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The Late Bronze Age Settlement from Giroc (Timiș County). The 1992–1993 archaeological excavations*

Florin Gogâltan, Andrei Stăvilă

To Professor Florin Drașovean on his 65th birthday

Abstract: Identified more than 30 years ago, the archaeological site in *Giroc–Mescal* proved to be highly significant for the research of the Bronze Age in Banat. Besides the settlement that we present here, a habitation layer attributed to the *Gornea–Foeni* ceramic style, characteristic to the end of the Early Bronze in this area, and also a layer with *Gornea–Kalakača* materials, that can be attributed to the 10th–9th centuries BC, have been researched in that location. Although often mentioned in the specialized bibliography, *Cruceni–Belegiș* type discoveries have largely remained unpublished. The archaeological excavation campaigns (1992, 1993) have led to the identification of two layers with materials specific to the *Cruceni–Belegiș* I ceramic style, two dwellings, and a household refuse pit. The archaeological material consists mainly of pottery, but there were also bronze items and two clay molds. The lot allows one to reconstruct the *Cruceni–Belegiș* I ceramic style characteristic to the onset of the Late Bronze (Late Bronze Age I=LBA I – 1600/1500–1450/1400 BC) in the low plain area of Banat. The research campaigns in *Giroc–Mescal* are also significant from the perspective of rescuing the archaeological patrimony, as the site is exposed to the active erosion of the River *Timiș*.

Keywords: Low Banat Plain; Late Bronze Age; *Cruceni–Belegiș* I ceramic style; bronze objects; casting molds.

More than 30 years ago, Prof. Dr. Marius Munteanu from Timișoara offered me the opportunity to publish three interesting items dated to the Bronze Age. They were found on the bank of the *Timiș* River, at the border between the municipalities of *Giroc*, *Moșnița*, and *Sacoșu Turcesc*. Locally known as “*Mescal*”, the place is located ca. 7 km south–east of the municipality of *Giroc* and 2 km east of the forest range, i.e. between the dam and the River *Timiș* (Fig. 1; Pl. 1).

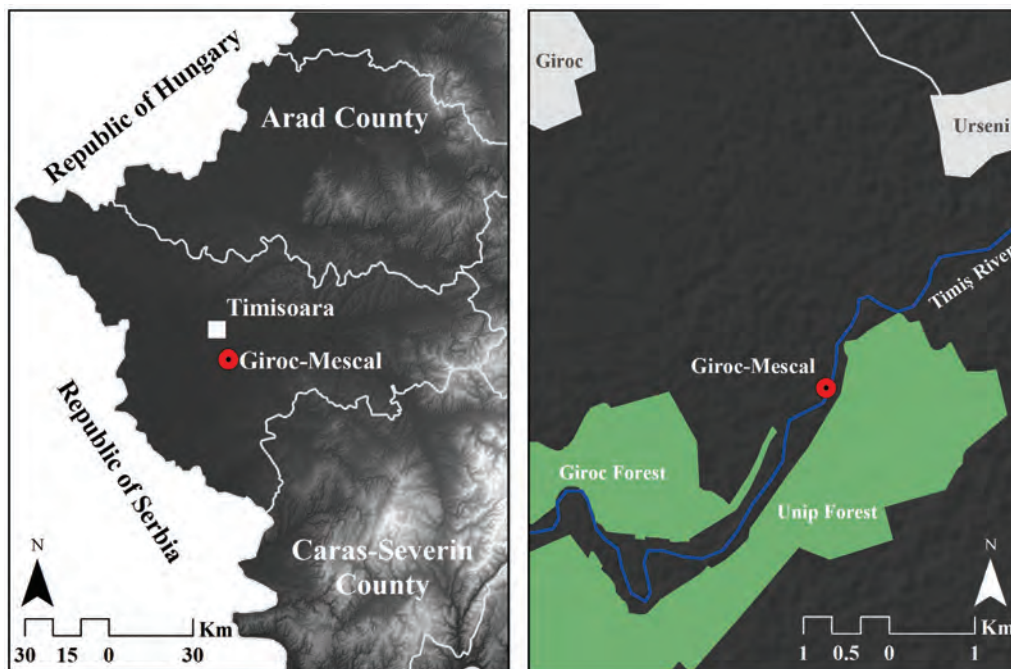


Fig. 1. Administrative location (left) and geographic location of the archaeological site of *Giroc–Mescal*.

* Translated by: Ana-Maria Gruia. Proof-reading Anca Gogâltan.



Fig. 2. On-site picture of the former research units located on the bank of River Timiș (photograph by Cristian Floca) February 2020.

Arriving on site, on the high cliff of the Timiș that provided an “ad-hoc” profile of the entire site, I was able to note the traces of a Bronze Age settlement spread on an area of more than 100 m. The previously mentioned artifacts (two clay molds and a bronze bracelet fragment) as well as several considerations regarding the Cruceni–Belegiș culture were subsequently published¹.

During the field walk in the summer of 1989, I have discovered numerous sherds, located mainly on the riverbank, and in the high cliff of the Timiș. Prior to an archaeological excavation, based on the uncovering of pottery fragments with “pseudo-cord” decoration and a pottery fragment decorated with garlands continued with hachures in the upper part (characteristic for the Vatin Culture), I have tentatively dated the settlement to the early phase of the Cruceni–Belegiș culture².

Starting with 1991, when I decided to focus my doctoral research on the Bronze Age in Banat, I noted the lack of published data on the settlements of the Cruceni–Belegiș culture. At the same time, there were few information on the beginning of the Late Bronze Age in the area of the Romanian Banat plain. The necessity of systematic research on the site under discussion was supported also by the fact that every year this was further destroyed by the erosion of the river cliff³ (Fig. 2). The archaeological excavations performed in 1992–1993 were financed by the Romanian Academy and were part of my research project during those years at the Institute of Archaeology and Art History in Cluj–Napoca.

However, except for the discoveries attributed to the Gornea–Kalakača horizon⁴ and a few pottery fragments characteristic to the Gornea–Foeni ceramic style from the end of the Early Bronze Age⁵, the

¹ Gogâltan 1993=Gogâltan 1994a. The article was initially submitted to the periodical *Tibiscum* in the beginning of 1991. In 1994, noting that the study had been published, I included it in the collective volume of the Association of Young Historians from Transylvania entitled *Studii de Istorie a Transilvaniei* (Studies on the History of Transylvania) published in Cluj during the same year. The eighth volume of *Tibiscum* was only edited in 1995 and included my study as well. As I have mentioned before, I am the first to regret the double publication of the same article (Gogâltan 1996b, n. 1).

² Gogâltan 1993, 63, n. 4=Gogâltan 1994a, 17, n. 4.

³ In 2006, when I took up the archaeological researches in *Giroc–Mescal*, together with Al. Szentmiklosi and V. Cedică, I was barely able to identify the traces of the excavations performed in 1992–1993 (Gogâltan *et al.* 2007).

⁴ Gogâltan 1996a.

⁵ Gogâltan 1996b, 46, T. XII. These discoveries have been attributed to the “Gornea–Orlești Group”, a term employed in the specialized literature of that time. In a novel analysis of the horizon of the broom-strokes and textile impressed pottery

old excavation reports have remained unpublished. On this occasion I have brought up to date the bibliographic data regarding the stratigraphy, the features, and the metallurgy of the communities that we now label as Cruceni–Belegiș. I was lucky to be able to collaborate with Andrei Stavilă who dealt with the typological structuring of the pottery and identified their analogies. I have also restructured and completed the older illustration. Together we provided hypothesis concerning the site's dating and the current stage in the research of the Late Bronze Age in the lower plain area of the Romanian Banat.

*

Description of the excavations⁶. The archaeological researches started in July 1992 and were continued during the summer of the subsequent year⁷. The investigated area covered ca. 140 m² (Fig. 3)⁸. Noting that in three years only, since I have last visited the site, the settlement was eroded



Fig. 3. Location of the research units on an aerial photograph of the site (photograph by Alexandru Hegy, Cristian Floca) October 2019.

along its entire length by ca. 1–2 m, the area CI/1992 was set right on the bank of the River Timiș in order to record as much data as possible before the site was dramatically destroyed. The trench measured 12 m in length and 3.50–4 m in width, depending on the riverbank (Pl. 1/1).

(*Besenstrich und Textilmuster*), Cristian Ioan Popa suggested that the discoveries in the western half of Romania should be called the Gornea–Foeni Group (Popa 2005, 77; Popa 2011, 167–168) and we fully agree with the term.

⁶ Brief pieces of information regarding the 1993 excavations were published in Gogăltan 1994b, 28.

