly represented.

Style variants in pottery decoration

Jan Lichardus distinguished between seven main decorative style variants⁵² within the Bükk pottery decoration; his system was expanded by Piroska Csengeri (Fig. 20).

The style variants fundamentally determine the division of the vessel surface and the significance of the various parts. As mentioned in the previous part, a stylistic development could also be outlined. However, the vast majority of the potsherds could not be categorised due to the highly fragmentary state of the find material. Based on Piroska Csengeri's classification, the distribution within the excavated part of the Baradla Cave was the following (Fig. 18.3).



Fig. 20. Main pattern variants of Bükk fine pottery with the chronological phases they are assigned to (after CSENERI 2013, 178, Fig. 102).

51 LICHARDUS 1974, 64, 90.

52 LICHARDUS 1974, 31. Abb. 2, 33–34.

Lower arch connection ($\alpha 1$, $\alpha 2$ or $\zeta 1$ decorative style – S-01) occurred on five fragments. The arches are connected (S-02) in seven cases and appear separately (S-03) on two sherds (Fig. 37.2). The arches' relations could not be determined on eighteen fragments (S-04), and four sherds featured only a small part of the wide, bluntly curved line bundles (thus, either style $\alpha 1$ or $\zeta 1$ – S-05).

Narrower, bluntly curved line bundles appeared in various forms and are generally considered part of the $\beta 1$ or $\beta 2$ decorative style (Fig. 36.5). Spherical segment-shaped vessels often appeared with typical style β decoration (Fig. 35.2, Fig. 36.6).

The main spiral motif is characteristic mainly of styles ζ and $\alpha 2$; spirals winding in opposite directions were observed on five vessels (S-07; Fig. 38.1), while running spirals appear on two fragments (S-08; Fig. 40.5). Parts of a spiral motif appeared on seventeen more fragments (S-09; Fig. 40.4).

The bodies of at least 37 vessels were divided into fields (S-10; Fig. 33.8, Fig. 36.1); these can be classified into style $\eta 2$, characterised by the frequent appearance of a negative grid dividing the surface into rectangular panels. The grid pattern is typical of both styles $\eta 1$ and $\eta 2$, appearing on nineteen of the 37 vessels.

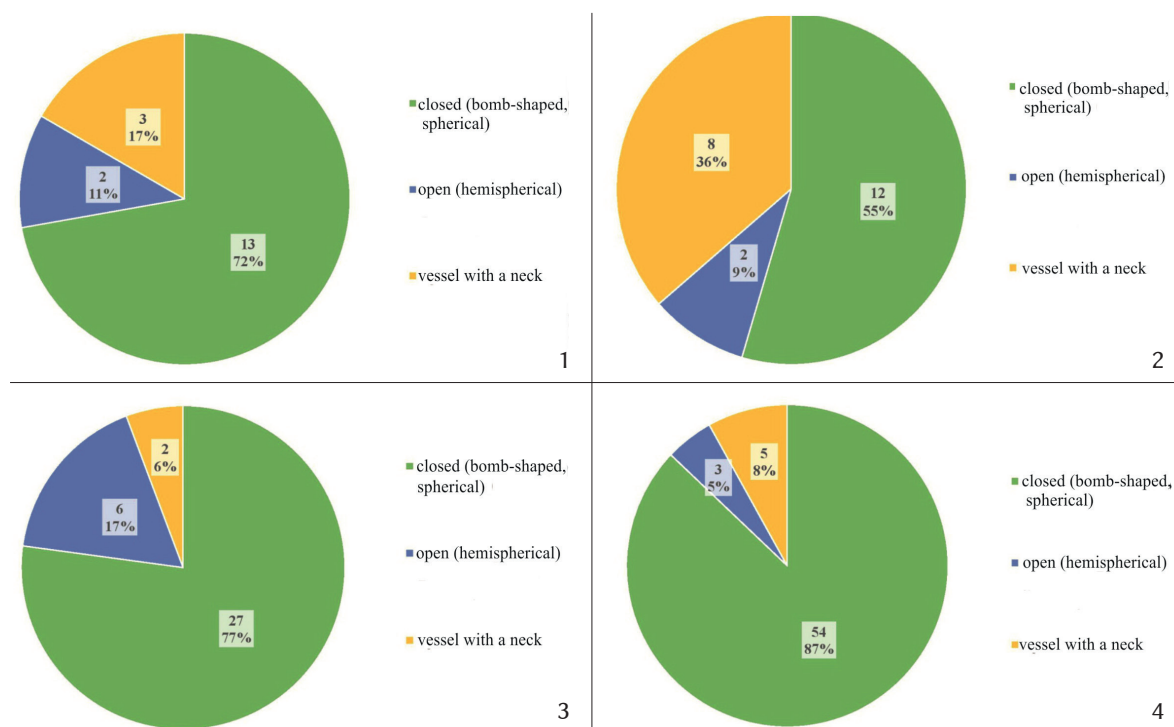


Fig. 21. Fine pottery vessel types in the excavated sections. 1 – Bejárat (n=18), 2 – Áttörés (n=22), 3 – Folyosó (n=35), 4 – Biológiai labor (n=62).

The bulk of the pottery record is made up of fragments that cannot be accurately classified based on the persisting details of the decoration. Curved line bundle pattern details could be observed on 36 pieces (Fig. 40.6), while 45% of the fragments only feature straight line bundle patterns (Fig. 36.7).

The 36 pieces with pointed arch line bundles were classified into a separate group (S-15; Fig. 31.2, Fig. 33.2, Fig. 40.1). This motif is characteristic mainly of vessels decorated in style β , the variety of which is well-illustrated by the additional subtypes in the pottery record of Felsővadász-Várdomb.⁵³ The 'broken' pointed arch bundles on the 21 vessels pigeonholed into category S-16 (likely also a

⁵³ CSENGÉRI 2015.

part of style β during the Bükk B phase) consisted of shorter straight lines meeting at an angle (Fig. 32.2b, Fig. 33.1).

With 54 pieces, S-17, comprising vessels with V-shaped line bundles, can be considered a relatively common variant. On some, the stems of the V actually meet, while on others, they only run out of the field of decoration near the bottom. Additional (slanted) line bundles accompany the V motif at a distance on many pieces (Fig. 40.8). This decorative style appeared in Bükk Phase C according to Piroska Csengeri's system.

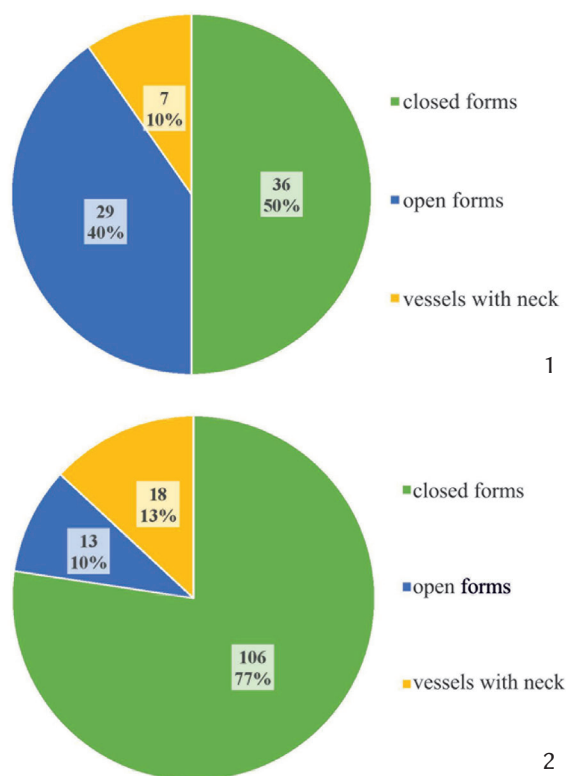


Fig. 22. Comparison of the proportion of fine pottery vessel types between Sajószentpéter-Kövecses, n=72 (1) and Baradla Cave (2019) n=137 (2) based on data from CSENGERI 2013.

Auxiliary decoration

Auxiliary decoration may appear in relatively many places on the vessel surface; the related motifs do not have a fixed position like the other elements. They can accompany the main line bundle pattern, appear next to the decorative triangles, or as delimiters between fields with different fill patterns. They can also appear in the empty zones beside the main pattern; in this case, they may have been created in the initial phase of vessel decoration. By dividing the surface, they could have helped the potter execute the complicated pattern to be as precise and symmetrical as possible.

These motifs are usually pointy stabs (25 cases; Fig. 38.1) and grooves (14 pcs; Fig. 40.5) on undecorated parts, arranged into straight lines (1), waves (2), or zigzag variants (5 pcs; Fig. 38.2). Sometimes the lines are continuous, in other cases dashed or combed (Fig. 37.1). In one case, an incised chevron is hanging from the corner of probably a triangle (Fig. 36.7). You can see some examples of auxiliary decorations at the middle of Fig. 19.

Decorations close to the bottom

Below the zone of the main decoration, a separate zone seems to have been dedicated to bottom decoration; seventy fragments featured related patterns (Fig. 18.4). These were classified based on the number of rows.

A single line occurred on twelve vessels (F-01).⁵⁴ Most had two-line patterns (F-02; 37 pcs); among these, three displayed a pair of straight horizontal lines (Fig. 37.1), fourteen dot lines (Fig. 40.6), and twenty dashed lines. The notches in the lines may be vertical, horizontal, or oblique, and their lengths also differ.

A three-row pattern could be observed on fourteen fragments (F-03; Fig. 35.3, Fig. 40.7). Five fragments feature four-row patterns (F-04) near the bottom; three of these are dot lines. A bottom and side fragment has a combined pattern with two zigzag and two dot lines. Altogether, two of the studied bottom fragments bear no decoration at all (F-05).

⁵⁴ Four of these were dotted lines, seven continuous, and one a row of horizontal running spirals.

The bottom patterns are usually much simpler than those on the upper parts of the vessel. The most common variant is the double dashed line,⁵⁵ which was also predominant in the studied find material. The bottom zone of the vessels was decorated from the Bükk Phase AB and then became more varied by Phase B.⁵⁶ Complex pattern variations of this decoration are presented at the bottom of Fig. 19.

Other decorations

The inner sides of five rim fragments and a vessel with a complete profile, consisting of several fragments, are decorated (E-01), always in the uppermost zone right below the rim. The pattern on the biggest fragment is a row of hanging nested triangles (Fig. 34.5). Another piece features a much smaller detail of a similar pattern made even more spectacular by white inlay (Fig. 34.6). The rim is notched. The two sides of three not-fitting fragments of a vessel feature oppositely running spirals (Fig. 31.1).

The outer side of a hemispherical vessel bears a decoration similar to but simpler than a vessel found in Domica Cave⁵⁷ (Fig. 34.4.a–b), while its inner side is decorated with symmetrical pairs of hooked four-line bundles hanging from the rim. Interestingly, the rim seems to be notched only where these inner motifs start (albeit the fragments are too worn to state that with absolute certainty). An analogy to the ‘hook’ pattern, but in three-line bundles, is known from Sajószentpéter-Kövecses.⁵⁸ The pottery record of the cave comprises another fragment with four-line bundle patterns on the lower part of the inner surface and a decoration resembling the Tiszadob style on the outer (Fig. 34.3).

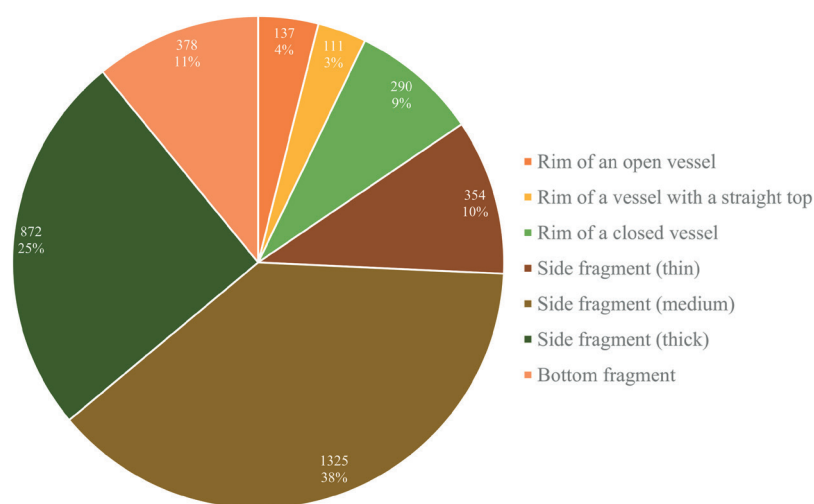


Fig. 23. Distribution of household pottery fragments by vessel part (n=3467).

Decorating the inside of vessels is typical of the Tiszadob group⁵⁹ and rare in the Bükk Culture. According to Lichardus, it appears in the advanced (‘classical’) phase of the culture, mainly on the upper third of the vessel body and the zone below the rim.⁶⁰ The internal decoration is more common in the early phase of the culture, but as recent excavations have proven, it is still present in the late ones (Edelény-Borsod-Derékegyháza – Bükk B–C; Mezőzombor-Temető – Bükk C).⁶¹

55 LICHARDUS 1974, 39.

56 LICHARDUS 1974, 89–90.

57 LICHARDUS 1968, 55. Obr. 11.1.

58 CSENGERI 2013, 97., 46. t. 1.b.

59 KALICZ – MAKKAY 1977, 41.

60 LICHARDUS 1974, 40, 90.

61 CSENGERI 2013, 97, 178–179.

The walls of four vessels were pierced (E-02): three in the upper third (Fig. 32.1) and one in the lower third (Fig. 38.1).

A larger vessel with a separate neck has applied decoration (E-03) (Fig. 32.2.a–b): a spout-like but closed, triangular protrusion completes its intricate incised decoration. Five irregular circumferential lines mark the knob's base, while its sides are decorated with three-line bundles.

A fragment of a vessel with a cylindrical neck and a spherical body bears traces of a small round knob (E-03). Knobs can be linked with biconical vessels,⁶² thus, this piece is somewhat unusual.