⁷ In July 1993 I have checked the bank of the Timiș circa 1 km upstream and downstream from the settlement, in the hope of identifying the corresponding necropolis. I was unable to locate the necropolis, but I have identified numerous pottery fragments dated to the 12th and 13th centuries ca. 1 km downstream from the Bronze Age settlement on the spot called “Cotul Mantovei”, in the high cliff of the Timiș. The culture layer measured 60–70 cm and numerous archaeological features were apparent in the “profile” that the river had excavated.

⁸ At these excavations also attended my colleagues Ioan Bejinariu (1992) and Gabriel Rustoiu (1993), at that time involved in their student academic practice. After all these years, I thanked them.

During the subsequent year, I opened another area, labeled C I/1993, 18 m apart from the old excavation, upstream along Timiș River, where I have noted an active bank erosion area and implicitly a place of settlement destruction. C I/1993 measured 10 m in length and 4.50–5 m in width, depending on the riverbank (Pl. 1/2). In order to clarify certain stratigraphic details, but also to establish the general boundaries of habitation in this area, I have also performed three trial trenches. Trial trench A (S A), measuring 8 × 1 m, was opened ca. 25 m west of C I/1993 and 8 m away from the earthen road, oriented east–west. Trial trench B (S B), measuring 4 × 1 m, was located ca. 70 m upstream from C I/1993 and 30 m away from the area where soil was extracted for the construction of the dam during the second half of the 19th century. The trial trench was oriented NW–SE. The last section, trial trench C (S C), was opened approximately along the same line as C I/1992, but ca. 20 m from the “cubici” (the local name of the extraction area for the soil required for the erection of the dam). Its initial dimensions were 8 × 1 m, but it was subsequently extended on one side by 5 × 3 m and on the other side by 5 × 2 m (Pl. 2). As previously mentioned, the systematically researched site in the area called “Mescal” covered ca. 140 m² (Fig. 3).

Even if the site proved to be extremely interesting, due to the discovered archaeological material, its complex stratigraphy, and last but not least the proven cultural realities, the research was discontinued for several reasons: first, the very hard and dry soil that made the excavation laborious and the recovery of data concerning the horizontal stratigraphy very difficult⁹; then there was the site’s location, far (ca. 7 km) from other settlements, and the restricted availability of man power. Moreover, at that time my priority was to research archaeological objectives dated to the Early and Middle Bronze Age (the topic of my doctoral dissertation)¹⁰. Thirteen years later, in the summer of 2006,¹¹ the excavations were resumed by Alexandru Szentmiklosi whose doctoral dissertation focused on settlements of the Cruceni–Belegiš culture in Banat¹².

Stratigraphy. Taking into consideration the fact that the stratigraphy was slightly different in each of the investigated areas, we shall analyze these aspects according to each of the opened sections. C I/1992 was set in an area with a small alluvial sand deposition. The stratigraphy was thus: alluvial sand between 0 and 0.20/0.25 m; black–gray hard soil between 0.20/0.25 and 0.60 m (Gornea–Kalakača level)¹³; yellow–gray soil, strongly pigmented with coal and pottery fragments, flour–like in structure, between 0.60–0.75 m (Cruceni–Belegiš level)¹⁴; the archaeologically virgin soil, sandy, starts from 0.75 m (Pl. 1/1). C I/1993 displayed the following stratigraphy: alluvial sand 0–0.30/0.35 m; black–gray hard soil 0.30/0.35 – 0.70/0.75 m (Gornea–Kalakača level); yellow–gray soil pigmented with red (small pottery fragments and tiny adobe pieces), sandy in structure 0.70/0.75 – 0.90 m (Cruceni–Belegiš level); yellowish soil, pigmented with black (small pottery fragments, coal) 0.90–1.05/1.10 m (Cruceni–Belegiš level); below we found the archaeological sterile soil (sand) (Pl. 1/2). S A/1993: alluvial sand 0–0.20/0.25 m; black–gray soil 0.20/0.25–0.65/0.70 m (Cruceni–Belegiš level); yellow–gray soil, strongly pigmented with red (small pottery fragments and tiny adobe pieces) 0.65/0.70–0.85/0.90 m (Gornea–Foeni level)¹⁵. The virgin soil that was found below this depth consisted of hard, yellow–brown clay (Pl. 2). S B/1993: 0–0.30 m alluvial sand; 0.30–0.75 m black–gray soil (Cruceni–Belegiš level); 0.75–1.00 m yellow–gray soil (Gornea–Foeni level); the subsequent layer was the archaeological sterile, consisting of yellow–brown, very hard clay (Pl. 2). S C/1993: 0–0.20/0.25 m alluvial sand;

⁹ For this reason, less than 100 m² were excavated during the three weeks of the 1993 campaign, with more than 10 workers. The site is best researched during spring and late autumn, not during the dry summer months.

¹⁰ Gogâltan 1999.

¹¹ Gogâltan *et al.* 2007.

¹² Szentmiklosi 2009.

¹³ Cruceni–Belegiš pottery fragments also became apparent throughout this level. They have been drawn, but not all are included in our plates; we have excluded those found in secondary stratigraphic positions. We might present them to the academic environment on another occasion, as they would render the present article excessively long.

¹⁴ Several Gornea–Kalakača-type pottery fragments were also found in the upper part of this layer. They could have ended there through soil compaction or were part of small features (such as postholes, for example) that could not be identified stratigraphically.

¹⁵ In this layer were discovered pottery fragments decorated with “textile” and “broom–strokes” impressions. Based on the combination of these ornaments, the layer in question was included in the Early Bronze Age III and attributed to the Gornea–Orlești cultural group (Gogâltan 1996b, 46, T. XII). For the absolute and relative dating of this horizon (Gornea–Foeni), see more recently Gogâltan 2015, 60–61.

0.20/0.25–0.65 black–gray soil (Cruceni–Belegiș level); below this layer we found the archaeological sterile soil (yellow–brown hard clay) (Pl. 2).

Nothing was known on the stratigraphy of the Cruceni–Belegiș settlements from the Romanian Banat at the time when the excavations started in Giroc–*Mescal*. Trial excavations had been performed in the settlements of Timișoara–*Fratelia*¹⁶ and Voiteg–*Groapa cu vulpi*¹⁷, but the data had not been published. The situation is very different today, as our colleague Alexandru Szentmiklosi, who has sadly passed away, had the merit of publishing the old excavations and performed new excavations in settlements such as those in Peciu Nou–*Bociar*¹⁸, Deta–*Dudărie*¹⁹, Cruceni–*Módosi út*²⁰, and Foeni–*Gomila Lupului II*²¹. The results of these archaeological investigations show that in general the Cruceni–Belegiș–type settlements had simple stratigraphy, consisting of one or two culture layers, varying between 0.25 and 0.40 m in thickness.

The features. We shall only present here the features that belong to the Cruceni–Belegiș habitation horizon, as those attributed to the Gornea–Kalakača community have already been published²² and will only be enumerated. No feature could be identified in the culture layer as the soil was extremely hard and dry.

Thus, five features were identified in C I/1992. There was a pit–house (L 1/1992) and a pit, probably for storage (G 1/1992), very likely used in connection to the dwelling in question. All are characteristic of the Cruceni–Belegiș horizon. Another pit (G 2/1992), as well as two drainage ditches²³ (S 1 and S 2) can be connected to the Gornea–Kalakača type habitation (Pl. 1/1). Returning to the features that can be dated to the Bronze Age, one must mention that the dwelling was oblong in shape and measured 4.40 × 2.60 m. Its walls were relatively straight, and the dwelling deepened into the virgin soil by some 0.25–0.35 m. The floor was flat. We were unable to identify postholes, possibly due to the fact that the dwelling was built in a sandy area and thus the holes were dug into this soil and were subsequently filled in with more sand²⁴. As the ground suggests, this feature had two living areas: a “porch” and a room proper. Inside the dwelling, we discovered a significant quantity of pottery, largely in a fragmentary state (Pl. 3–4; 5/1–2), small pieces of adobe, a bit of coal, and very few bones. An interesting detail resides in the fact that a small clay tray (Pl. 5/2), measuring 20×11 cm, was full of clay mixed with chaff. It is possible that a small, relatively round hand mill (15.5×15 cm, 5.5–6 cm in thickness) (Fig. 8) and a small pyramidal crusher with traces of friction on three sides (4.5×4.2 cm) (Fig. 9), discovered in the part of the drainage ditch S 1 that cuts through the dwelling, were initially in the “porch” of this house. Two small bronze chisels were uncovered in the same area (Pl. 21/4–5), but, as we will subsequently show, their chronological identification is difficult. A pit (G 1/1992) became partially visible ca. 1.5 m from the dwelling. It measured 1.9 m in diameter and continued by 0.35 m into the virgin soil. Its edges are slightly trough–shaped and its base relatively flat. The inventory of this pit consisted of a few pottery fragments characteristic to the Bronze Age (Pl. 5/3–7).

Three Bronze Age pits were identified in C I/1993 (G 1, G 2, and G 3) (Pl. 1/2). They were not easily identified and only became fully visible when reaching the virgin soil, despite the repeated efforts of making the ground wet. It is difficult to say if the drought of that year or the fact that they were dug into sand made the shape visible mainly based on the pigments and the archaeological material. G 1 was relatively rectangular, measuring 2.10 m in length, the maximum width 1.15 m, and the depth 15 cm. Its base was flat. Only a few atypical pottery fragments that can be attributed to the Bronze

¹⁶ Stavilă 2012 with the older bibliography.

¹⁷ Florin Gogâltan, who took part in the archaeological excavations performed in the autumn of 1986, insisted on the trial trench inside the settlement (Szentmiklosi, Medeleț 2016, 240, footnote 9). Since the researches envisaged the Bronze Age necropolis, both the trial trench inside the settlement and the field documentation were performed by the students who took part in that campaign (Aureș Rustoiu, Florin Băluțiu, and Florin Gogâltan) in their free time. See also Medeleț *et al.* 2001.

¹⁸ Szentmiklosi 2016, 203–237.

¹⁹ Szentmiklosi 2004–2005, 637–656.

²⁰ Szentmiklosi 2010b, 293–306.

²¹ Szentmiklosi 2009, 208–227.

²² Gogâltan 1996a.

²³ We believe that the drainage slope towards the river, a much more aired fill, black in color, provides enough indications for such an interpretation.

²⁴ A similar situation was also identified in the case of the Cruceni–Belegiș graves. The grave pits could not be identified, even though hundreds such features were researched (see Medeleț 1995, 298; Medeleț 1996, 240–241).

Age were recovered, like from all the other pits. G 2 was irregular in shape, with the maximum diameter measuring 1.15 m and 0.55 m in depth. Its irregular base was slightly conical. G 3 was slightly oblong in shape. Its maximum diameter measured 1.65 m and its maximum width measured 1.05 m. Its trough-shaped base went deeper into the sterile by 35 cm. One can presume that these pits date to the Bronze Age due to the fact their fill has the same color and consistency as the culture layer. As for their function, they might have been used as storage pits subsequently turned into household refuse pits. In the western corner of C I/1993, over an area of ca. 1 m², we found several bronze objects at the base of the level belonging to the Cruceni-Belegiș community: three “drops”, one bronze chisel that was quadrilateral in section in the active part, a piece of wire, a fragment probably from a winged needle (*Flügelnadel*), and two blades (Pl. 21/1–4, 7–10). No feature became apparent. It is possible that a workshop existed in their proximity, but this hypothesis must be confirmed by future excavations.

Another pit-house has been identified in S C/1993 (L 1/1993) (Pl. 2). Its shape was almost oval, with the maximum dimensions measuring 4.25 × 3.80 m. It continued down into the virgin soil in that area by 45–50 cm. Inside the dwelling we could note a step, ca. 5 cm deeper, covering almost 1/3 of its inner area. Unlike the above-mentioned pit-house, this one has revealed two postholes, very likely because it had been dug into clay, not sand; one of the postholes was deeper and had a wider diameter (50 cm), while the second, located in close proximity, was smaller (35 cm in diameter) and oriented slightly obliquely, towards the larger hole. Such dwellings have also been identified in Timișoara-*Fratelia* (L.VIII/1977), Peciu Nou-*Bociar* (L.1/1997, L.2/1999), Deta-*Dudărie* (L.2/2000), and Foeni-*Gomila Lupului II* (L.3/2004, L.5/2004)²⁵. During the recent researches in Moșnița Veche-*Dealul Sălaș* we have investigated a dwelling that covered an area of 8.1 m² and continued 0.7 m below the prehistoric ground level²⁶. The building system of these dwellings was probably similar to the style of a house dated to the First Iron Age in Remetea Mare, whose reconstruction was based on Florin Medeleț’ design located in the former permanent exhibition of Banatului Museum in Timișoara. A conical roof made of reed or straw, supported by a central post and secured by a second one, could provide shelter for several individuals, if one takes into considerations the surface of ca. 14 m² of the dwelling. As for the archaeological material, the construction in question revealed only pottery fragments (the typical ones appear on Pl. 8–9). As previously mentioned, besides the dwellings, storage pits, often reused as household refuse pits, have been also identified. Although several storage pits were quite deep (measuring more than 1 m in depth), most of them were shallow (less than 1 m in depth), of various shapes, such as those in Timișoara-*Fratelia*, Hodoni-*Pustă*, Deta-*Dudărie*, or Foeni-*Gomila Lupului II*²⁷. Unfortunately, all have remained as yet unpublished.

The archaeological material. In an attempt to reconstruct the daily life of the community that lived at the beginning of the Late Bronze Age on this bank of the Timiș River, the discovered archaeological material can provide several clues. The lot includes numerous pottery fragments and stone tools (Fig. 8–9)²⁸. One can add the few metal items uncovered in drainage ditch S 1 from C I/1992 (Pl. 21/5–6), in C I/1993 (Pl. 21/1–4, 7–10) and the two molds and the Regelsbrunn-type spiral bracelet fragment found by Dr. M. Munteanu on the bank of the River Timiș (Pl. 20). No bone tools were found. Moreover, because of the acid soil, only a few large bone fragments could be recovered, and even those items were very friable.

Pottery. In the investigated area, the great majority of typical pottery fragments were found in the culture layer. Still, a significant number of finds were uncovered in the two dwellings or in the pits, allowing us to define them from a chronological and cultural perspective and establish their role in the repertory of everyday wares. The pottery will be analyzed according to shape, ornaments, type, and dimensions. We are foremost interested in deciding the function of the pottery vessels and not in creating a sterile typology. This brings us closer to the everyday life of prehistoric people. Like today,

²⁵ Szentmiklosi 2009, 155.

²⁶ A. Staviță and B. Craiovan have performed rescue archaeological researches in the summer of 2017.

²⁷ Szentmiklosi 2009, 157–159.

²⁸ As mentioned above, this was a small hand mill, relatively round, and a small pyramidal crusher with friction traces on three sides. The items were discovered in the section of drainage ditch S 1 that cut through the dwelling L 1/1992. They might have been originally used in the “porch” of this dwelling and thus they might belong to the Cruceni-Belegiș Culture.

potters did not create typological series, but vessels for cooking, eating, drinking, or storing food. The existence of such wares is also proven by the funerary inventory of the Cruceni–Belegiș communities. The so-called pottery “triad” features appear in ca. 30% of the researched graves: urn, bowl, and beaker. For Fl. Medeleț “the even character of the pottery in the settlements and the necropolises seems to indicate that the pottery centers worked for several rural communities and produced “series” of vessels from which buyers could choose the *triad* needed for funerals. Similarly, one could choose the pottery dowry of a bride when she started her own household”²⁹. The other two vessels placed besides the urn contained food (the bowl) and drink (the beaker). The osteological analyses have shown that in the bowl the Bronze Age people deposited a well-fried piece of meat, preferably pork³⁰.

Thus, based on functional criteria, the vessels can be divided into the following groups: *kitchen pots* (cooking vessels), *food storage vessels*, and *tableware*. One can add a category more rarely encountered in settlements, as it had a special character: *miniature vessels*. The two *whorls* were also made of clay. Naturally, this division of prehistoric pottery cannot be absolute, as it was not during other eras, like the Roman period when pots were highly standardized³¹, and their functionality was not restricted to a single type. One could use bowls to heat food on the fire, while some of the “storage” vessels could also be used for boiling food.

Kitchen pots (cooking vessels). In this category one can include some less carefully manufactured vessels, coarse in outlook, made of fabric that includes pottery fragments, sand, and grit, with unfinished outer and inner surfaces. Their outer color was gray (Pl. 5/5–6; 7/6) or brick-red (Pl. 7/2–3, 7). For the typological structuring of the cooking pots, in the absence of entire shapes, we have taken into consideration the morphological peculiarities of rims and walls in determining four types (Fig. 4). The first type (AI₁) includes pots with a wide mouth opening, straight rim, and walls that continue relatively straight towards the base (Pl. 5/5, 7). The cooking pots, with an average-size mouth opening, were included in the second type (AII₁). Their rim is slightly reverted, and the orientation of the walls suggests the pots were tronconic in shape. They have conical knobs or grabbers on the neck or on the body (Pl. 6/2–3; 10/1). The cooking pots included in the third type (AIII) had a maximum diameter larger than the mouth diameter and thus were bulkier in shape (Fig. 4). According to the morphology of the upper part, we have identified three variants of this type. The first variant includes pots with an average-sized mouth opening, a straight rim, and the walls set obliquely towards the outside (AIII₁). The boundary between rim and the lower part of the pot was marked by a carenation or an outwards arching of the walls (Pl. 7/6–7). The cooking pots included in the subsequent variant (AIII₂) have better-individualized rims and the transition towards the body is unmarked (Pl. 13/5). Cooking pots variant three (AIII₃) have reverted rims, short necks, and walls set obliquely towards the outside (Pl. 8/5; 13/3, 4). The pottery fragment on Pl. 5/6 belongs to a portable stove (*pyraunoi*) (AIV₁, namely a wall with traces of circular perforation.