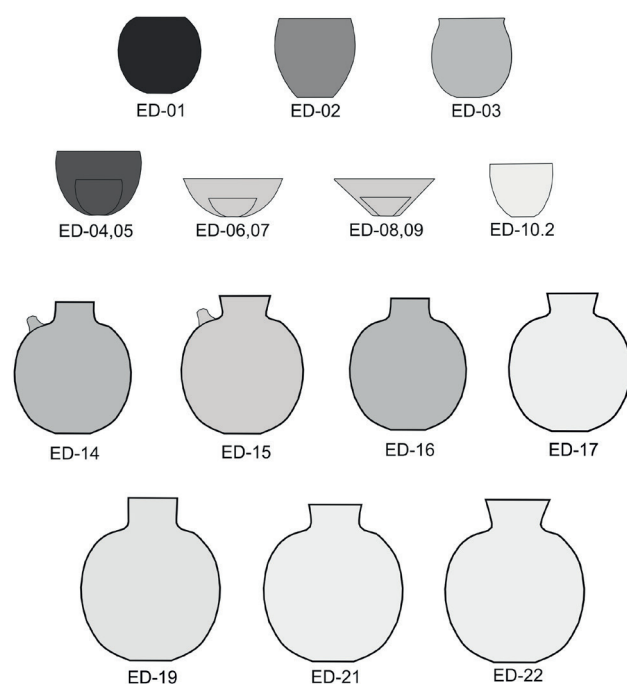


Fig. 24. Characteristic household pottery vessel forms; shading indicates their frequency in the record of the cave (the darker, the more frequent).

tistics). The most beautiful fragment to feature yellow and red encrustation, characteristic of Bükk Phase C (and especially style δ), was found right under the bottom of the concrete pavement (Fig. 34.2). Due to the brownish-red colour of the cave clay and its discolouring effect, the possibility to mistake it for colour inlay arose in several cases.

A previous analysis of the chalky substance filling the incisions on Bükk-style vessels revealed that its main components are kaolinite (a clay mineral) and quartz. Different colours were obtained by adding iron hydroxide (goethite) to the basic substance for yellow and iron oxide (hematite) for red.⁶⁶

The decoration of vessels with a separate neck

Fragments of at least twenty such vessels were found during the excavation; the looks of all were enhanced by a complex decoration. Almost all feature a band separating the neck and the vessel

The base of only one vessel was decorated (E-04) (Fig. 34.1); the heavily worn base fragment displays two irregular, circular, concentric four-line bundles that probably covered the entire base. The base of Bükk-style vessels is rarely decorated; the known pieces bear circles, crosses, and circle-cross combinations, as well as H and T motifs and swastikas.⁶³ Dot-line swastika patterns appear on the pottery collected from the *Fekete-terem* [Black Hall] of the cave.⁶⁴

Traces of white encrustation, a substance particularly sensitive to taphonomic effects, have been preserved on many potsherds (28% of all fragments) (Fig. 34.6). However, one must keep in mind that the light drip-stone shell that coated many sherds can get 'stuck' in the incised pattern, giving the impression of white encrustation, which may distort the proportion of 'inlaid' vessels⁶⁵ (albeit only the originally most likely encrusted pieces were included in the sta-

62 CSENGERI 2013, 97.

63 LICHARDUS 1974, 40, 59. Abb. 19.

64 LACZI 2011, 112.

65 LACZI 2011, 111.

66 MIHÁLY *et al.* 2010, 256; CSENGERI 2013, 255.

body. This zone is bordered by a pair of straight (Fig. 36.3) or serrated lines; it was left empty or was decorated with motifs akin to the ones by the rim and near the bottom.

On the fragment with the most complex decoration, the upper edge of this zone is bordered by a roughly horizontal line, the lower one by a low serrated line. A circumferential double dashed line of serrated line segments runs between them (Fig. 39.3).

The neck part is often covered in herringbone patterns (Fig. 39.4); these can be vertical or horizontal, even on the same vessel.

A motif may recur on different parts of the vessel body; for example, the belly and the neck of a vessel are covered by an identical hatched checkerboard pattern (Fig. 36.3).

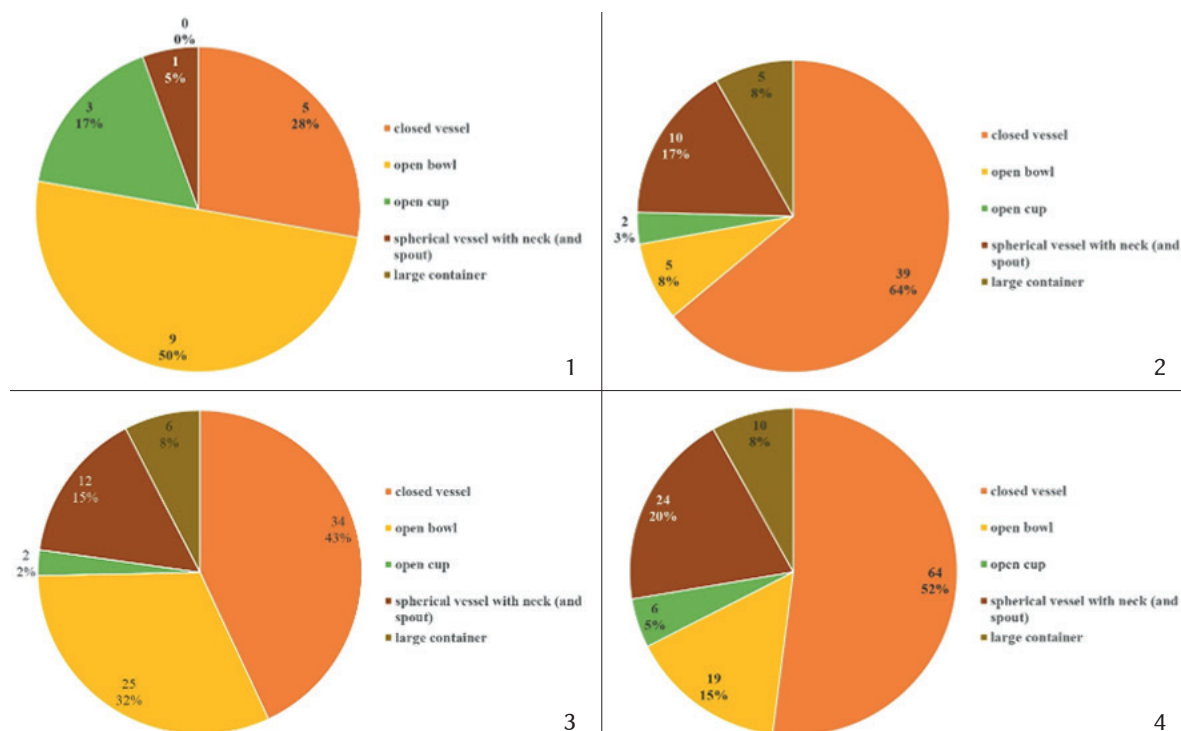


Fig. 25. Household pottery vessel types in the excavated sections. 1 – *Bejárát* (n=18), 2 – *Áttörés* (n=61), 3 – *Folyosó* (n=79), 4 – *Biológiai labor* (n=123).

Only the body part of the complex decoration of a spherical vessel with a cylindrical neck (Fig. 32.2) could be analysed. A circumferential band filled with a line of crosses divides it into an upper and a lower zone; the upper (shoulder) zone is divided into panels by vertical bands filled with a dashed line. The stub of a large, round-based knob or applied decorative element sits on the horizontal line. Five- to six-line running spiral bundles cover the upper zone, with triangles filled with a mesh or fishbone pattern between them. The lower zone is adorned with slightly curved pointed arch line bundles accompanied by an empty band and chessboard and herringbone patterns alternating in the remaining upper triangles.

Of the two decorated spouts, one had a single hole (Fig. 39.1), the other four (Fig. 39.2). The base of the single-hole spout is emphasised by a pair of carelessly executed concentric circles, while its side is adorned with alternating hatched and empty zones. The round-ish base of the rounded rectangular four-hole spout is decorated similarly (but with dotted lines), akin to its side (alternating oblique empty and hatched bands). The lower part of the spout, separated by dotted lines, is decorated with spirals. The front of the spout is covered in zigzag and slanted line bundles, which can be interpreted as a stylised face spout.

Summary of the fine pottery

Based on shape and decoration, most of the fine pottery recovered from the Baradla Cave in 2019 could be assigned to Bükk Phases AB and B, while a few pieces could be assigned to the early Tiszadob–Bükk style and Bükk Phase C.⁶⁷ Traits characteristic of the Tiszadob–Bükk (α 1–2; ζ 1,2 and η 1) styles—small triangles with simple fill, undecorated bottom—could be identified on only 22 fragments (minimum).⁶⁸ The presence of the early classical period (Bükk Phase AB) is pronounced in the record. It is characterised by blunt arch line bundles (β 1–2 styles, at least 27 pieces), the division of the surface to panels (style η 2, at least eighteen fragments) and the increasing importance of decorative triangles.

Fragments featuring a dense decoration made with a multi-toothed pattern comb, characteristic of Bükk Phase B, negative patterns in rim decoration, decorative triangles, H and T motifs, and white encrustation⁶⁹ are a main component of the pottery record (encrusted pieces make more than a quarter of all Bükk-style pottery). Pieces reflecting the evolution of style β (3, 4, 5) and the simultaneous emergence of style γ ⁷⁰ were also found.

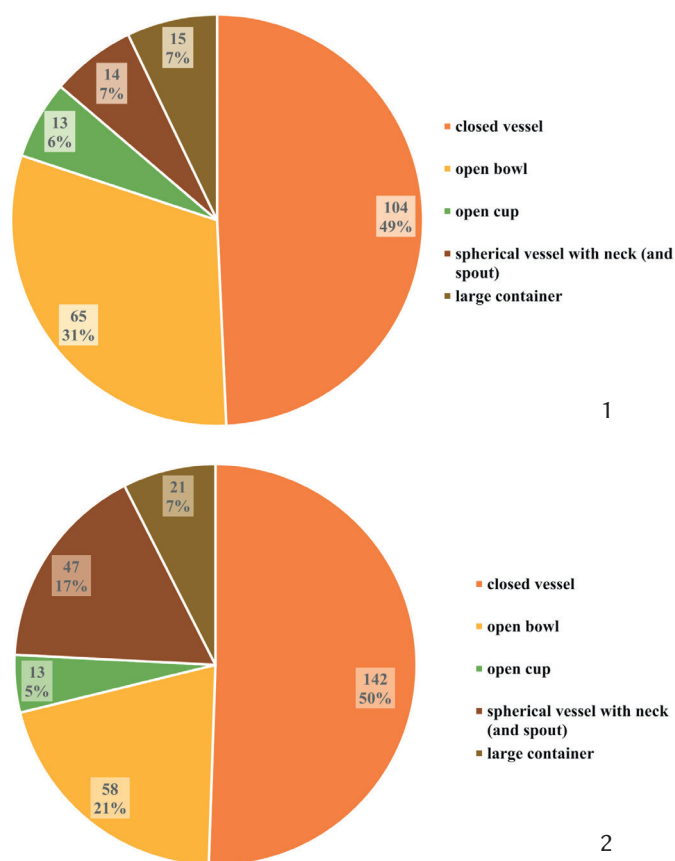


Fig. 26. Comparison of the proportion of household pottery vessel types between Sajószentpéter-Kövecses (1) (n=211) and Baradla Cave (2019) (2) (n=281) based on data from [CSENGERI 2013](#).

67 Due to the lack of data on the absolute age of the finds, the phasing developed by Jan Lichardus and refined by Piroska Csengeri delineates only broadly the chronological position and order of the cave finds. Specifying these requires further radiocarbon measurements and the excavation of intact cave layers (which the presented excavation lacked).

68 LICHARDUS 1974, 85–86.

69 LICHARDUS 1974, 90.

70 LICHARDUS 1974, 90.

Many pieces feature pointed arch line bundles (36 pcs from S-15, 21 pcs from S-16); this motif can probably be classified to style β and assigned to the Bükk Phases AB and B.

The number of fragments bearing late Bükk (Phase C) traits is moderate; its main characteristic, colour encrustation,⁷¹ could clearly be identified on less than ten fragments. Negative decoration still appears in relatively small decorative triangles; a few fragments featuring such patterns were also found. Besides Bükk-style pottery, vessels typical of the Tiszadob pottery style were also found in the cave.

Fig. 21 displays the similarities and differences between the fine pottery recovered from the various parts of the cave.⁷² Closed shapes dominate the record of all areas, their proportion ranging from 55% (Áttörés) to 87% (*Biológiai labor*). Most open vessels were found in the *Folyosó*, and the majority of necked vessels were found in the area of the Áttörés. When evaluating this record, one must remember that the vessel numbers are small and, thus, the conclusions that can be drawn from them are of limited relevance.

The comparison of the pottery from different parts of the cave is followed by a comparative analysis of the distribution of fine vessel types in the record of an open-air settlement, Sajószentpéter-Kövecses (Fig. 22). This site was chosen because Piroska Csengeri already evaluated it and, as I employed her method, it was handy to use the published numbers for a simple comparison. The sites overlap chronologically; however, the cave was also visited after the open-air settlement had been abandoned. Due to chronological differences, the vessel shapes, which remained unchanged for a long time (some even throughout the whole Bükk Culture), rather than the relatively swiftly changing decorations were compared their proportions may provide useful information on the functional differences between the two sites.

Closed forms are predominant in the pottery record of both sites, making up half of the identified vessels in Sajószentpéter-Kövecses and more than three-quarters in Baradla Cave. Accordingly, open forms are present in greater numbers and variety (cups and bowls) in the open-air site. Fine vessels with a cylindrical neck are present in roughly the same proportions (10 and 13%, respectively). However, it must be noted that almost twice as many identifiable pots were obtained from the cave than from the settlement; nevertheless, the marked differences in type distribution can be considered a reliable marker of the functional dissimilarity of the two sites.

Household pottery

The term ‘household pottery’ refers to sherds with medium-thick (0.5–1 cm) and thick (1+ cm) walls, made of clay with a more coarse temper than that of Bükk-style fine ware. Neolithic household pottery from the cave was tempered primarily with organic parts, gravel, and grog, mostly admixed. Most vessels were tempered with fine or medium fine gravel or grog, while some were with small pebbles or possibly sand (proving that requires further analysis). The porosity of the pottery varies widely; this property is dependent on firing temperature rather than the proportion of organic temper.

The analyses carried out on fine pottery revealed that not only the clay could be obtained from the cave, but its natural resources were also exploited for tempering materials: a vessel was tempered with a dripstone fragment (Fig. 52.7). As for the gravel temper, one wonders whether the rock fragments, which are also naturally present in cave clay, were consciously added to the clay or not.

71 LICHARDUS 1974, 91–93; CSENGERI 2013, 179–180.

72 For the sake of transparency, I combined categories with similar properties (closed shapes = ED-01 + ED-11; open shapes = ED-02 + ED-03 + ED-04; vessels with distinct necks (ED-08 + ED-15 + ED-16).

The colour of household pottery ranges from brown and grey (mainly spherical pots and bowls) to pale brick red (large storage vessels), and many are stained, uneven in colour. Their fracture surfaces are usually grey or dark grey, but there are also fragments with a light core. Traces of burnishing could be observed on two-thirds of them, usually on the inner surface but in many cases on both sides.

In the following, the typical dimensions and decoration of the distinguished household pottery types and their frequency in the record of the cave are presented. The separation of bowls and cups was rather arbitrary; relatively small, thin-walled, elaborate pieces were categorised as cups, while slightly larger, more heavily tempered fragments were classified as bowls.⁷³

Characteristic vessel types of household pottery

Most identifiable pot⁷⁴ fragments came from vessels with an inverted mouth and a spherical or slightly elongated body (ED-01, at least 110 vessels, 305 pcs), a variant present in all phases of the Bükk Culture. They vary in size; most have a rim between 11 and 14 cm in diameter (37 pcs), and there is a smaller variant with 5–10.5 cm rims (13 pcs) and a larger with 15–20 cm rims (14 pcs; Fig. 41.4, Fig. 42.3); the rim diameter of the largest ones is 21–29 cm (4 pcs).

Sherds of at least 23 vessels could be identified as vessels with a relatively wide mouth and a more or less spherical body (ED-02). Due to the high diversity of neck and rim designs, sometimes it was difficult to decide whether a particular fragment came from an inverted- or a wide-mouth vessel; these were classified based on the degree of slant. The rim diameter of these vessels is 12–16 cm, which is 1–4 cm larger on average than that of the previous type (Fig. 42.1); the rim of the largest one is 35 cm in diameter.

With 11 pieces, pots with everted rims represent the smallest variant of pots with a spherical or elongated body (ED-03; Fig. 41.2). The rim diameters of two could be measured (19 and 21 cm, respectively).

The pottery record of the cave contains fragments of at least seven hemispherical cups (ED-04) and 25 or more hemispherical bowls (ED-05). Spherical cups (ED-06) are less common, only three vessels could be classified into this type (Fig. 51.2). The only measurable rim diameter was 15 cm. Besides, bowls include at least six spherical segment-shaped pieces (ED-07). The profile of one vessel is complete; it has a rim 12 cm in diameter, a bottom 4.5 cm in diameter, and a height of 4.8 cm. Another measurable fragment has a 16 cm rim in diameter.

A single rim and side fragment represent conical cups (ED-08; Fig. 53.3), while sherds of at least seven conical bowls (ED-09) were also collected (Fig. 46.2). Fourteen matching fragments of a vessel with a 26 cm rim and an 8 cm bottom were found in the *Folyosó*.

No deep bowl akin to type ED-10 in Piroska Csengeri's system (with straight walls and a wide mouth) was found in the cave, but only a variant with slightly curved sides (named here type ED-10.2 due to its similarity to the former; Fig. 49.1).

A single fragment represents deep bowls with slightly curved walls and a wide rim (ED-11). Besides, two cups of unknown type (ED-12), one with a 17 cm rim and the other with a 24 cm rim and a 5.5 cm bottom, have been identified.

73 This subjective separation is not suitable for examining the function of the vessels; it is only sufficient for grouping the sherds.

74 The name 'pot' mainly refers to the shape and general character of the vessels; further analyses would be necessary to determine their actual functions.

The fragments of at least nineteen unspecified open bowls (ED-13), including shallow and deep variants, were also obtained.

The category of spouted vessels with a spherical body and a cylindrical neck (or amphora, ED-14) is best represented by an almost complete vessel (Fig. 50.2). The at least twenty-three vessels (161 pcs. overall) come in different sizes; the rim of most is 9–10 cm in diameter, but some have a 17 cm wide rim. In the record of the *Biológiai labor*, several (10+) fragments belong to each; these were probably placed there as complete vessels at once.

The funnel-necked variant of the previous type is ED-15 (Fig. 50.1);⁷⁵ at least eight vessels, with a rim diameter ranging from 9–15 cm, belong here.

Fragments of at least fourteen vessels were classified as cylindrical-necked spherical vessels (ED-16; Fig. 49.3, Fig. 51.3). In some cases, the height of the neck could be measured (varying between 3.5 and 4 cm), while their rim diameters range from 7 to 13 cm. Funnel-necked spherical vessels (ED-17⁷⁶) are also present (six sherds of at least two vessels; Fig. 44.4).

Mostly matching sherds of at least four large containers with cylindrical necks appear in the record (ED-19; Fig. 46.3, Fig. 47, Fig. 48.2), which comprises 33 fragments of at least two large containers with a slightly everted neck (ED-21; Fig. 45.2), while two vessels could be identified as large, red containers with a funnel neck (ED-22; Fig. 45.1), made of clay tempered with significant proportions of organic particles.

The fragments of at least four large, thick-walled storage vessels with a separate neck (ED-23) were also found. The most robust side fragment is 1.9 cm thick, and the thickness of the others varies between 1.1 and 1.5 cm (even within the same vessel).

At least 31 fragments of nine vessels could be classified as large containers (ED-24). Their wall thickness ranges from 1.3 to 1.9 cm. They have a dark reddish coating, perhaps slip or engobe.

The special forms (ED-25) include three fragments of a small or miniature, hemispherical, light reddish-brown vessel with a fine slip coating on the outside and a bottom fragment with a ring base 6.8 cm in diameter (Fig. 52.1).

The fragment of a single light brown-brown-grey pedestalled bowl (ED-26) was found in the Áttörés (Fig. 53.5). It was made of clay finely tempered with gravel, pieces of organic material, and some pebbles. It was thoroughly fired; the vessel's inner surface is slightly uneven, featuring traces of burnishing. The fragment includes only a small part of the pedestal.

The category of unidentified vessels (ED-27) includes mainly medium- and thick-walled, mostly side and bottom fragments not bearing information enough for type identification. A few were decorated, but without the vessel type they can only be used in analyses of the frequency of pattern variants. About 10% of the 2,576 sherds classified here are bottom fragments (Tab. 1).

Other pottery artefacts

A hand or foot fragment with notches marking the fingers or toes, probably from an anthropomorphic vessel, was found in the area of the *Folyosó* (Fig. 55.7). A similar piece was found earlier during a field walking survey in the cave; the author interpreted it as an arm fragment.⁷⁷

75 In Piroska Csengeri's system, this type represents the low-necked version (which I did not separate, they are part of the ED-14); in the system presented here this code refers to funnel-necked amphoras.

76 Sherds with a funnel neck but no spout have been classified into ED-17; this also differs from Piroska Csengeri's system.

77 LACZI 2011, 108, Tab. 53.

Tab. 1. Household pottery, number of sherds by vessel types.

	Number of pieces	Min. number of vessels
<i>ED-01</i>	305	110
<i>ED-02</i>	36	23
<i>ED-03</i>	11	9
<i>ED-04</i>	13	7
<i>ED-05</i>	84	25
<i>ED-06</i>	7	3
<i>ED-07</i>	16	6
<i>ED-08</i>	1	1
<i>ED-09</i>	19	7
<i>ED-10.2</i>	1	1
<i>ED-11</i>	1	1
<i>ED-12</i>	33	2
<i>ED-13</i>	52	19
<i>ED-14</i>	161	23
<i>ED-15</i>	14	8
<i>ED-16</i>	31	14
<i>ED-17</i>	6	2
<i>ED-19</i>	48	4
<i>ED-21</i>	33	2
<i>ED-22</i>	17	2
<i>ED-23</i>	24	4
<i>ED-24</i>	31	9
<i>ED-25</i>	1	1
<i>ED-26</i>	1	1
<i>ED-27</i>	2519	190
<i>Overall</i>	<i>3467</i>	<i>459</i>

The decorations were also classified based on the system published in Piroska Csengeri's PhD dissertation;⁷⁸ the categories that do not apply to this record were omitted, and the new ones continue with the numbering of the original system (Tab. 2). Household pottery decoration could be divided into three large groups: rim zone, applied, and painted. Some are probably functional (e.g., to enhance grip), while others are likely purely aesthetic.

Rim decorations

Finger-impressed rim decoration (P-02) was observed on two bowls, one of them conical. A pot with a spherical body, a cylindrical necked vessel (Fig. 51.3), and a hemispherical bowl have incised rims (P-03).

Most household vessels were decorated with a horizontal row of holes under the rim (44 pcs; P-01); this pattern appears on 35 pots with a spherical or oblong body (ED-01, ED-02, ED-03; Fig. 41.2,4),

various bowls (Fig. 52.6), and medium-sized vessels with a separate neck. Most holes were pierced from outside, and the clay residue was often not removed. Unfinished holes were also observed (Fig. 53.1), raising the question of the role of the dense row of holes; did they have a practical function or were they important only to the makers? Their proximity to the rim, dense scatter, and the actual weight of the vessels make it unlikely that they were involved in suspension, but perhaps they were used for fastening a lid or a textile cover.⁷⁹ In some cases, additional tabs can be found under them in the belly of the vessel (Fig. 43.3).

Tab. 2. Household pottery, decoration types.

<i>P-01</i>	row of holes under the rim	<i>E-01</i>	finger impressed applied rib
<i>P-02</i>	rim decorated with finger impressions	<i>E-02</i>	AVK/Tiszadob type incised decoration
<i>P-03</i>	rim decorated with noches	<i>E-05</i>	red paint
<i>Bü-01</i>	small round/oval knob	<i>E-06.1</i>	single hole spout
<i>Bü-02</i>	small pointed knob	<i>E-06.2</i>	multi-hole spout
<i>Bü-08</i>	elongated handle/knob	<i>E-07</i>	spout fragment
<i>Bü-10</i>	small, round knobs arranged in pairs	<i>E-10</i>	knobby surface
<i>Bü-11</i>	knob with indented centre	<i>E-11</i>	white slip
<i>Bü-12</i>	thin, slat-like decoration	<i>E-12</i>	dark (black) paint
<i>Bü-13</i>	anthropomorf handle	<i>E-13</i>	drilled hole

Such vessels first appeared in the pottery of the Tiszadob group, and the type remained in use throughout the Bükk Culture.⁸⁰ The line of holes is often interrupted with small knobs, nicely smoothed or rough, usually placed a bit out of line. The pottery record includes 32 spherical pots (Fig. 41.1,3, Fig. 43.1, Fig. 42.3, Fig. 53.2), a hemispherical bowl, and a large container with such decoration. Sometimes this combination was completed with additional knobs on the belly (Fig. 42.1,3, Fig. 51.5).

Applied ornaments

The most commonly applied ornament is a small, round or oval knob (Bü-01), appearing mostly on (elongated) spherical pots (Fig. 3.1,2, Fig. 51.1,2) and a hemispherical bowl. They are usually placed in the lower part of the belly under the rim (Fig. 51.4). Round, pointed knobs (Bü-02) appear on spherical vessels with inverted rims (similar but unspecifiable knob stubs were also classified as Bü-01). A (probably) spherical vessel was decorated with a pair of small knobs (Bü-10; Fig. 53.6).

Wide, slightly finger-impressed applied knob handles appear on five pieces (Bü-08; Fig. 44.2); the shape of two could be identified (a spherical pot with an inverted rim and a bowl with a notched rim). One vessel features an undecorated elongated knob (Fig. 44.3).

Other decorations

The belly of a large vessel with a slightly everted neck is decorated with finger-impressed applied ribs (E-01) in the shape of a swash letter S, in addition to the usual rib at the base of the neck and short horizontal ribs on the shoulder (Fig. 45.2). Apart from the finger-impressed rib running around the neck-belly line, the remains of a double applied rib or knob handle appear on the belly

⁷⁹ LICHARDUS 1974, 48.

⁸⁰ KALICZ – MAKKAY 1977, 47–48; CSENERGI 2013, 114.

of a large container which also bears traces of an off-white coating on its outer surface (Fig. 46.3). The belly of a large container with a cylindrical neck is decorated with evenly spaced knobs with indented centres (Bü-11); its shoulder-neck line is emphasised with a pair of applied horizontal finger-impressed ribs with vertical ends (Fig. 47).

An angular handle appears on a vessel with a spherical body and a neck (Fig. 48.3). The incised decoration is more complex on the handle than on other parts of the vessel.

ALPC/Tiszadob-style incised decoration (E-02) appears on relatively many (at least 48) vessels. The vast majority of them cannot be linked to a specific vessel type; most could be classified as pots with (elongated) spherical bodies, while some as hemispherical cups or spherical vessels with cylindrical or low slightly everted necks (Fig. 44.1,4, Fig. 48.2,4).

A vessel with an elongated body and a cylindrical neck was decorated with a four-line bundle with a curved upper part, overpainted in black (Fig. 49.3). The rudimentary decorative triangle beside it is unpainted, a pair of circumferential lines emphasise the shoulder-neck line, and slanted lines (probably from a zigzag pattern) cover the neck. Black painting (E-12) may appear on vessels of the Tiszadob group between or in incised lines, probably as a continuation of a decoration characteristic of the earlier ALPC period (Fig. 49.2). Auxiliary painting usually appears on vessels with relatively thick walls like in Šarišské Michaľany;⁸¹ however, the fragment decorated this way from Encs-Kelecsény has thin walls.⁸² The vessel found in Baradla Cave is interesting because it features a combination of incised but rudimentary Bükk-style patterns and black painting.

Black painting (E-12) can be linked in general with spherical amphorae with a slightly curved or cylindrical neck. At least seven such liquid containers feature traces of black patterns, mainly a line around the base of the neck⁸³ (Fig. 50.2) and sometimes of the spout (Fig. 52.2). The dark post-firing painting is not very resistant;⁸⁴ in many cases, only its imprint has been preserved, and distinguishing it from soot stains may also be problematic.⁸⁵ No analogy to the vessels with black painted patterns against a red background, characteristic of Phase Ia of Domica Cave⁸⁶ or to the ones with geometric, less frequently spiral patterns from Phase Ib were found in this part of the Baradla Cave due probably to wear. The dark painted band surrounding the neck and the applied decorations adorning the vessels also appear on Szakálhát-style pottery.⁸⁷

Two vessels coated in off-white slip wear incised patterns (E-11; Fig. 49.1). Off-white coating without other decorative elements appears on both sides of a spherical vessel with a cylindrical neck and on a spherical cup (Fig. 52.5)

Traces of post-firing red painting (E-05) were observed on at least three vessels, including one with a slightly everted, low neck, a bowl, and a large, funnel-necked storage vessel with a row of holes under the rim and a narrow horizontal knob (Fig. 45.1).

Oval spouts come with one (E-06.1; 4 pcs; Fig. 52.3), two (E-06.2; 1 pc), or three holes (Fig. 50.2); some three-hole variant is triangular (Fig. 48.1). In one case the holes were not joined (Fig. 52.4). An amphora has a four-hole spout (Fig. 50.1); the spout with the most holes has eight. The spouts point usually upwards, especially on amphorae.

81 ŠIŠKA 1986, Taf. 2.16.