Cooking pots are undecorated containers, as incisions (D₅; Pl. 11/3; 13/4) or notches (Pl. 10/1) featuring on vessels found in C1/1993 are exceptions.

The category of storage vessels is difficult to define. We have included in this group coarse pots that show no traces of secondary firing (Pl. 13/7–8). Besides, the two fragments included in this category also define the variants of the type of pot (Fig. 4). The first fragment belongs to a pot with straight rim and walls that are arched outwards from the area of the neck (BI₁). In the contact area between neck and walls the pot is provided with grabbers (Pl. 13/8). The shape included in the second variant is more closed (BI₂) than the one previously described, due to the position of the walls and the lack of a clear marking between rim and body (Pl. 13/7). In this case as well, the function of the vessels is the most relevant, while the aesthetic aspect is an exception, consisting in the use of finger impressions (G₁) on the grabber of the storage pot discovered in the upper levels of trench C1/1993 (Pl. 11/7).

Tableware. Inside this category one can make the difference between vessels used for cooking and those for drinking. As indicated by the analysis of the funerary inventory, deeper and shallower bowls were vessels used for eating. The plates are the most numerous in this category. Based on their morphology, they can be divided into tronconic and everted. Tronconic plates usually have a straight rim and the walls slightly arched outwards or straight. The morphological peculiarities have allowed

²⁹ Medeleț 1995, 296.

³⁰ El Susi 1990.

³¹ Rusu–Bolindeț 2007.

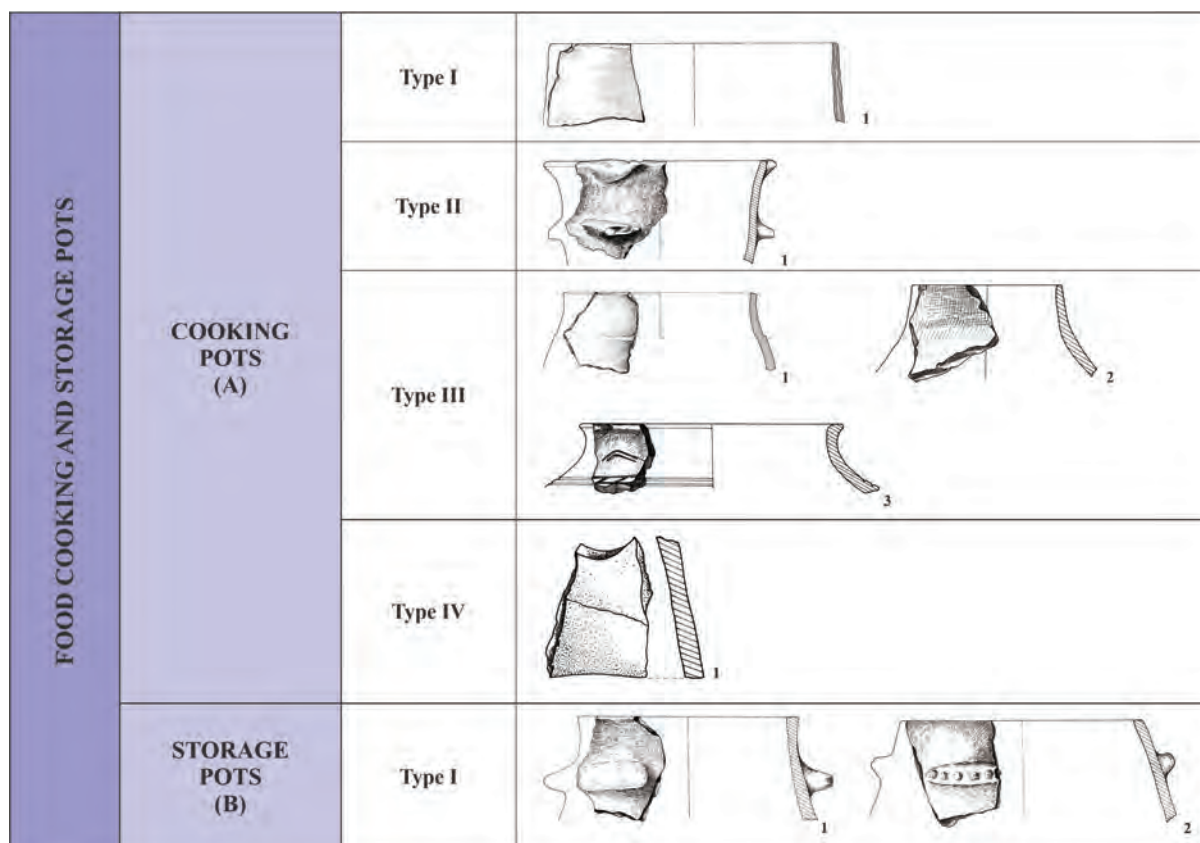


Fig. 4. Shapes of cooking and food storage vessels identified in Giroc–Mescal.

for the identification of four variants (Fig. 6). The first variant reunites tall tronconic plates with a proportion of 1:3 between the opening of the mouth and the height of the vessel (DI_1). They have straight rims and the walls slightly arched outwards or straight (Pl. 8/1; 10/2, 4; 12/5; 13/6; 15/4). At the same time, tall tronconic plates with handles pulled from the rim (DI_2) were included in a distinct variant (Pl. 3/4; 12/1–3; 19/5–6), while those with walls descending almost horizontally towards the base define the third variant (DI_3). In this case we have documented a wide proportion (1:6) between the opening of the mouth and the height of the vessels, that renders them open in shape (Pl. 3/5–6; 7/5; 10/3; 15/1, 5). The presence of lobes on the rims of such bowls made us establish the fourth variant of the tronconic plates (Pl. 18/1).

Incurving rimmed plates (DII_1) are represented in the typological repertoire by two fragments (Pl. 8/4; 12/4), that display inwards arched rims and walls descending obliquely towards the base.

Through the way they are made, bowls can be attributed to the category of semi-fine or fine pottery and more rarely to the coarse category (Pl. 13/6). The latter are made of fabric with inclusions of crushed shards. The two types of firing are attested by colors such as dark gray (Pl. 3/4–6; 8/1) or brick-red, in different shades (Pl. 7/5; 8/4; 10/2–4; 12/1–5; 18/9). Few of the plates have been decorated. One thus notes the plate fragment (Pl. 19/4) identified in the level located at the base of C1/1993 (0.90–1.05 m in depth). The prominence pulled from its rim is decorated in the pseudo-cord technique (C_s). Finger impressions (G_1) decorate the grabber of a small tronconic plate (Pl. 13/6) from C1/1993 (0.60–0.75 m in depth). At the same time, simple conical prominences (E_1) can be encountered on the shoulders of everted plates (DII_1), but also on the tronconic plate found in C1/1992 (Pl. 7/5). Though conical prominences did have an aesthetical function, their functional role was more important.

Few bowls were found in the settlement from Giroc (EI). They are tronconic in shape, with the rim straight or thickening towards the outside, walls descending obliquely to the base that is also straight. The proportion between the diameter of the rim and the height of the vessel is 1:2 or close to it (Fig. 6). According to their height, there were two variants of tronconic deep bowls: short (EI_1 ; Pl. 5/1) or tall (EI_2 ; Pl. 3/1–3; 17/5). In their case one may notice as well that the potters have carefully manufactured the vessels. Their outer color is mainly light gray (Pl. 3/1; 5/1), coffee-brown (Pl. 3/2–3), or brick-red

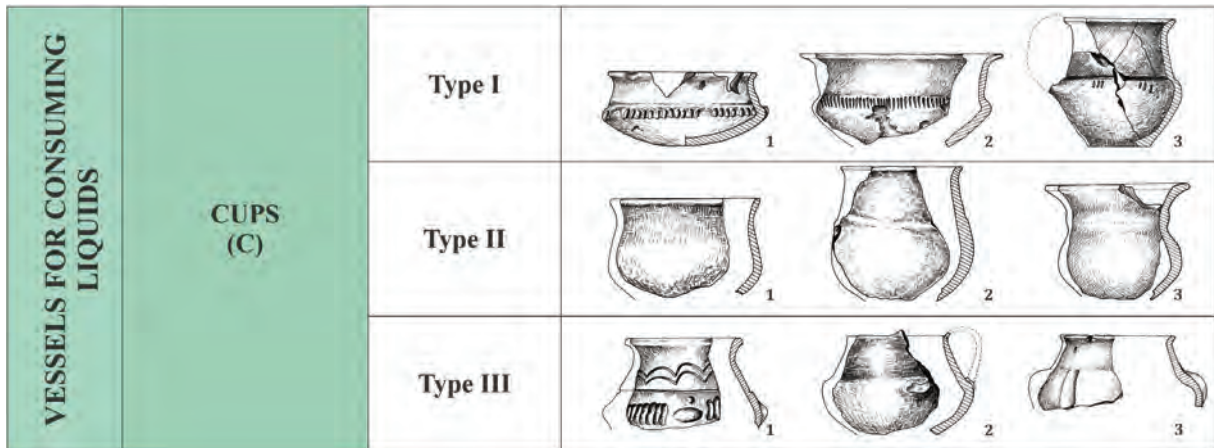


Fig. 5. Shapes of drinking vessels identified in Giroc–Mescal.