82 CSENGERI 2015, 139.

83 A vessel fragment with a cylindrical neck and black painted strips was also found in the *Fekete terem* (LACZI 2011, 96).

84 SEBŐK 2022, 133–134.

85 LACZI 2011, 112.

86 LICHARDUS 1974, 35.

87 SEBŐK 2022, 135.

Applied barbotine in the form of a knobby surface (E-10) appears on a spherical vessel with a low neck and slightly everted, curved rim, recovered from a secondary position in the area of the *Biológiai labor* (Fig. 46.1). Some vessels have holes not under the rim (E-13): a probably spherical vessel with a funnel neck at the shoulder-neck line and a large vessel decorated with incised two- to three-line bundles on the bottom (Fig. 48.4). Tab. 3 presents a simplified overview of the appearing vessel types and their decorations (not all decorated pieces all included, and combinations [of two or more variants] are also omitted).

Tab. 3. Distribution of main pattern variants among vessel types.

	Number of pieces	Undecorated	Min. number of vessels	P-01	P-01+P-02	P-02	P-03	P-01 + knot	E-01	E-02	E-05	E-11	E-12	E-13	Bü-01	Bü-02	Bü-08	Bü-10	Bü-11	other
ED-01	305	41	110	28	1	0	1	24	0	5	0	0	0	0	5	2	2	1	1	-
ED-02	36	9	21	5	0	0	0	5	0	1	0	0	0	0	1	0	0	0	0	-
ED-03	11	6	9	2	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	-
ED-04	13	5	7	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	-
ED-05	84	19	25	2	0	0	1	1	0	0	1	0	0	0	1	0	0	0	0	-
ED-06	7	3	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-
ED-07	16	6	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-
ED-08	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-
ED-09	19	5	7	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	-
ED-10	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-
ED-11	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-
ED-12	33	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-
ED-13	52	15	19	2	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	1
ED-14	161	4	12	0	0	0	0	0	0	1	1	1	3	0	0	0	0	0	0	2
ED-15	14	3	8	2	0	0	0	1	0	0	0	0	2	0	0	0	0	0	0	-
ED-16	31	8	13	1	0	0	0	0	0	0	0	0	2	1	0	0	0	0	0	1
ED-21	33	0	2	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1
ED-22	17	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-
ED-23	24	3	4	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	-
ED-24	31	9	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-
ED-25	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-
ED-26	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-
ED-27	2576	2498	195	1	0	0	0	2	2	39	1	2	2	1	14	4	4	0	1	11
Overall	3467	2643	459	44	1	2	2	37	3	48	3	3	9	2	21	6	6	1	3	16

Household pottery: summary

The most characteristic decoration appearing on household pottery is incised ALPC/Tiszadob-style patterns, appearing at least on 44 vessels, of which 27 were found in the *Biológiai labor*, ten in the *Folyosó*, three at the *Áttörés*, and eight at the *Bejárat*; in summary, such vessels were scattered in the entire area of the excavation. This decoration appears mostly on spherical pots, sometimes on hemispherical cups and various types of amphorae. Most fragments are too small for a pattern reconstruction; the one to three relatively deep incised line patterns include straight and curved lines, zigzags, and spirals.

Previous analyses have revealed that the ‘household pottery’ was made of local raw materials similar to that of the Bükk-style fine ware.⁸⁸ Such vessels appear on many sites, indicating that the use and production of vessels in the earlier ALPC (2–3) style was part of the life of communities with Bükk-style fine ware.

Tongue-shaped, bent knobs, a characteristic of Bükk Phases B and C, are missing from the record; however, this does not mean that the cave was not used in the late phase (as the presence of late Bükk-style fine ware has proven that it was). The appearing elements of applied decoration represent older, ALPC traditions and have remained in fashion throughout the Bükk Culture.⁸⁹

The presence of red and dark painting probably reflects Szakálhát influence; its significance is suggested by that it was added even to large face vessels.⁹⁰ In the record of the cave, traces of red painting were observed mostly on containers, but dark-painted sherds, especially of spouted vessels, were more common.

The vessel with early Bükk-style incised decoration overpainted in black indicates direct contact with the circle of painted vessels. The distribution of the main pottery types was different between the different locations within the cave (Fig. 25).⁹¹

The types of very few, only eighteen vessels could be identified in the record of the *Bejárat*; here, unlike the other locations, open forms (cups and bowls) are predominant. No fragments of large containers were found there, unlike in all other locations.

The highest proportion of closed spherical vessels was present in the *Áttörés* (64%), accompanied by the least open forms (seven vessels, 11%). Besides, the location yielded a significant number of amphorae (10 pcs) and some large storage vessels (5 pcs).

The proportion of closed and open forms is the most balanced in the *Folyosó* (43% and 34%). The number of amphorae (12 pcs) is roughly the same as at the *Áttörés*, while that of large containers is double (6 pcs).

More than half (52%) of the 123 vessels found in the *Biológiai labor* have closed spherical bodies; besides, the number of open vessels (25 pcs, 20%) and amphorae (24 pcs, 20%) is almost equal. Even though this room is the innermost location and the most difficult to access, most large containers (10 pcs) were found there.

In summary, the biggest differences between the locations are in the proportion of closed and open forms. The unique predominance of open forms in the find material of the *Bejárat* may be a result of the small sample size. As for the inner parts, the proportions of amphorae (15–20%) and large storage vessels (5–8%) change in a relatively narrow range; their distribution within the locations is similar. The significantly higher proportion of open forms in the *Folyosó* than in the *Biológiai labor* may reflect a difference in use, perhaps due to the dissimilar character of the two locations.

Again, comparing the distribution of vessel types with the find material of Sajószentpéter-Kövecses (Fig. 26) may be informative of the differences between the two sites, even if their chronological positions do not match perfectly, and some decorations in the find material of the settlement do not appear in the cave.

88 CSNGERI 2013, 118.

89 CSNGERI 2013, 115–116.

90 CSNGERI 2010, 229; CSNGERI 2015, 139.

91 For the sake of transparency, I combined certain categories (ED-01+ED-02+ED-03 = closed, spherical vessel; ED-05+ED-07+ED-09+ED-10.2+ED-13 = open bowl; ED-04+ED-06+ED-08+ED-12 = open cup; ED-14+ED-15+ED-16+ED-17 = amphora; ED-19+ED-21+ED-22+ED-23+ED-24 = large container).

The biggest difference emerges in the number and proportion of spherical, probably spouted, vessels, whose role in Baradla Cave was clearly more important than in Sajószentpéter. The differences between closed and open forms are not that striking; in the cave, spherical vessels give the half of pottery finds (50%), while the proportion of such forms in the open-air settlement is a little lower (49%). Among open vessel forms, bowls are more prominent in both sites, while cups appear in almost the same proportion in the cave and Sajószentpéter.

The lithic record

In the case of stone tools, reconstructing and understanding the former production process and identifying the different stages of the *chaîne opératoire*, from the procurement of raw materials to the disposal of the tool, provide the basis for processing. Mainly raw materials with a high SiO₂ content are suitable for stone tool knapping, while those including larger crystals can also be used for polished tools.⁹²

As no raw material lump was found in the excavated part of the cave, an m blade core represents the ‘first stage’ of preparation (Fig. 54.9). The record of the cave contains eight knapped tools, all blades (Fig. 54.1–8), of which six were retouched (Tab. 4). Blades were also predominant in Domica Cave.⁹³

Polished stone tools include only axes (Fig. 55.1,2), with an intact, three fragmented, and a small, elongated fragment flaked off the side of an axe amongst them (Tab. 4).

Tab. 4. Lithic finds by raw material and applied technology.

Raw material	Blade core	Debitage product (used)	Retouched tool	Polished tool	Overall
<i>Andesite</i>	–	–	–	4 (+1)	5
<i>Jurassic flint from Kraków</i>	–	–	3	–	3
<i>Limnosilicite</i>	–	1	–	–	1
<i>C1 obsidian</i>	–	1	2	–	3
<i>C2 obsidian</i>	1	–	1	–	2

The scarce lithic record is relatively diverse, especially in terms of raw materials (Fig. 27). The nearest available lithic resources (within 60–70 km) are in the Tokaj Mountains.⁹⁴ The polished axes were made of compressed metamorphic rock, presumably andesite. This rock type is present in large quantities in the southern part of the mountain range (Baskó formation). A blade fragment is from Korlát-Fony limnosilicite, a material from the western part of the mountain range, together with Carpathian 2-type obsidian, the raw material of a core and a blade.⁹⁵

Carpathian 1-type obsidian is the raw material of three blades. This variant is considerably more translucent and higher-quality than Carpathian 2, with outcrops in the Zemplén Mountains 80–100 km from the cave. Besides, three blades were made of an extremely fine distance raw material, Jurassic flint⁹⁶ from the area of Kraków 160–170 km away.

92 T. BIRÓ 1984, 52.

93 LICHARDUS 1968, 70.

94 The Tokaj Mountains played a similarly important role as a raw material source in Bükkábrány-Bánya VII. site (FARAGÓ *et al.* 2015, 27).

95 T. BIRÓ 2008, 20.

96 T. BIRÓ 1984, 52.

All knapped stone finds are blade tools; several feature damage from hafting, indicating that all were hafted. Their length is 2.2–7.1 cm, while their width ranges from 1.15 to 2.65 cm, and their thickness is 0.25–0.6 cm. Their design differs depending on the raw material:

- the proximal blade fragment made from limnosilicite was not retouched but has wear marks indicating intensive use and sickle gloss on the distal part of its left edge (Fig. 54.2);
- the distal parts of two of the three flint blades were truncated (Fig. 54.3,6), while the third was sculptured to a scraper (Fig. 54.1). The right edges of all three feature wear marks indicating similar use.

The blades in two different types of obsidian are dissimilar. Carpathian 1 blanks are almost straight (Fig. 54.5,7–8), while the Carpathian 2 blade is curved and twisted (Fig. 54.4). They were shaped this way due presumably to differences in hafting and use. Both edges of the Carpathian 2 blade are notched and feature wear marks on both the front and the back. Carpathian 1 blade tools include a piece with a widening proximal part and one with a broken or worked base and a notching-like feature and wear marks on the distal part. The design and traces of use wear indicate that the proximal parts of the blade tools came in contact with the processed materials during use.

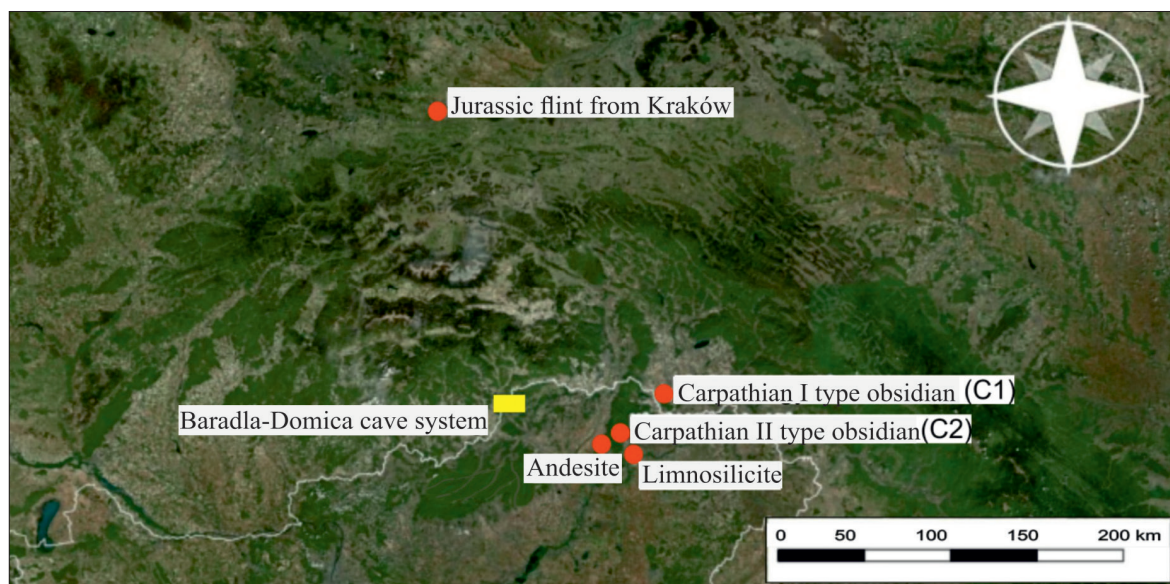


Fig. 27. Map of presumed places of origin of the raw materials of the lithics found in the excavation.

The lower part of the Carpathian 2 blade core has a cortex, suggesting that the lump it was made of was obtained in its natural form.⁹⁷ It features two curved but not completely matching debitage surfaces at a right angle with the oval striking surface. A similar unexploited blade core is known from Boldogkőváralja.⁹⁸ The ridges on the striking surface of the unipolar core may have contributed to a controlled blade flaking; a similar core is known from the Early Neolithic lithic assemblage of Kőtelek-Huszár-sarok.⁹⁹ The upper part of the core shows traces of earlier shaping, probably to prepare the core for being exploited after decortication. The core yielded blades of different lengths.

The polished axe finds include an intact piece (Fig. 55.1), one with a damaged base (Fig. 55.2), and another with a chipped base and tip. All are relatively small, representing types commonly used by communities with Bükk-style pottery (e.g., Domica Cave).¹⁰⁰

97 MESTER 2013, 18.

98 MESTER – TIXIER 2013, 179.

99 MESTER 2013, 17.

100 LICHARDUS 1968, 68.

Most stone finds were obtained from the *Biológiai labor* (all obsidian, two flint blades, and two polished axes). The core and the limnosilicite blade were found at the entrance of the *Róka-ág (Teknősbéka-terem)*.¹⁰¹ A stone axe, a fragment of a polished tool, and the third flint blade came from the *Folyosó*.

In summary, the 2019 excavation yielded a relatively scarce but varied lithic record representing a complex spectrum of raw materials. The core indicates the presence of unfinished lithics in the cave, and also stone knapping, as it was not fully exploited. Interestingly, while the core was found at the *Bejárat*, all the other obsidian tools were discovered in the *Biológiai labor*, i.e., the farthest location.

The production method of the knapped blades varies by raw material, indicating that they were made for different purposes. The polished axes were of similar type but somewhat different in size, although all relatively small. The five types of raw material (andesite, Korlát-Fony limnosilicite, Carpathian 1 and 2 obsidian, and Jurassic flint from Kraków) were obtained from within a distance of 160–170 km. Based on available analogies, the lithic record of Baradla Cave fits the Middle Neolithic lithic industry.

The animal bones

The 286 animal bone fragments collected during the excavation weigh approximately 4 kg (Fig. 28); 57% could be identified at the family or species level. The *Folyosó* and the *Áttörés* contained the most animal bones, followed by *Biológiai labor* and *Bejárat* (Fig. 5). Most bones belong to small ruminants (*Caprinae sp.*), while cattle (*Bos taurus L.*) and pigs (*Sus domesticus Erxl.*) are present in roughly equal proportions in the zooarchaeological record.

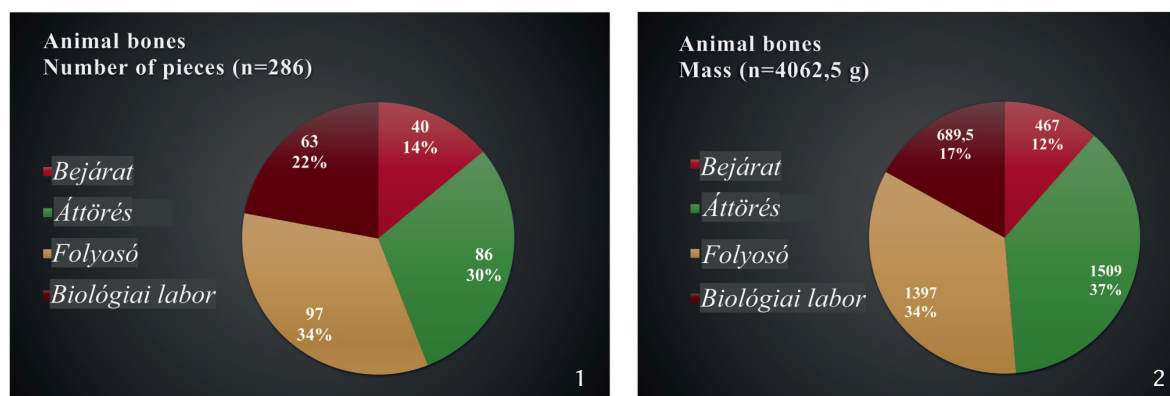


Fig. 28. Distribution by count (1) and weight (2) of the animal bones between the locations within the cave.

The animal bones were not classified by age at death; however, the bones of young animals were present in a greater proportion in the *Folyosó* than in any other location. Matching bones were observed in several cases (cervical, thoracic, and lumbar vertebrae of mainly small ruminants and cattle) in the *Folyosó* and the *Biológiai labor* (Fig. 56.5,6).

A pile of eight animal bones (small ruminants, pigs, and cats) and unspecified Neolithic potsherds was found at the entrance of the *Folyosó* (Fig. 55). Besides, bone fragments with sharp cut marks caused by metal tools were found in the area of the *Bejárat*, the *Áttörés*, and the *Folyosó*. These two phenomena best illustrate well how mixed the cave material is (Fig. 29). Not only human intervention (previous expeditions, landscaping) but also natural factors significantly altered the structure of the cave deposits.¹⁰² The most significant power in Baradla Cave has always been water, which has transported and

101 NYÍRŐ *et al.* 2022, Fig. 5.

102 HANSEN 2001, 407.

eroded finds (and features), so they have only been preserved in their original context in some lucky cases—like, fortunately, the Neolithic material under the travertine layer that protected it. However, every other find and phenomenon must be evaluated taking into account the uncertainty factor.

Tab. 5. Species/family distribution of the recovered animal bones.

	Bejárat	Áttörés	Folyosó	Biológiai labor	Overall
<i>Small ruminant</i>	11	18	16	20	65
<i>Cattle</i>	7	13	14	4	38
<i>Pig</i>	10	8	11	6	35
<i>Cervid</i>	2	–	5	1	8
<i>Rabbit</i>	–	3	2	2	7
<i>Rodent</i>	–	3	–	–	3
<i>Dog</i>	–	2	–	–	2
<i>Small predator</i>	–	–	1	1	2
<i>Horse</i>	1	–	–	–	1
<i>Bear</i>	–	–	–	1	1
<i>Boar</i>	–	–	–	1	1
<i>Overall (pcs)</i>	31	47	49	36	163

With eight different species or families identified, the zooarchaeological material of *Biológiai labor* shows the greatest species variety. Akin to Middle Neolithic sites, small ruminants are predominant, while pig and cattle occur in small numbers, and the wild game remains, including the mandible of a predator, a wild boar canine (Fig. 56.3) and a bear canine filled by a thin dripstone deposit (Fig. 56.1), make up 20% of the bones. A fossil bone indicates the presence of bones from earlier periods, but the question of to what extent any cave animal used the place during the Neolithic has remained unanswered. Leg bones from a small ruminant embryo were also found on the eastern side of the Big Rock (Fig. 56.2). Some bones feature cut marks caused by stone tools (Fig. 56.4.b) and burn marks (Fig. 56.5).

Altogether fifteen pieces of worked and possibly worked bones were found in the cave, seven of them in a Middle Neolithic context in the *Biológiai labor*. The artefacts include a long needle with a pointed tip (Fig. 55.3), a long and narrow tool made from two ribs, perhaps used for smoothing (Fig. 55.4,6), and a curved-tapered rib fragment with a somewhat pointed tip (Fig. 55.5).

In summary, the admixing of the cave material represents a significant problem in the evaluation of the animal bones. The material of three locations (*Bejárat*, *Áttörés*, *Folyosó*) also comprises finds from younger archaeological periods. With eight different species and families, the species variety observed in the *Biológiai labor* is outstanding, and most bones were obtained there from a certainly Middle Neolithic layer; besides, the finds include worked bones and those from an embryo.

The high proportion of wild animals and the predominance of small ruminants among domesticated animals are highly similar to the pattern observed in Domica Cave.¹⁰³ Although the archaeozoological record of relatively few Bükk sites has been evaluated, it is already apparent that there are significant differences between the proportions of wild and domesticated animals and the species composition between open-air and cave sites.¹⁰⁴

103 LICHARDUS 1974, 51–52; CSENGERI 2000, 92–93.

104 CSENGERI 2013, 138–139.



Fig. 29. Feature 2/152 in the Folyosó (an example of mixed find clusters found in the cave).

The diversity of the use of caves

The natural properties of a cave, including the accessibility of the entrances, the difficulty of entry-ing, size, structure, light conditions, etc., determine mainly but not exclusively what activities can be carried out in them.¹⁰⁵ Humans have used caves for two distinct purposes: economic and ritual.¹⁰⁶

Economic utilisation includes occupying it for a longer or shorter time (as residence or shelter), exploiting natural resources (stone, clay, water, minerals), or using it as a storage place.¹⁰⁷

Whether caves served as places of lasting residence is an important question. Today, we see living in a cave as a fundamentally unpleasant way of life, but it might have seemed more acceptable in earlier periods. Caves were places of daily life already in the Paleolithic, especially ones with

¹⁰⁵ MANEM 2008, 250–251; MLEKUŽ 2012, 201.

¹⁰⁶ Academic literature suggests that it is necessary to distinguish between ‘sacred’ (irrational, non-functional) and ‘profane’ (rational, functional) ritual actions. However, these two opposing terms cannot be identified with absolute certainty in context with prehistoric sites, and their separation is not justified either, as ethnographic and ethnohistorical examples prove that many economic acts can have a ritual dimension. Everyday life could be completely interwoven with ritual behaviour, which, fortunately, left traces behind (TOLAN-SMITH – BONSALE 1997, 217; EDMONDS 1999, 8–9; BRADLEY 2002, 3; BALLMER 2010, 121, 124; BRÜCK 2011, 10, 12; ARPONEN – RIBEIRO 2019, 76–77).

¹⁰⁷ ANGHELINU – BORONEANȚ 2019, 513.

sufficiently spacious interiors and wide entrances, which made them suitable for various activities (mainly related to food preparation) and sunlit enough for activities to be carried out in the inner spaces.¹⁰⁸

In later archaeological periods, not only humans but also wild and domestic animals entered the caves. Pastoral animal husbandry was practised in the karst areas of Europe (France, Sardinia, Slovenia, etc.) from the Neolithic, and it involved going into caves for shelter from storms, nocturnal predators, the scorching sun, or the cold.¹⁰⁹ The relics of periodic visits include fireplaces and kitchen waste left behind, mainly pottery fragments and animal bones. In most caves, the excrement of the animals (cattle, small ruminants, pigs and bats) formed massive layers.¹¹⁰ Marks related to the burning of the manure were observed in several caves in the Slovenian Karst region, indicating a 'cleaning' of the seasonally visited caves before moving on, not only to get rid of the accumulated excrement that may have even caused a significant reduction in space in the more narrow caves but also to disinfect them.¹¹¹ The accumulating piles of settlement waste could symbolically remind those returning in the spring to previous settlements, the oldest perhaps linked to their ancestors.¹¹²

The differences between caves used in diverse ways in several archaeological periods can be clearly seen in the La Garma cave complex in Spain. The hill where the sites are scattered has been visited since the Lower Paleolithic when only the foregrounds of the caves were used as temporary camps. The caves were used the most intensively and extensively during the Upper Paleolithic by people of the Aurignacian, Gravettian, and Magdalenian complexes, who left behind several artefacts and features classified today as cave art in the inner, dark parts of the cave: animal figures scratched on the walls, symbolic marks, hand- and fingerprints, scratched limestone and calcite slabs, and pierced/scratched animal bones. As for the Mesolithic, traces of human presence (mainly household waste) could only be detected in the outer parts of the caves. Only burials and no traces of settling are known from the Neolithic and the Copper and Bronze Ages, indicating that the area remained important for the people living there, just not in the old way. The caves were visited in later periods, too, as attested by some medieval pottery found in their innermost parts and the large amount of charcoal falling from the torches. However, not only traces of activities driven by curiosity and a desire for adventure were discovered there, but also a strange multiple burial, where the skulls of all five young men were crushed into pieces after their bodies had decomposed, which means that the grave was visited again.¹¹³

The Pupicina Cave in northeast Istria, with its wide entrance and sloping interior, provides interesting information on the changes in cave use during the Neolithic. The Middle Neolithic (5000–4550 cal BC) layers attest to the most intensive period of use, but the cave was occasionally visited from the Upper Paleolithic until the Roman Period. The Neolithic use was cyclical, starting with the spring and concluding with the burning of the manure at the end of the summer. The ovens indicate that people actually lived inside the cave, while the lithic record reflects the making of stone tools there from local materials. Some changes took place in the Late Neolithic (4550–4150 cal BC): besides typical Hvar-style vessels, some unique pieces appear in the pottery record, while the lithic assemblage of the period is characterised by the relative abundance of finished tools made of raw materials with natural resources at a distance, indicating the strengthening of long-distance connections. The site may have been settled more permanently than earlier, as most of the nearly 15,000

108 BERGSVIK – SKEATES 2012, 6.

109 KAISER – FORENBAHER 2016, 138; GRADOLI – MEADEN 2012, 189.

110 HÁLA 1992, 37–38.

111 BERGSVIK – SKEATES 2012, 6.

112 MLEKUŽ 2012, 207–208.

113 ARIAS – ONTAÑÓN 2012, 101–113.

recovered animal bones can be linked to this period. There was an increase in the proportion of cattle, pigs, and wild game, which were probably slaughtered at a specific location within the cave, while their consumption likely took place elsewhere. Interestingly, the traces of periodical manure burning, characteristic of the previous period, are absent from the Late Neolithic record.¹¹⁴ The differences observed between the Neolithic ways of use show that the people living in a given area could use the same location in various ways, and the history of a cave is a series of diverse episodes.

While most conditions in the spacious Baradla Cave were suitable for staying for a longer period, the lack of sunlight (some light only reached a narrow zone at the entrance, and the locations of the 2019 excavation were in the realm of eternal darkness) strongly limited the area suitable for living. The Middle Neolithic settlement discovered in the foreground of the cave also supports the hypothesis that the cave was utilised as an unusual living space.¹¹⁵ However, it may have been of outstanding importance to the people living there and in the vicinity, as reflected by the large amount of artefacts accumulated in its internal spaces.

A form of ritual cave use is for burials. It may have been important for a community that the deceased could be laid to rest in a suitable place and in safety, in a cave that protected the body from weather and being scavenged by animals.¹¹⁶ Another aspect is that isolating and placing the dead in a closed space could have meant safety for the living.¹¹⁷ Most burials are not typical graves, as the bodies were simply laid on the floor or sometimes covered with stones.¹¹⁸

Complete human skeletons were found in different locations within Baradla Cave, including the corridor between the *Pitvar* and the *Csontház-terem* and the entrance of the *Róka-ág*.¹¹⁹ Scattered human remains were also collected in large numbers from amongst animal bones and potsherds during all expeditions, including the 2019 excavation. Radiocarbon analysis of some ‘relatively complete’ skeletons confirmed the previous hypothesis that the remains belong to Neolithic, Bronze Age, and medieval people.¹²⁰

Understanding past actions carried out in a cave requires knowing the extraordinary feeling of ‘being in a cave’. Archaeological research is fundamentally visual;¹²¹ few archaeological investigations have relied significantly on hearing, touch, and smell, even though these are also integral parts of human perception.¹²² When one reaches the cave entrance and starts progressing inwards, one immediately perceives a change in light and temperature. On the surface, one can feel the sun on their skin, hear the rustling of leaves, see the clouds, and smell the flowers, while inside a cave, all our senses are deprived of such stimuli.¹²³

Vision, the most important sense in everyday life, is limited; the light is flickering, the shadows almost dance on the walls, and the parts which torchlight cannot reach remain in complete dark-

114 MIRACLE – FORENBAHER 2005, 255–275.

115 KOREK 1970.

116 MLEKUŽ 2012, 201.

117 Sometimes the dead were treated in extreme ways; e.g., the remains of young adults with cut marks made a year after their death were found in Scaloria Cave in southern Italy (ROBB *et al.* 2015, 39–44, 46–52).

118 GRADOLI – MEADEN 2012, 196.

119 HOLL 2007, 23.

120 A detailed evaluation of the anthropological record collected during the excavation is beyond the scope of this paper.

121 Christopher Tilley, the pioneer of the phenomenological approach, also considered his personal experiences when answering research questions (TILLEY 1997; BALLMER 2018, 101).