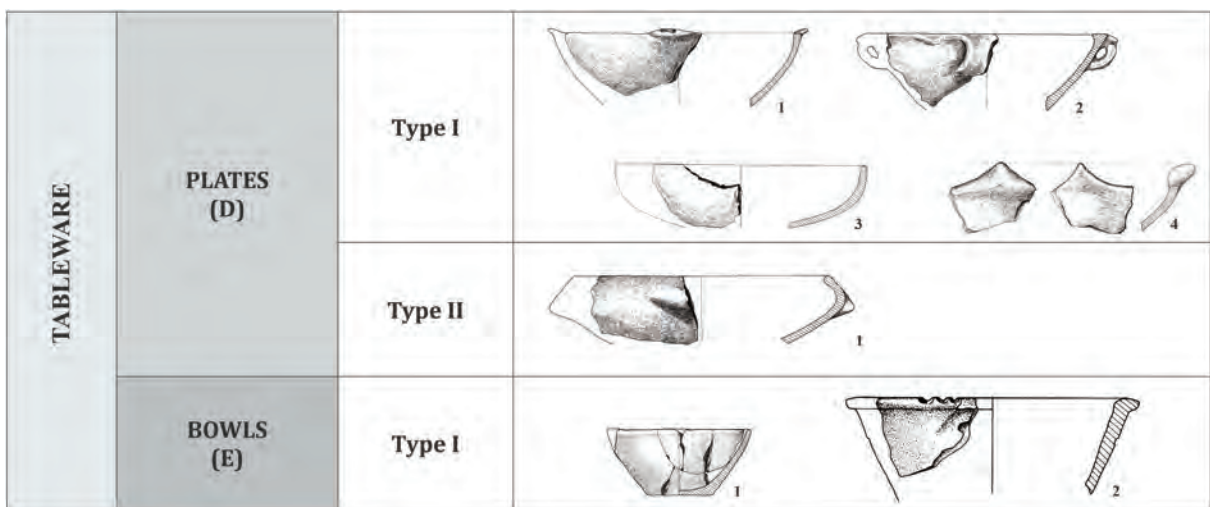


Fig. 6. Tableware. Bowl shapes identified in Giroc–Mescal.

(Pl. 17/5). Like in the case of the plates, one notes the absence of ornaments, except for the bowl in C1/1993 (Pl. 17/5), whose rim was decorated with finger impressions (G_1).

It is difficult to decide if the *small trays* (Fig. 7) were used for eating or had another function (cooking, drying/preserving foodstuffs, even lighting³²). As mentioned above, in such a vessel, the item discovered in L 1/1992, we found clay mixed with vegetal remains, a mix that could have been used for repairing the walls or the dwelling's floor, etc. (Pl. 5/2). According to shape, they can be grouped in two types, i.e. tronconic trays (FI_{1-2}) and ellipsoidal trays (FII_{1-2}), each with several variants. Tronconic trays have the same shape as the bowls, but display taller and oblique walls. This type's variants have been defined according to the morphology of the rim and walls, as the base was flat. The items with straight rim and walls set obliquely as compared to the base were included in a first variant (FI_1 —Pl. 5/2; 18/4; 19/3), while in the second (FI_2) we have included small trays with T-shaped rim profile and outwards arched walls (Pl. 4/9). The oblong, ellipsoidal trays have been included in the second type (Pl. 19/7; 9/1). Based on the angle of the walls, we have identified two variants. The second (II₂) certainly stands out as an open shape due to the wide angle at which the walls and the base meet (Pl. 9/1). These trays display small protomes on the rim, probably fulfilling a functional role (Pl. 5/2; 9/1; 19/7) or even a small, stylized animal (Pl. 18/4). These items were generally carefully made. Their outer color is dark gray (Pl. 18/4; 19/7) or different shades of brick-red (Pl. 4/9; 9/1).

Mugs and cups were included in the *drinking ware* category. Cups are often encountered in the necropolises of the Cruceni–Belegiș communities, as well as in their settlements, as we shall

³² Gogâltan 1996c, 17.

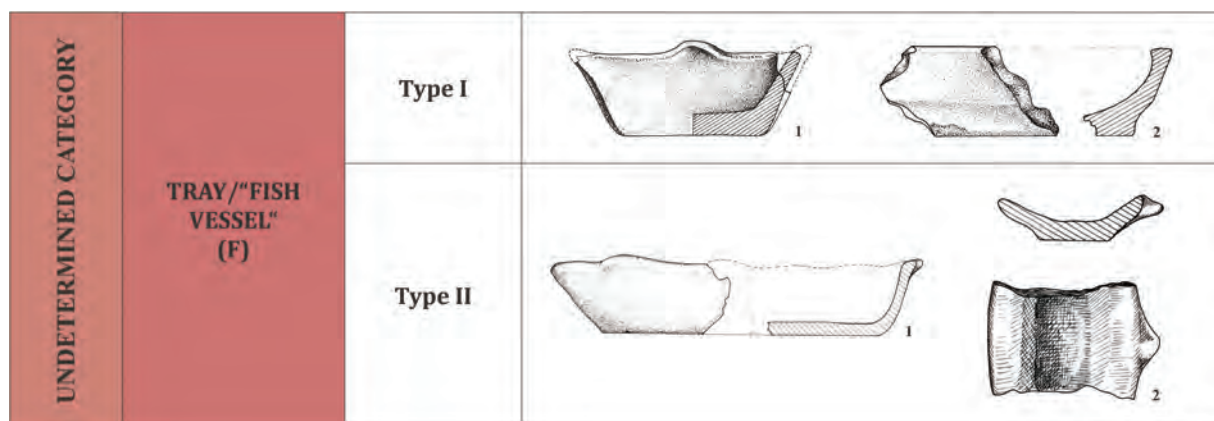


Fig. 7. Fish trays/vessels identified in Giroc–Mescal.

subsequently show. The typological diversity of such vessels is nevertheless richer in the settlements than in this culture's necropolises.

Three types of cups have been identified in Giroc–Mescal (CI–III): tronconic, globular, and bitronconic (Fig. 5). Tronconic cups have flared rims, short or tall necks, and walls that descend obliquely towards the straight base. They were usually provided with handles that went beyond the level of the rim. Tronconic cups with short necks and the maximum diameter marked by decoration or a girdle define the first variant (CI₁–Pl. 9/6–7). Those part of the subsequent variant (CI₂) have taller necks and the maximum diameter carenated (Pl. 16/7). Tall tronconic cups have been included in the third variant (CI₃). They are characterized by flared rims, tall necks, and walls that descend obliquely towards the base. In their case as well the maximum diameter is carenated (Pl. 14/1).

The globular cups (CII_{1–3}) identified in Mescal are characterized by everted rims, cylindrical necks, and walls that descent straight towards the base (Fig. 5). In the first two variants the maximum diameter is larger than the diameter of the mouth and the difference between them resides in the height of the vessels (Pl. 16/1–2). The slim variant of the globular beaker (CII₃) displays an approximately 1:1 proportion between the opening of the mouth and the height of the vessel (Pl. 13/2). In this case, both the rim and the neck are well stressed.

The shared characteristic of the *bitronconic cups* (CIII) envisages the maximum diameter that is always larger than the diameter of the mouth (Fig. 5). This type of cup has both tall (CIII₁) and short variants (CIII_{2–3}). The tall variant of the bitronconic cup displays a flared rim, a long neck, arched inwards, and walls that descent obliquely towards the base from the area of maximum diameter (Pl. 11/1,6–7; 16/5). Variant CIII₂ describes a short bitronconic cup with straight rim, short neck, and walls that descent obliquely towards the base from the area of maximum diameter. The maximum diameter is located mid–height and is carenated (Pl. 11/5; 13/1). Somewhat similar morphological characteristics can also be encountered among the items of the third variant, but their maximum diameter is placed in the upper third of the vessel (Pl. 18/8).

From a technological perspective, the cups are carefully made, belonging to the same category of semi–fine and fine pottery. Their outer color range is varied: brick–red (Pl. 11/5; 16/1–2, 5; 18/8), dark gray (Pl. 4/1; 9/7; 13/1–2; 14/2; 16/4), dark coffee–brown (Pl. 4/8) or black (Pl. IV/3, 7–8; VII/2; IX/4, 6; XII/1; XIV/3).

One should note the variety of ornaments associated with the cups or with pottery fragments belonging to this category that could not be attributed to any specific type. Low tronconic cups (CI₁) are decorated in the area of maximum diameter with simple girdles (A₁; Pl. 9/6) or alveoli girdles (A₂; Pl. 9/7). The items included in variants CI_{2–3} were decorated with successions of short incised lines, vertically placed (D₁₀; Pl. 16/6) or groups of three such lines (D₁; Pl. 14/1). Incisions are also encountered on tall bitronconic cups (CIII₁), in the shape of incised horizontal stripes (Pl. 11/1), sometimes associated with rows of arches (D₆; Pl. 11/7). The latter are associated with simple conical prominences, framed by dotted decoration or oblong, narrow grooves, or successions of short incisions (D_{3,9,11}; Pl. 6/3; 11/4; 16/5). Dotted decoration was identified in a single case in the inner area of the row of arches (D8; Pl. 16/3). The repertory of ornaments is completed by oblong prominences placed vertically on the maximum diameter

of the vessels (Pl. 18/8), as well as by pseudo-cord decoration (Pl. 11/2) identified on the neck of a beaker. As demonstrated by the inventory of some of the graves presented in the discussions subchapter, some of the cups have heightened handles that end in protomes (Pl. 18/1, 3). The protomes identified in the settlement from *Mescal* are simple (E_1) or double (E_2).

Ornaments generally feature on the upper half of cups, on their neck or maximum diameter, more rarely in their lower part (Pl. 16/7).

One should also note small cups with marked and bulging belly and relatively straight walls. They are decorated with prominences, polished incisions, grooves, or dots (Pl. 4/1; 6/3, 7–8; 9/2; 11/4, 6). Many of these drinking vessels have a ring base (Pl. 4/8; 16/7). Due to their high degree of fragmentation, these cups cannot be structured typologically.

Mugs are larger than cups and, when preserved, their handles are much more robust. In *Mescal* a single pottery fragment can be attributed to this category of vessels (Pl. 7/4) and it is decorated with incisions.

A significant number of pottery fragments that cannot be included with certainty in any of the typological groups are decorated in the pseudo-cord technique (Pl. 4/3, 6; 5/3; 6/4–6, 9; 9/4–5; 14/8–9; 17/1; 18/7), display conical prominences (Pl. 4/2; 7/1; 14/4; 18/5–7) or a notched girdle (Pl. 7/2). A special case is the pottery fragment that preserved a decoration rather reminding one of the *Žuto Brdo–Gârla Mare* ceramic style³³ (Fig. 10). It was decorated through incision, with patterns such as incised stripes that frame concentric circles.

Among the vessels that cannot be included in any of the categories mentioned above, one must note a tronconic, brick-red *miniature vessel* (Pl. 19/1). Two *whorls* were also found during the excavations performed in Giroc. Both were discovered in the *Cruceni–Belegiș* culture layer. The item found in 1992, preserved in fragments, was partially perforated (Pl. 6/1). The second item measures 4.8 cm in diameter, is dark gray, and for obscure reasons its wider side displays intense ware through friction against a hard object (Pl. 18/2).

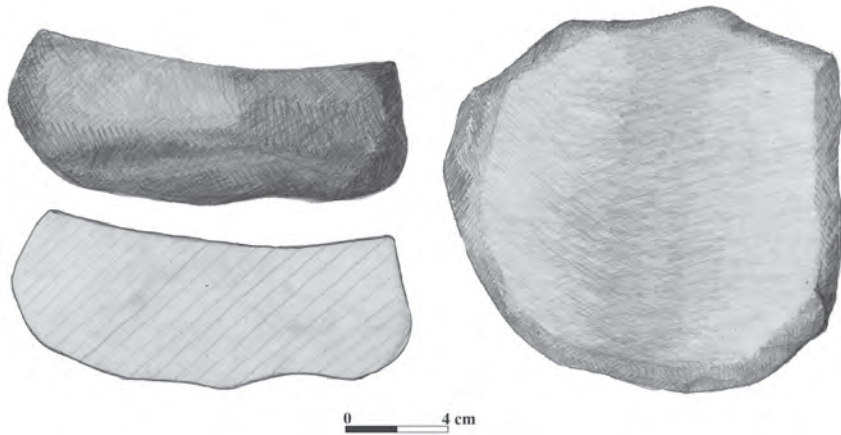


Fig. 8. Hand mill identified in S.1

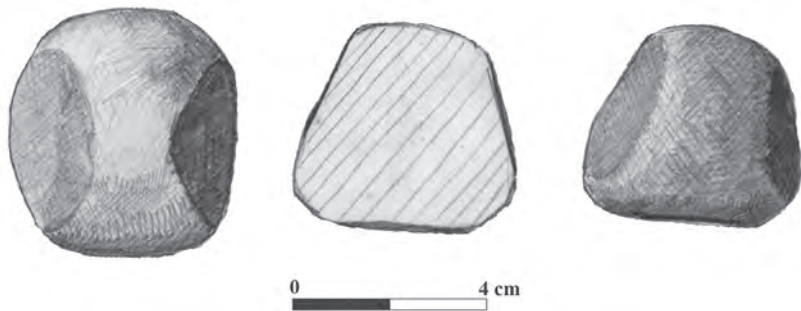


Fig. 9. Pyramidal crusher identified in S.1.

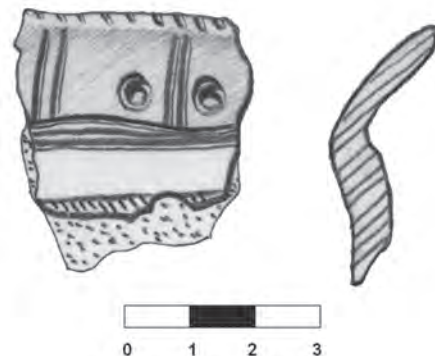


Fig. 10. Pottery fragment decorated with concentric circles and incised lines filled with white paste.

³³ Regarding the contacts between the two pottery styles, see Šimić 2000, 91–93; Șandor–Chicideanu 2003, 197–199; Szentmiklosi 2006; Motzoi–Chicideanu 2011, 617–618.









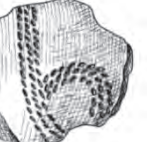
















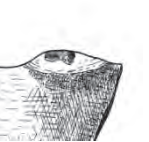




<p>GIRDLES (A)</p>	 1	 2	 3		
<p>GROOVES (B)</p>	 1	 2			
<p>IMPRESSED DECORATION (C)</p>	 1	 2	 3	 4	 5
<p>INCISED DECORATION (D)</p>	 1	 2	 3	 4	 5
	 6	 7	 8	 9	 10
	 11	 12			
<p>PROMINENCES (E)</p>	 1	 2	 3	 4	
<p>NOTCHES (F)</p>	 1				
<p>IMPRESSIONS (G)</p>	 1				
<p>PROTOMES (H)</p>	 1	 2			

Table 1. The repertoire of ornaments.

Discussions. The researches performed over the last years have revealed significant data regarding the absolute chronology and the structuring of the cultural realities of the first two stages of the Late Bronze Age in the Romanian Banat and the regions in its close proximity: Late Bronze Age I (LBA I) and Late Bronze Age II (LBA II)³⁴. One notes the fact that the absolute dates have often been published independently from archaeological materials. The present article aims to be a *restitutio* of data and archaeological materials, as no absolute data can be obtained since more than 25 years have passed since the completion of the researches. One can only count on the two samples collected during the 2006 campaign, found in Alexandru Szentmiklosi's unpublished doctoral dissertation, besides the archaeological discoveries made on that occasion.

The first benchmark regarding the cultural and chronological identification of the settlement in Giroc–*Mescal* consists of the presence of the pseudo-cord decoration in the repertory of ornaments (C₁₋₅). Pottery fragments decorated in this technique are encountered in most of the archaeological features (Pl. 4/3, 6; 5/3; 6/4–6, 9; 9/4–5; 11/2; 14/4–5, 9; 17/1; 18/7; 19/4). This decoration is characteristic to the Cruceni–Belegiš I ceramic style that was introduced and generalized in the Banat Plain during the chronological level LBA I (1600–1400 BC)³⁵. This type of ornament has been attributed to phases Cruceni–Belegiš I³⁶ or Belegiš–Cruceni I_{a-b}³⁷ according to the chronologies developed by Marian Gumă or Nikola Tasić. If type C₁ decoration is common, encountered on the majority of the pottery fragments or vessels, the ornaments included in type C₂₋₄ are to be found on the bellied vessel from M. 82³⁸ or the urns from M. 92³⁹, M. 93⁴⁰ and M. 98⁴¹ in the necropolis from Cruceni. Type C₂ decoration also features on the amphora found in Sečanj⁴², the urns belonging to graves 147 and 295 from the necropolis in Beograd–*Karaburma*⁴³ or the vessels in the necropolis from Livezile⁴⁴. The pseudo-cord decoration type C₅ is less frequent. A close analogy is the pottery fragment from Rudna–*Hunca*⁴⁵.