122 HAMILAKIS 2013, 8.

123 GARWOOD 2011, 16.

ness—the importance of touch and hearing increases. The complex acoustics of cave interiors are characterised by reverberation, sound effects that suddenly intensify or fade. In addition, free movement is replaced by adapting to the morphology of the cave's interior and relying on narrower spaces and uncertain, slippery areas, mainly on the palm and (even in shoes) the sole.¹²⁴

The total darkness and the feeling of isolation and confinement affect perception and mental state. Cavers reported experiencing hallucinatory sound effects and images and a shift in the sense of time during long-term mapping of caves.¹²⁵ Research by J. David Lewis-Williams and Thomas A. Dowson has revealed that the geometric forms (entoptic phenomena) experienced while hallucinating are closely similar to motifs of Paleolithic art. Entoptic phenomena are often experienced in shamanistic rituals; as the duller the senses, the easier it is to get through them, caves seem a suitable place for seeing these images.¹²⁶

In a cave, people may experience many, even conflicting, sensations. They fall into a completely unknown and unusual world, where the perspective of human existence changes as nature's enormous power becomes perceptible.¹²⁷ However, one encounters constructive and destructive processes simultaneously. Various stalactite forms develop, but hard rocks can also start to wear off; facing these destructive effects may cause terror and fright.¹²⁸

In summary, caves are not passive environments for human actions but have a significant impact on those who enter them. The powerful impulses experienced in this special milieu could also be important in stimulating memory and reinforcing the community.¹²⁹ If a cave was located far from a community's dwelling area, even visiting it could be of particular importance. As Baradla Cave had a settlement right in front of the entrance, this question may only be relevant to visitors from nearby and distant settlements.

Like many caves, Baradla was used for ritual purposes in several prehistoric and historical periods. Research has outlined differences between the ways of use and rituals practised within the cave in different periods. For example, finds of the Late Bronze Age Kyjatice Culture are concentrated in the areas close to the entrances and can be mainly associated with burials, but there are also deposits of valuable metal objects in the more frequented places. In contrast, Bükk-style pottery with particularly lavish decoration appears almost everywhere in the cave, and its total amount is huge. Although they cannot be linked with specific graves, stray Neolithic human bones are certainly known from there, and early excavations also found Neolithic graves in the branches and chambers of the cave system.¹³⁰

Position of the site in the context of the communities using Bükk-style pottery

The Baradla Cave in Aggtelek is on the western fringe of the distribution area of the Bükk Culture (Fig. 30). It contains finds of the Tiszadob group, the Tiszadob–Bükk transition, Bükk Phases AB, B,¹³¹ and C, indicating that it was visited during the entire existence of the Bükk Culture.

124 MLEKUŽ 2019, 49; DOWD 2008, 314.

125 NYÍRÓ 2019, 30–31.

126 ARPONEN – RIBEIRO 2019, 77–78; MLEKUŽ 2019, 205.

127 MLEKUŽ 2019, 45, 49.

128 MLEKUŽ 2019, 52.

129 MLEKUŽ 2019, 201–203.

130 HOLL 2007, 21. Fig. 5; REZI KATÓ 2020, 54.

131 CSENGERI 2013, 290.

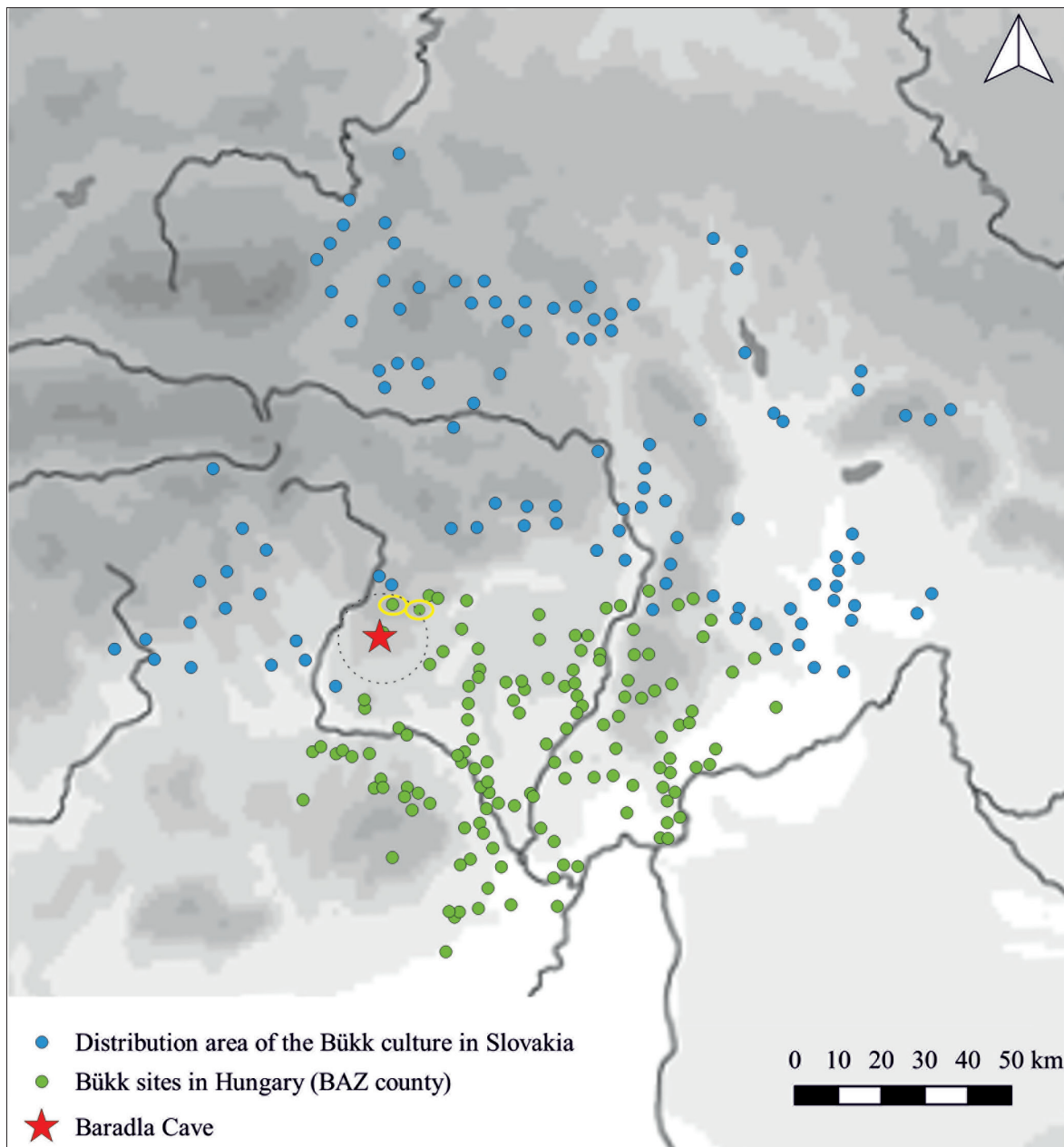


Fig. 30. Bükk and Tiszadob sites in Borsod-Abaúj-Zemplén County and the distribution area of Bükk Culture in Slovakia (based on PIATNICKOVA 2010, Fig. 1; CSENERI 2013, Fig. 23).

Two unspecified Bükk sites (Aggtelek, Szarvasól Cave, and Szögliget, Sárogekerti-zsomboly) are known within a 15 km circle of the cave (Fig. 35, marked in yellow). The settlement in front of the cave entrance was clearly the closest to it, and the local residents could visit the cave on a daily basis.¹³² To reach it from other sites, it took several hours or a day-long journey along a river, and travelling in the low mountain area could be even more difficult sometimes.

Summary

The processing of the Middle Neolithic record of Baradla Cave, obtained by the 2019 excavation, includes the evaluation of pottery, stone, and animal bone finds from four locations (*Bejártat*,

¹³² CSENERI 2013, 290, 297.

Áttörös, *Folyosó*, and *Biológiai labor*) away from the main entrance. In addition to natural taphonomic effects, disturbance caused by humans visiting Baradla Cave, a popular location for centuries, must also be taken into account when observing and evaluating the archaeological phenomena discernible there. Landscaping caused permanent damage at all locations, especially in *Bejárat* and *Áttörös*, resulting in a mixing of almost all materials; besides, certain trends could be outlined in *Folyosó*, while most Neolithic finds in *Biológiai labor* were preserved in their original context due to the travertine layer protecting them.

The rescue excavation affected a relatively small part of the cave, yet more than 5,000 pottery fragments were collected, which can be considered significant even if they accumulated there during centuries of use. Vessel type could be identified from a relatively high proportion of sherds, and conservators managed to reconstruct some complete profiles. Pottery analysis has revealed differences in vessel type composition between diverse locations within the cave, reflected mainly by dissimilar ratios of open and closed forms, while spherical amphorae (liquid containers) and large storage vessels were used in roughly equal proportions in the inner parts.¹³³ The cave was a reliable source of water—this can still be observed in several places today, indicated by *in situ* vessels—which may be a reason behind the abundance of liquid containers.

Decorated vessels represent all phases of the Bükk Culture from the Tiszadob–Bükk transition to Bükk Phase C, but most belong to Phases AB and B. Applied decorations characteristic of the late phase are missing from the household pottery, but spherical vessels, types used throughout the culture, appear in a very high proportion and variety, including decorations characteristic of the late phase.

Despite their small number, the stone finds include knapped and polished tools and a core; these were made of a variety of raw materials. The dissimilarities in design by raw material may indicate different functions, which perhaps included visibly distinguishing between materials obtained from sources at dissimilar distances.

Small ruminants dominate the zooarchaeological record; besides, cattle and pigs were also present among the domestic animals. The proportion of wild animals is around 15–20%; the finds include a bear canine and a wild boar tusk from the *Biológiai labor*. Several bones feature cut marks made by stone tools and burn marks, and the record also contains worked bones (mostly not Neolithic). The assemblage of Neolithic animal bones from *Biológiai labor* certainly has the highest species variety of all; besides, the bones of a small ruminant embryo indicate the importance the room had for Neolithic people.

Based on the separate analysis of diverse find types, *Biológiai labor* seems to have had a prominent role within the cave. Despite the difficulty of accessing it, most pottery fragments came from there, including large containers that were certainly not easy to transport due to their weight and size. The highest proportion of spherical vessels with distinct necks appeared here; this type seems to have been more important inside the cave than in an open-air settlement. Although closed forms are predominant in almost all locations within the cave, the proportion of such vessels amongst both the fine and the household types in the pottery record of the *Biológiai labor* is exceedingly high. Most animal bones identified on a species or family level also came from here; at least the remains of the embryo cannot be interpreted as household waste. Most of the few stone finds were also found here, and the concentration of obsidian blades also points to the special status of *Biológiai labor*.

Hundreds of former stake holes were found in the deepest parts, indicating that the people visiting the place in the Neolithic adapted to the cave environment and transformed it to some degree.

133 The composition of the finds from *Bejárat* is very different, presumably due to the small number of cases and the highly disturbed context.

In the realm of eternal darkness, permanent sources of light (torches inserted into the floor) were needed, and since the cave stream and occasional other watercourses made moving difficult, they perhaps also built elevated walkways or platforms for offerings.

Several authors have already discussed the ritual role of Baradla Cave¹³⁴ and the results of the 2019 excavation confirm that the traces of former activities in the cave differ in many respects from those in coeval open-air settlements.

In the future, it would be important to compare the material of the entire Baradla-Domica cave system excavated so far, as well as the open-air settlement in front of the entrance to Aggtelek, in order to understand the dynamics of cave use in the Neolithic period. To clarify the chronological framework and internal periodisation of the Bükk culture, absolute data are needed from intact layers and closed archaeological features, which unfortunately are not often published due to the many decades when the cave was visited and destroyed. Despite the fact that so many valuable artefacts may have disappeared and suffered damage, we still have the opportunity to examine and see what a prominent role the Baradla Cave had in the life of prehistoric people.

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Fig. 31. Pottery from Baradla Cave. 1–3 – *Folyosó* (1 – (probably) spherical vessel, decorated on both sides, 2 – bomb-shaped vessel, 3 – hemispherical vessel), 4–6 – *Biológiai labor* (4 – bomb-shaped vessel, 5 – deep bowl with straight upper part, 6 – hemispherical vessel with unique decoration).



Fig. 32. Pottery from Baradla Cave, *Biológiai labor*. 1 – pierced bomb-shaped vessel, 2 – vessel with spherical body and cylindrical neck.

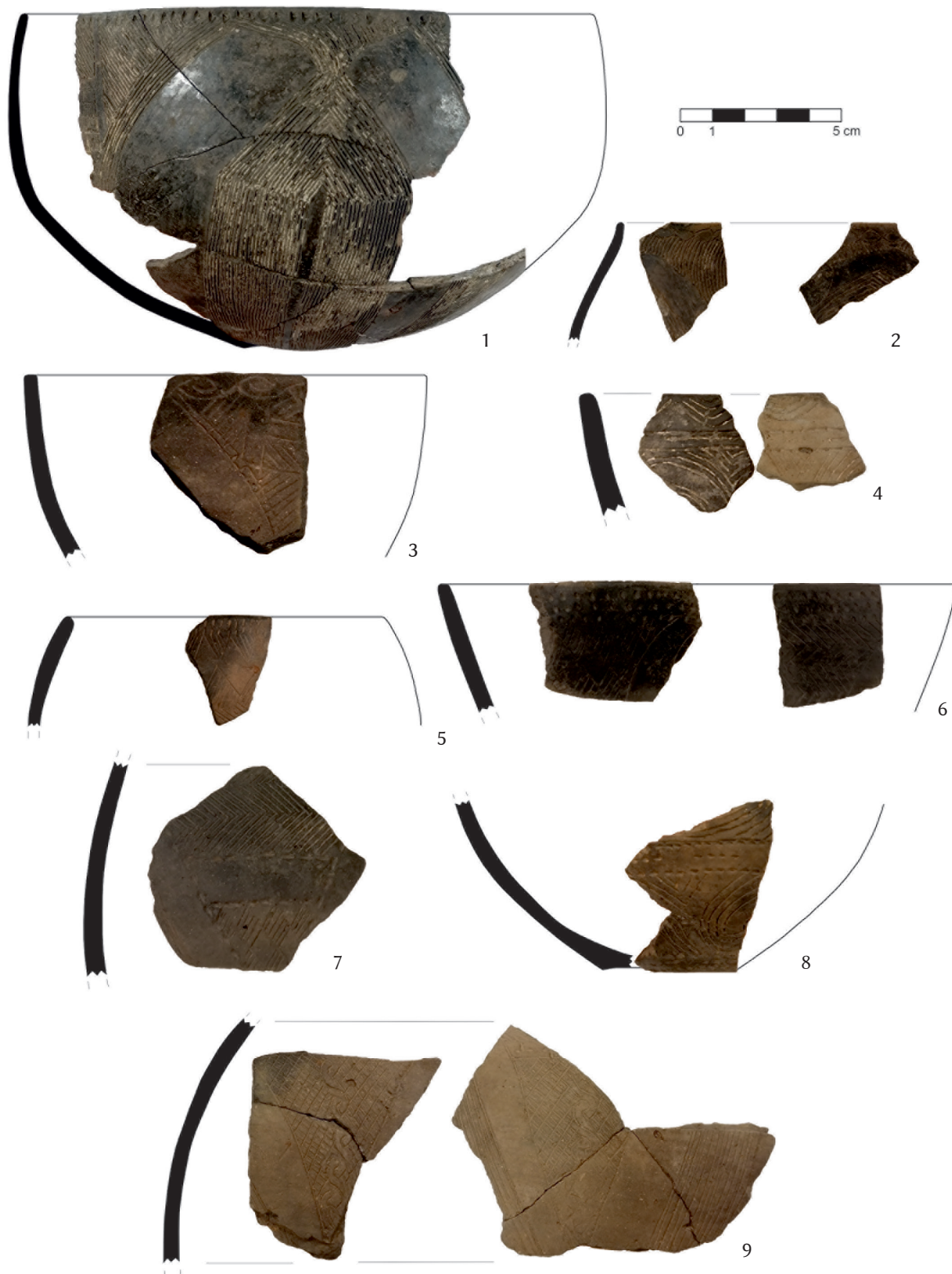


Fig. 33. Pottery from Baradla Cave. 1–2 – *Biológiai labor*, bomb-shaped vessel with wide mouth, 2 – bomb-shaped vessel, 3 – *Folyosó*, hemispherical vessel, 4 – *Bejárat*, hemispherical vessel, 5 – *Biológiai labor*, spherical vessel, 6 – *Áttörés*, spherical segment-shaped vessel with slightly curved upper part, 7–9 – *Biológiai labor*, curved side fragments, 8 – with a concave base.