One also notes the high percentage of incised ornaments (D₁₋₁₁). The most numerous decorative motifs are rows of arches (D_{3,6-9}) combined with incised lines or prominences flanked by dotted or linear motifs. One encounters, though more rarely, combinations of incised decoration and grooves, either thin or wide (D_{3,9}). In Giroc–*Mescal* incised ornaments mostly feature on bitronconic cups type CIII₁. Analogies can be identified in Voiteg–*Groapa cu Vulpi*⁴⁶, Deta–*Dudărie*⁴⁷, or on two of the cups from the inventory of the necropolis in Livezile⁴⁸. In the case of the settlement from Timișoara–*Fratelia* one notes the preference for the use of incision as pottery decoration technique. This technique is encountered on 48% of all decorated fragments. Rows of arches feature on 187 pottery fragments, while incised lines, stripes, garlands and triangles are encountered on another 272 pottery fragments⁴⁹.

Incised decoration, associated with bitronconic cups – in the same style as those from Giroc – can also be identified in the inhumation necropolis from Pecica–*Situl 14*⁵⁰, in the funerary context from Felnac–*Complexul Zootehnic*⁵¹, or the settlement from Șagu–*Sit A1_1*⁵² located in the north of Banat. On the other hand, in these cases one notes the absence of pseudo-cord decoration in the pottery lots associated to these cups⁵³. A significant item is the fragment that can be associated, through the way

³⁴ Diaconescu *et al.* 2018; Gogăltan 2019, 48, 60 with the older bibliography; Sava, Gogăltan 2019; Lehmpful *et al.* 2019; Sava *et al.* 2019; Ignat, Sava 2019; Sava 2020; Sava 2021.

³⁵ Gogăltan 2019, 49.

³⁶ Gumă 1997, 68, Fig. 7.

³⁷ Tasić 2001, 315–316.

³⁸ Radu 1973, 508, Pl. 2/4.

³⁹ Radu 1973, 510–511, Pl. 4/4.

⁴⁰ Radu 1973, 511, Pl. 1/4; 5/1.

⁴¹ Radu 1973, 514, Pl. 8/1.

⁴² Радушић 1960, Таб. I/4.

⁴³ Todorović 1977, 39, 106.

⁴⁴ Gogăltan 1998, Pl. III/2; IV/1;

⁴⁵ Mărcuți, Rogozea 2019, Fig. 15/15.

⁴⁶ Szentmiklosi, Medeleț 2016, Pl. V/5, 11.

⁴⁷ Szentmiklosi 2004–2005, 646

⁴⁸ Gogăltan 1998, Pl. V/1–2; VI/3.

⁴⁹ Stavilă 2012, 40, Fig. 17; Szentmiklosi 2008, Pl. LXXXVIII–CLV.

⁵⁰ Sava, Ignat 2016, Fig. 5/5 (the first stage of the necropolis is dated to 1600–1400 B.C).

⁵¹ Sava 2016, Pl. 3/7.

⁵² Sava *et al.* 2011, Fig. 180; Sava, Ignat 2016, Fig. 2/7.

⁵³ Sava, Gogăltan 2019, 227.

it was decorated, to the Žuto Brdo–Gârla Mare ceramic style (Fig. 10). We were unable to identify close analogies⁵⁴, but similar motifs can be encountered on the bowl from Vatin–*Bele Vode*⁵⁵, Kudeljara kod Kleka⁵⁶, or on the pots from the necropolis in Cruceni⁵⁷.

The simple (E_5) and double (E_6) protomes identified in Giroc were extensions of handles and had broken off due to the height of those handles and are thus preserved in a fragmentary state. Protomes type E_5 were very popular in the Cruceni–Belegiš distribution area, and similar elements feature on the cup from the grave in Vatin–*Bele Vode*⁵⁸, dwellings LII, LX or XXV in Timișoara–*Fratelia*⁵⁹, or Deta–*Dudărie*⁶⁰. We found no adequate analogies for the protomes type E_6 . The other ornaments, such as impressions, notches, and girdles (the latter also fulfilling a functional role), are common ornaments without exact chronological value.

The shapes of the pots found in the settlement from Giroc–*Mescal* are varied. Like in the case of the necropolises, plates and cups were the most numerous in the category of tableware. Incurving rimmed plates (DII_1) are unusual for this chronological stage (LBA I). Such items were found in Giroc in the upper third (∇ 0.60–0.75 m) of the area labeled C I/1993 and in dwelling L 1/1993. One must note that only tronconic plates with “slightly in–pulled rim” are known for the first stage in the development of the Cruceni–Belegiš pottery style⁶¹. On the other hand, specialists have repeatedly stressed the fact that incurving rimmed plates were introduced in Banat and Transylvania during stage LBA II, and were subsequently generalized⁶². Still, there are two analogies of incurving rimmed plates found in the same features as pottery fragments decorated in the pseudo–cord technique. The first is the incurving rimmed plate fragment from L 1/2000 in Foeni–*Gomila Lupului II*. The plate has no knobs on the shoulder and is decorated with stripes consisting of four short incised lines placed vertically⁶³. The material associated with this plate is heterogeneous in its manner of decoration. The same feature contained fragments decorated in the pseudo–cord technique or incision – one can even mention a fragment decorated in the *Kammstrich* style⁶⁴ – and grooves typical to the 2nd phase of the Cruceni–Belegiš ceramic style. The absolute date obtained for this feature⁶⁵ dates L 1/2000 after 1400 BC (Fig. 11) and supports the dating of the feature during the transition period between the first and the second stage of development of the Cruceni–Belegiš ceramic style.

The second example, a plate with slightly incurving rim, was found in Beograd–*Karaburma*, in grave 251, associated with a bitronconic urn decorated in the pseudo–cord technique⁶⁶. The grave has been included in horizon Reinecke Bz. B_2 – C_1 (LBA I) and belongs to a group of graves that marks the transition between the earliest discoveries on that site and the subsequent stages of the Late Bronze Age.

Tronconic cups type CI_1 feature besides the incurving rimmed plate in dwelling L 1/1993 from *Mescal* (Pl. 9/6–7). They are also less present in the inventory of the necropolises or of the settlements characteristic to the Cruceni–Belegiš I ceramic style, but became subsequently generally distributed⁶⁷. One can identify analogies for the cups found in Giroc in the dwellings of the settlement in Timișoara–*Fratelia*⁶⁸, attributed to the 1st phase of the Cruceni–Belegiš ceramic style.

Cups of CI_3 type are much more common to the Cruceni–Belegiš I ceramic style. Such items

⁵⁴ One pottery fragment decorated with circular impressions was discovered in the settlement from Cruceni–*Módosi út*. It reminds one of the decoration techniques of the Žuto Brdo–Gârla Mare–type impressed pottery that was also adopted by the potters of the Cruceni–Belegiš I communities (Szentmiklosi 2010b, 297, Pl. III/9).

⁵⁵ Szentmiklosi 2006, Pl. IX/2.

⁵⁶ Marinković, 2009, T. II/5.

⁵⁷ Szentmiklosi 2006, Pl. II/3a–b; III/2a–b.

⁵⁸ Szentmiklosi 2006, Pl. IX/1.

⁵⁹ Szentmiklosi 2009, Pl. LXXXIX/2; CXXIII/2; CXLVIII/3, 9.

⁶⁰ Szentmiklosi 2009, Pl. VI/4.

⁶¹ Gumă 1997, 56

⁶² Gogâltan, Nagy, 2012, 112–113; Măruia *et al.* 2019, 107.

⁶³ Szentmiklosi 2009, Pl. XXVIII/12.

⁶⁴ Szentmiklosi 2009, Pl. XXVIII/8

⁶⁵ Szentmiklosi 2009, 210, Fig. 33 (Beta 256557 – 3100±40 BP).

⁶⁶ Todorović 1977, 80.

⁶⁷ Szentmiklosi 2009, Pl. VII/1–2, 5; IX/4; XI/2; Forenbaher 1991, Fig. 7/4b; Szabó 2004, Abb. 11/46, 49, 50.

⁶⁸ Szentmiklosi 2009, Pl. LXXXIX/5 (L. II); XCIX/4, 7 (L. VII); C/5 (L. VII); CXXIX/6 (L. IX).