Fig. 34. Pottery from Baradla Cave. 1 – *Biológiai labor*, with decorated base, 2–3 – *Folyosó*, 2 – with red encrustation, 3 – bottom fragment decorated on both sides, 4 – *Biológiai labor*, hemispherical vessel, 5 – *Bejárat*, bomb-shaped vessel decorated on both sides, 6 – spherical vessel decorated on both sides.



Fig. 35. Pottery from Baradla Cave. 1 – *Biológiai labor*, bomb-shaped vessel, 2 – *Áttörés*, spherical segment-shaped bowl, 3 – *Biológiai labor*, curved bottom fragment.



Fig. 36. Pottery from Baradla Cave. 1 – *Biológiai labor*, spherical vessel, 2 – *Bejárat*, bomb-shaped vessel, 3 – *Folyosó*, vessel with a separate neck, 4 – *Biológiai labor*, curved side fragment, 5 – *Folyosó*, rim fragment of a hemispherical vessel, 6 – *Biológiai labor*, spherical segment-shaped vessel, 7 – *Folyosó*, curved sherds.



Fig. 37. Pottery from Baradla Cave, *Biológiai labor*. 1 – spherical vessel, 2 – bomb-shaped vessel.



Fig. 38. Pottery from Baradla Cave, *Biológiai labor*. 1–2 – spherical vessels.



Fig. 39. Pottery from Baradla Cave. 1–2 – *Biológiai labor*, decorated spouts, 3 – *Áttörés*, vessel with a cylindrical neck, 4 – *Biológiai labor*, vessel with a cylindrical neck.



Fig. 40. Pottery from Baradla Cave. 1–2 – *Folyosó*, bomb-shaped vessels, 3 – *Áttörés*, vessel with a narrow mouth, 4 – *Biológiai labor*, curved sherds, 5 – *Áttörés*, curved sherds, 6–8 – *Biológiai labor*, bottom fragments.



Fig. 41. Pottery from Baradla Cave, *Biológiai labor*. 1-4 – spherical and elongated spherical vessels.



Fig. 42. Pottery from Baradla Cave. 1-3 – *Biológiai labor* (1 – vessel with a relatively wide mouth and oval body, 2-3 – vessels with narrow mouth and spherical body), 4 – *Folyosó*, biconical vessel.

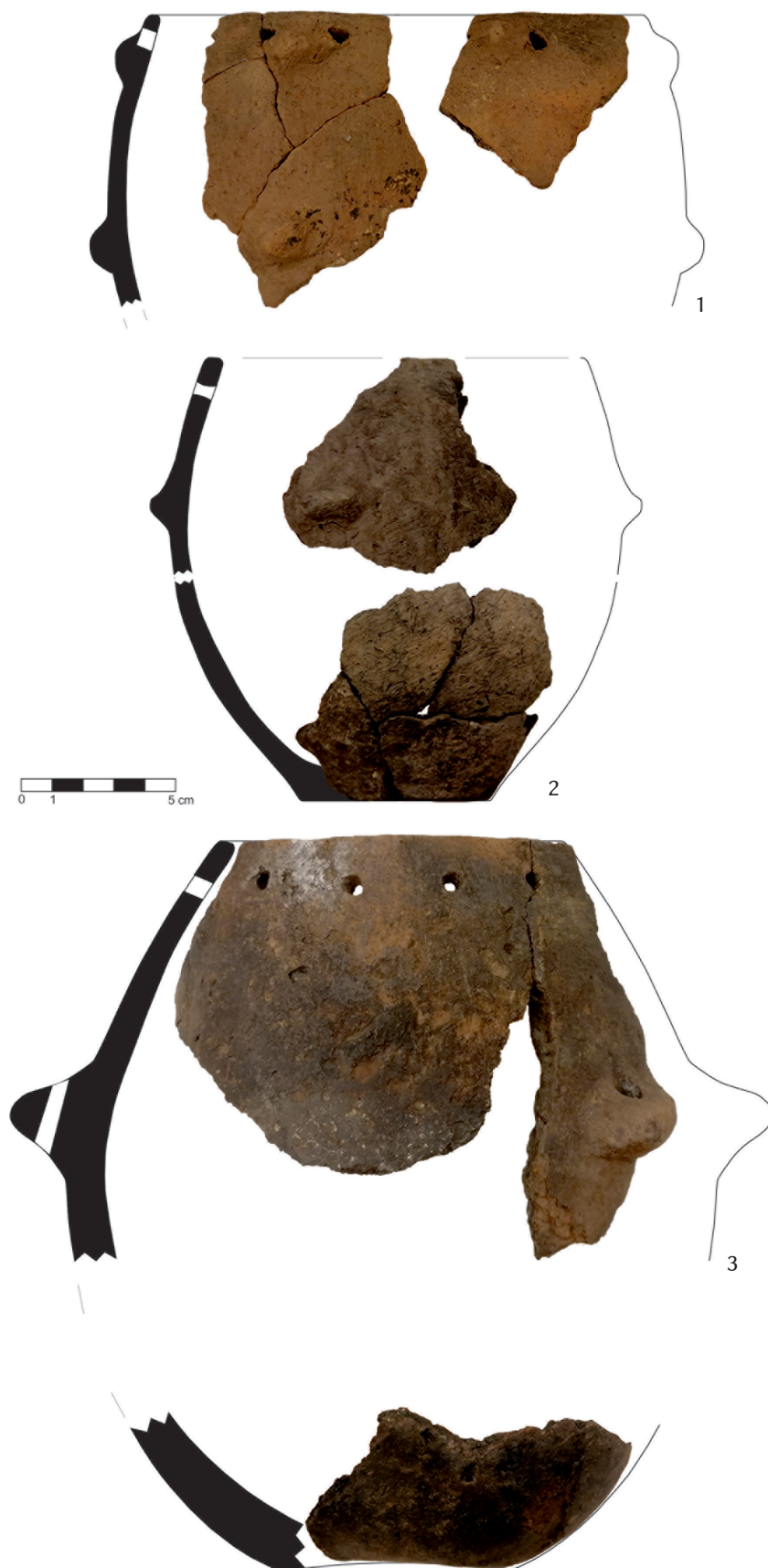


Fig. 43. Pottery from Baradla Cave. 1–2 – *Biológiai labor*, spherical vessels, 3 – *Áttörés*, slightly elongated spherical vessel.

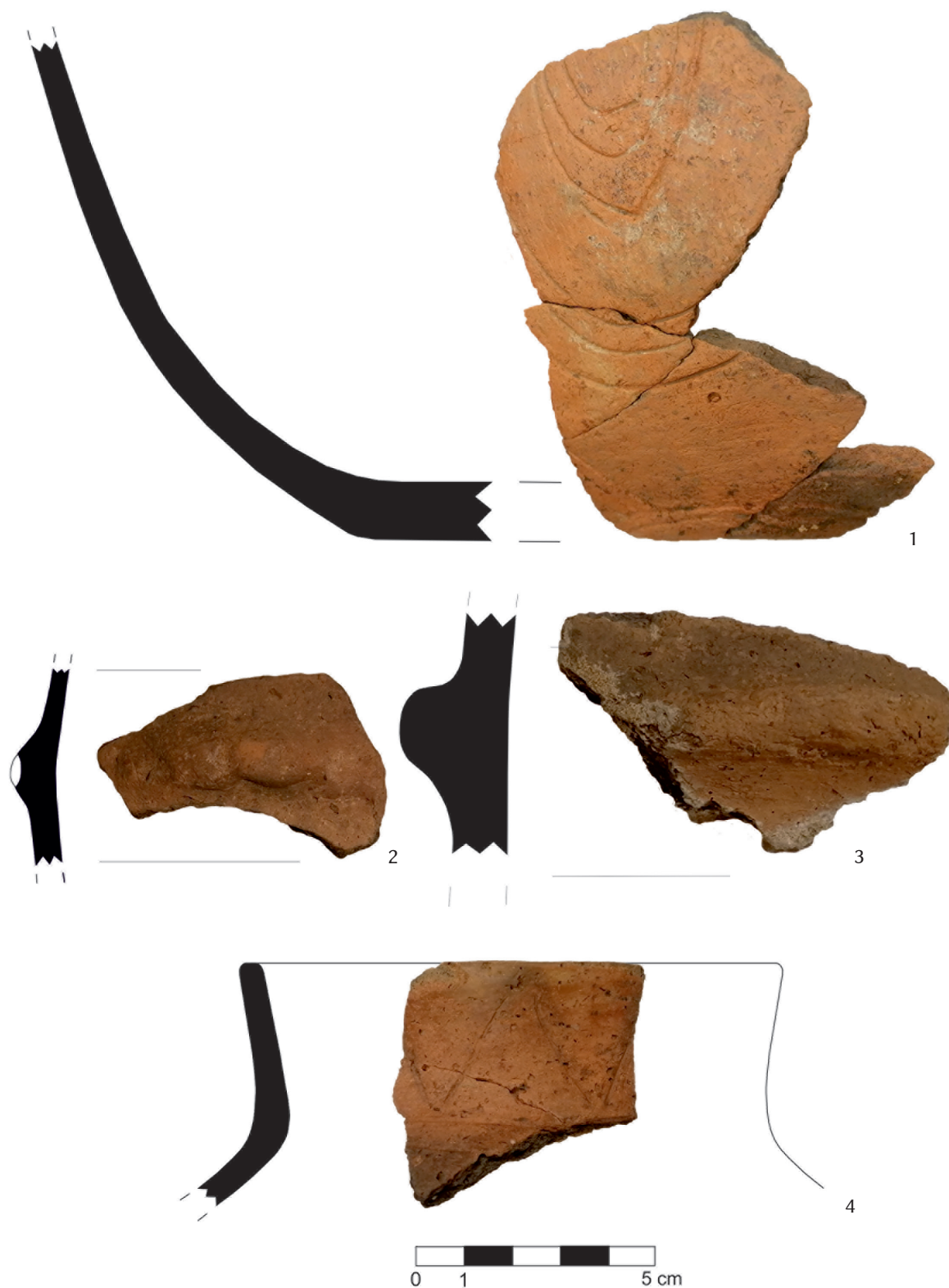


Fig. 44. Pottery from Baradla Cave, *Biológiai labor*. 1 – bottom and side fragments of a container with incised decoration, 2–3 – Baradla Cave, sherds with knob handles, 4 – funnel-necked vessel.



Fig. 45. Pottery from Baradla Cave. 1 – *Áttörés*, large, red container with a funnel neck, 2 – *Biológiai labor*, large containers with a slightly everted neck.

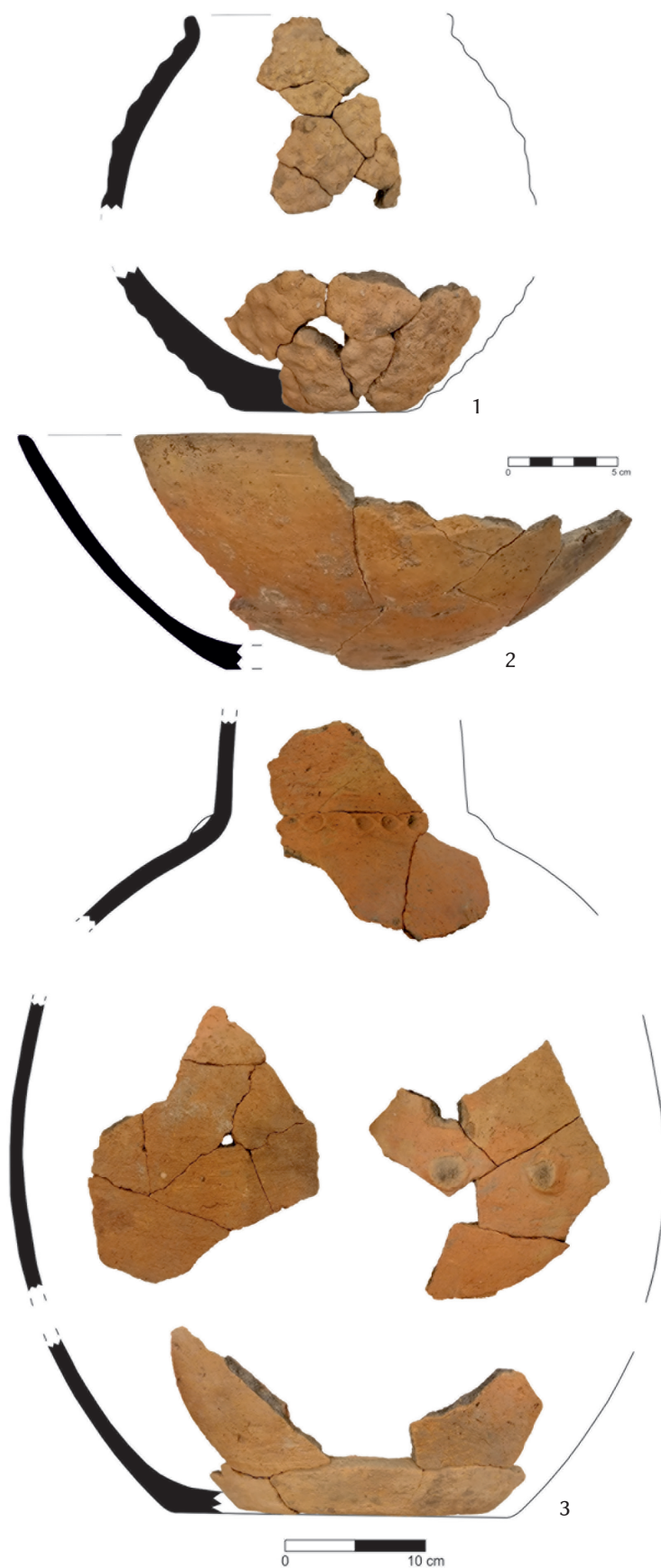


Fig. 46. Pottery from Baradla Cave. 1 – *Biológiai labor*, spherical vessel with a low neck and slightly everted, curved rim, 2 – *Bejárat*, conical bowl, 3 – *Biológiai labor*, large container with cylindrical neck.

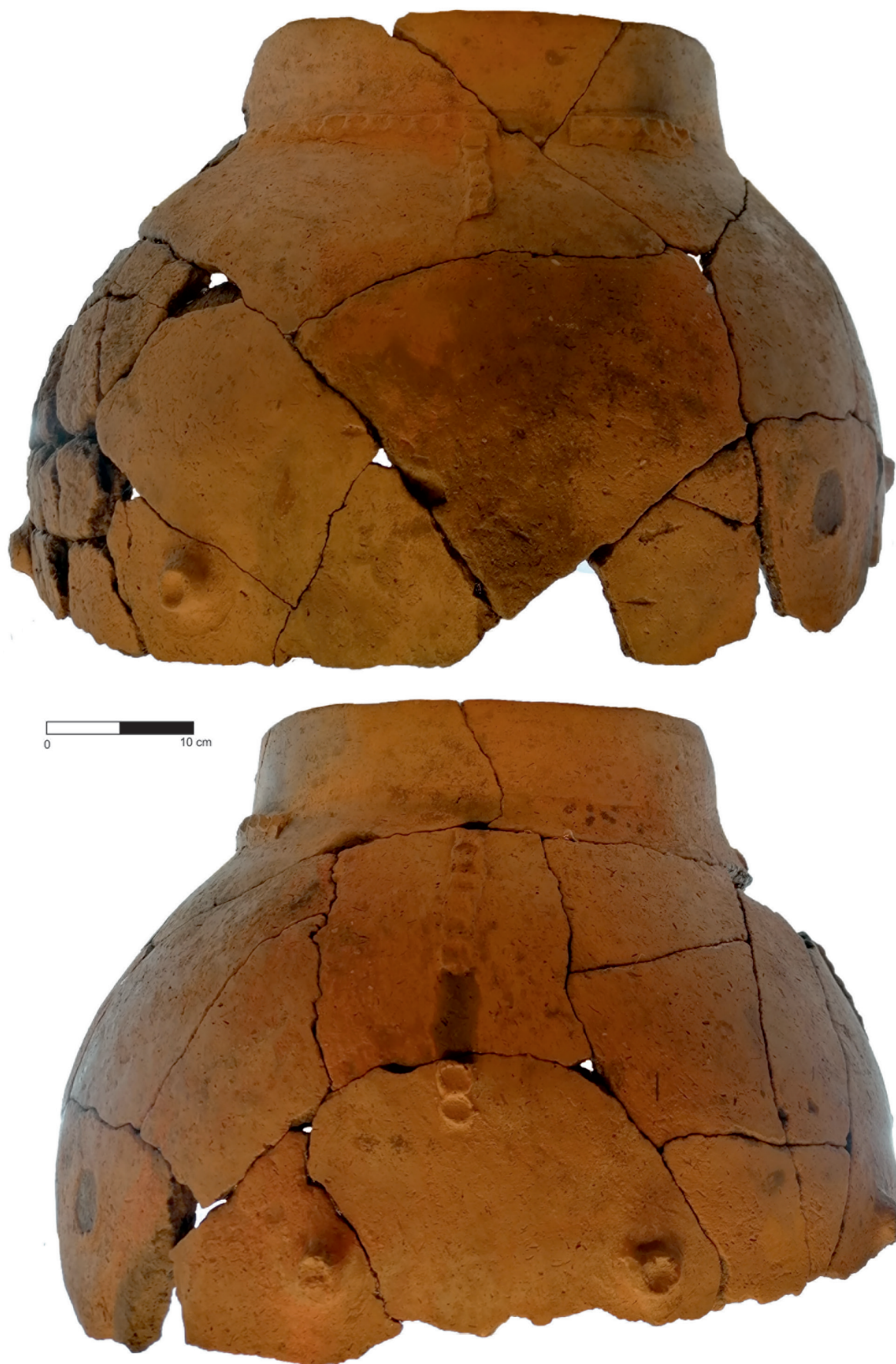


Fig. 47. Pottery from Baradla Cave, *Biológiai labor*. Large container with a cylindrical neck.

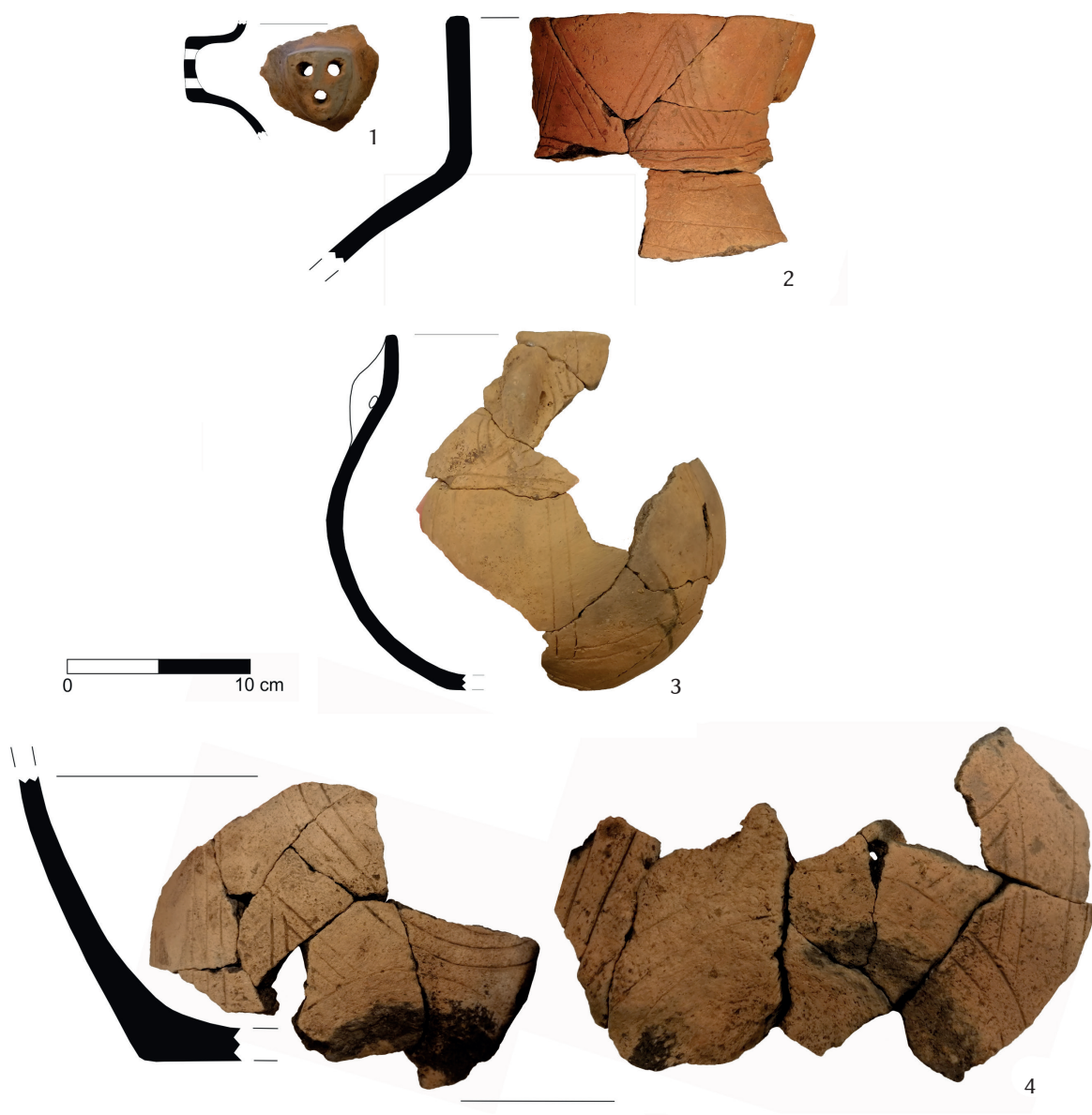


Fig. 48. Pottery from Baradla Cave. 1 – *Bejárat*, triangular three-hole spout, 2–4 – *Biológiai labor* (2 – large container with a cylindrical neck, 3 – spherical vessel with a cylindrical neck, 4 – decorated fragments of a large container).



Fig. 49. Pottery from Baradla Cave. 1-2 – *Biológiai labor* (1 – deep bowl with slightly curved upper part, 2 – curved sherds), 3 – *Áttörés*, spherical vessel with a cylindrical neck.



Fig. 50. Pottery from Baradla Cave, *Biológiai labor*. 1–2 – amphoras with a funnel and a cylindrical neck.



Fig. 51. Pottery from Baradla Cave. 1-2, 4 – *Biológiai labor*, 3, 5 – *Folyosó* (1-2 – spherical vessels, 3 – spherical vessel with a cylindrical neck, 4 – spherical vessel, 5 – spherical vessel).

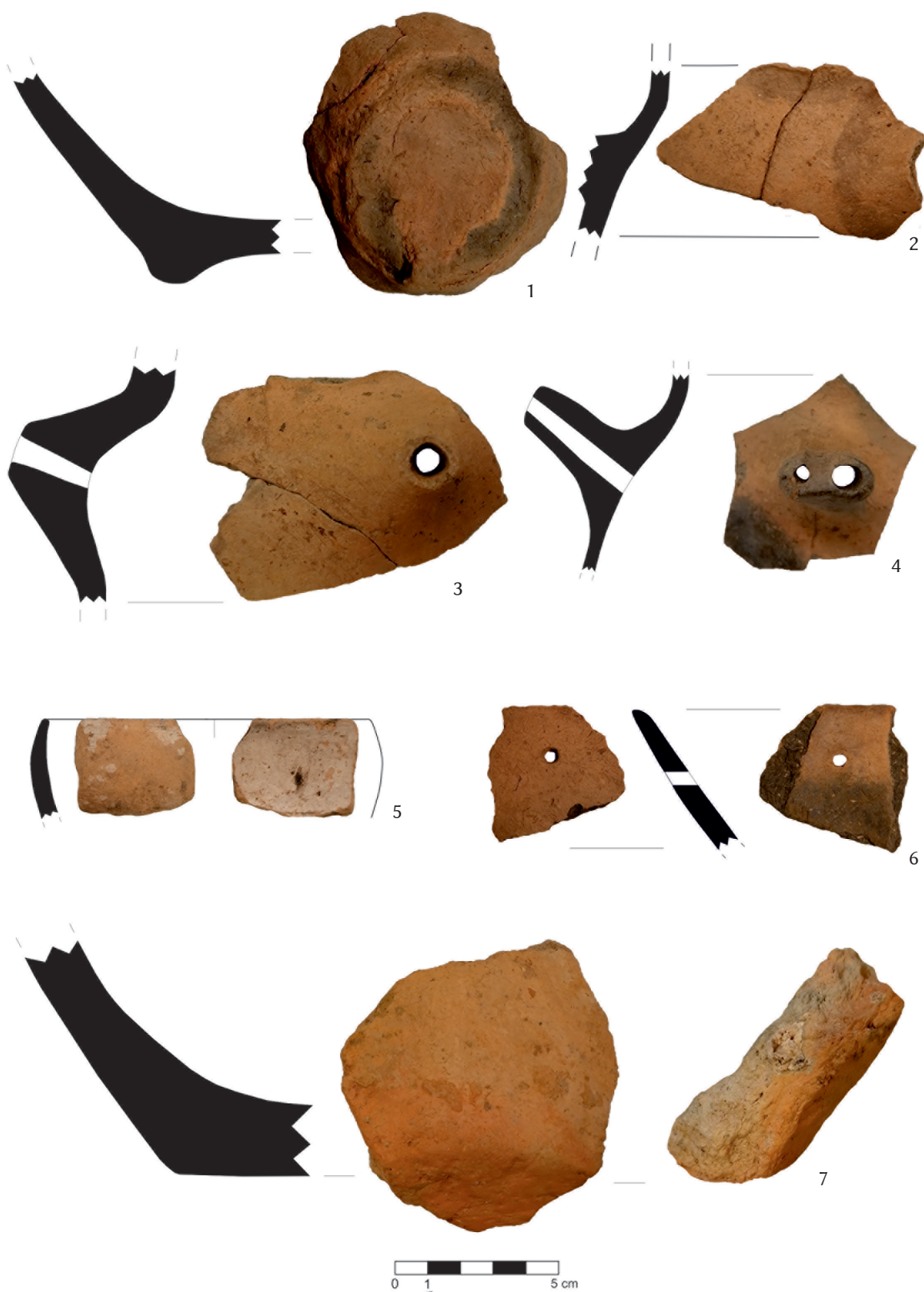


Fig. 52. Pottery from Baradla Cave. 1–3, 5–7 – *Biológiai labor*, 4 – *Áttörés* (1 – bottom fragment with a ring base, 2 – amphora, 3 – one-hole spout, 4 – two-hole spout, 5 – spherical cup, 6 – conical vessel), 7 – Baradla Cave, *Biológiai labor*, sherd of a large container tempered with dripstone.



Fig. 53. Pottery from Baradla Cave. 1–3, 5 – *Biológiai labor*, 4 – *Áttörés* (1 – (probably) spherical vessel, 2 – spherical vessel, 3 – conical vessel, 4 – curved sherd, 5 – pedestalled vessel).



Fig. 54. Lithic finds from Baradla Cave. 1–8 – *Biológiai labor*, knapped stone tools, 9 – *Bejárat*, obsidian blade core.



Fig. 55. Finds from Baradla Cave. 1 – *Folyosó*, polished stone axe, 2–6 – *Biológiai labor* (2 – polished stone axe, 3–6 – bone artefacts, 7 – *Folyosó*, hand or foot fragment in pottery).



Fig. 56. Animal bones from Baradla Cave. 1–4, 6 – *Biológiai labor*, 5 – *Folyosó* (1 – bear and wild boar canine, 2 – ruminant embryo leg bones, 3 – wild boar tooth, 4 – bone with cut mark caused by stone tool, 5 – matching vertebrae, 6 – matching vertebrae).