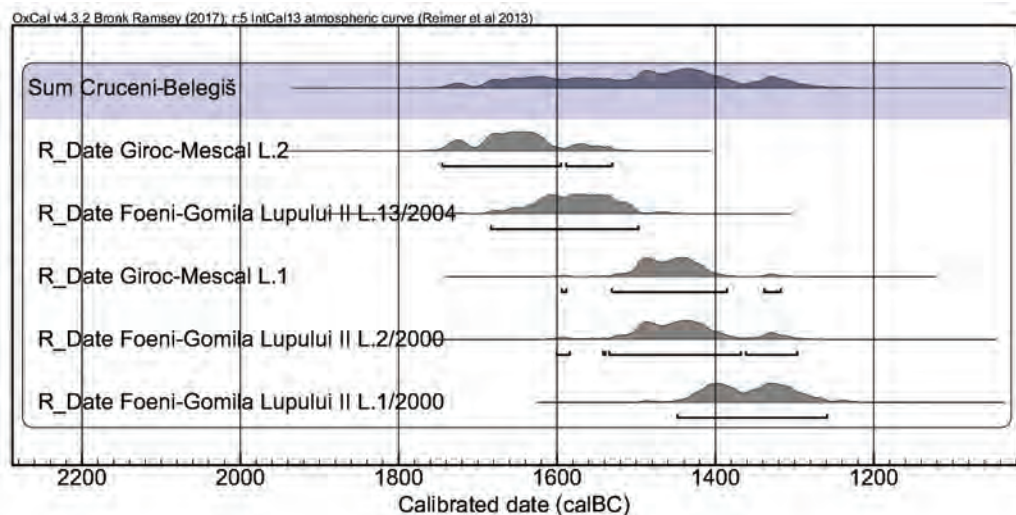


Fig. 11. Calibration and sum of ^{14}C dates in Giroc–Mescal and Foeni–Gomila Lupului.

were found among the materials recovered from the necropolis in Cruceni⁶⁹, Livezile⁷⁰, Șag⁷¹, or the site in Rudna–Canton⁷². To the same degree, the short globular cups (CII₁) have correspondences in Timișoara–Fratelia⁷³, Sânnicolau Mare–Seliște⁷⁴, Felnac–Complexul Zootehnic⁷⁵, and in M. 77 and M. 106 from the necropolis in Velebit⁷⁶. For the slim variant of the globular cup (CII₃) one can note a similar item in North Serbia, in Velebit, but she is more bellied and has the base slightly profiled⁷⁷.

The tall bitronconic cup (CIII₁) has analogies in Sânnicolau Mare–Seliște⁷⁸, Timișoara–Fratelia⁷⁹, and Voiteg–Groapa cu Vulpi⁸⁰, while cups of CIII₂ type display similarities with the fragment found in Felnac–Complexul Zootehnic⁸¹. The third variant of the bitronconic cup (CIII₃) has a series of morphological and decorative similarities with the cup in M. 53 from the necropolis in Velebit⁸². As for the cups of CI₂ and CII₃ variants, we were unable to identify adequate analogies.

The small trays are vessel shapes that represent good chronological benchmarks. They were adopted from the tableware repertory of the Cornești–Crvenka ceramic style⁸³ and were used during the entire interval of stage LBA I. They certainly fulfilled strictly domestic functions, as none have been identified as yet in grave inventories. In *Mescal*, small trays were discovered both in the two dwellings, L 1/1992 (Pl. 4/9, 5/2) and L 1/1993 (Pl. 9/1), as well as in the culture layer at the base of C 1/1993 (Pl. 18/4; 19/3; 7). There are relatively few analogies. Correspondences were only identified for the items of CII₁₋₂ type in the settlement from Timișoara–Fratelia⁸⁴ and the pottery lot uncovered during the 2006 campaign in Giroc–Mescal⁸⁵.

The similarities between the tronconic plates (DI₁₋₃) of the Cruceni–Belegiș ceramic style and those part of the Cornești–Crvenka (Vatina) shapes repertory are obvious, and have been repeatedly

⁶⁹ Radu 1973, Pl. 2/6; 3/3, 7; 6/2; 7/5.

⁷⁰ Gogâltan 1998, Pl. IV/1, 3; VII/5, 7; VIII/3,5.

⁷¹ Szentmiklosi 2002–2003, Pl. I/4; II/2

⁷² Mărcuți, Rogozea 2019, Pl. 15/9.

⁷³ Szentmiklosi 2009, Pl. LXXXIX/8 (its base is profiled).

⁷⁴ Bejan *et al.* 2011, Pl. II/3; Stavilă, 2015, 239 (the beaker was erroneously included in stage II of the Cruceni–Belegiș pottery style); Sava, Ignat 2016, Fig. 13.

⁷⁵ Sava 2016, Pl. 4/3a–b.

⁷⁶ Kapuran, 2019, Pl. 55/1, Pl. 71/2.

⁷⁷ Kapuran, 2019, Pl. 5/5.

⁷⁸ Bejan *et al.* 2011, Pl. II/4.

⁷⁹ Szentmiklosi 2009, Pl. CVII/3, 5.

⁸⁰ Szentmiklosi 1998, Pl. IV/3.

⁸¹ Sava 2016, Pl. 4/4.

⁸² Kapuran, 2019, Pl. 47/5.

⁸³ Gogâltan 2004, Pl. XIV/4; Marțiș 2008, Pl. IV/1. See similar items and other regional variants of the so-called Vatina Culture: Ljuština 2015, Fig. 5/10, 12–16, 18; 9/9.

⁸⁴ Szentmiklosi 2009, Pl. XCIX/3.

⁸⁵ Szentmiklosi 2009, Pl. LXXXI/7.

mentioned⁸⁶. Such items are present both in the inventory of graves and in settlements. In *Mescal* plates of DI₁₋₃ type have been documented in all features and research units, while a single lobed plate (DI₄) was identified in the 0.75–0.90 m layer of section C I/1993. In necropolises, archaeologists mostly found plates of DI₁₋₂ type, and such items were encountered in the inventory of graves from Voiteg⁸⁷, Cruceni⁸⁸, Beograd–*Karaburma*⁸⁹, and graves 13, 20, and 62 from the necropolis in Velebit⁹⁰. Similar tronconic bowls were also found in the settlements from Gherteniş⁹¹, Liebling (C.A.P Est, *Dudu 2* or *Grădinile I.A.S*)⁹², and Timișoara–*Fratelia*⁹³, also accompanied by plates of DI₃⁹⁴ and DI₄ types⁹⁵.

Portable stoves (*pyraunoi*) were cooking vessels relatively often encountered in the Middle and Late Bronze Age settlements of the Carpathian Basin and beyond⁹⁶. Similar items, with the body perforated by orifices or plain, were also discovered during the 2006 excavations performed in Giroc⁹⁷, or the Cruceni–Belegiš settlements in Deta–*Dudărie*⁹⁸ and Cruceni–*Módosi út*⁹⁹. In rare cases, such items were also included in the funerary inventory of features attributed to the Belegiš group¹⁰⁰.

Based on the above-mentioned analogies for the pot shapes and decoration, we can include the settlement from Giroc–*Mescal* to what is interpreted today as the first stage in the development of the Cruceni–Belegiš ceramic style. On the other hand, the stratigraphic realities in Giroc suggest the existence of two stages in the settlement's development. In order to see if the pottery material can be separated from a chronological perspective, we have also studied the items based on correspondence analysis (CA) and seriation according to pottery shapes and ornaments (Pl. 22). Unfortunately, no absolute dates that would allow us to check the conclusions below are available.

First, we have noted that the material is mostly homogenous, with numerous shared elements between the researched archaeological contexts. They are located in the middle of the series, while the elements that differentiate the two “groups” are to be found in the ends. G 1/1992 and the first two layers of C 1/1993 are distributed in one end of the series and form a group. The elements that feature only on items part of this group are incised decoration of D_{1,3-6} types, grooves (B₁₋₂), and finger marks (F₁). Cups are frequent pottery shapes; tronconic cups (CIII₂) were found in the upper layer of C1/1993, while variants of tronconic and globular cups appear only in the 0.60–0.75 m level of the same trench. The position of feature G1/1992 in the series is due to the *pyraunos*-type pot (AIV₁), while the connection of this feature to the series is ensured by the presence of the storage pot (BI).

The second group includes the level from the lower half of the C1/1993, trench C1/1992 and the two dwellings. The level located at the base of trench C1/1993 (0.90–1.05 m in depth), C1, and L1/1992 is in the middle of the series. These archaeological units feature few ornaments or particular pot-shapes. The elements they share with the other features are more numerous. Even so, one notes the fragment with incised decoration (D₁₂) that seems to be characteristic to the Žuto Brdo–Gârla Mare cultural environment. The contacts between the two ceramic styles are well documented in Banat¹⁰¹. Better individualized in this group are L1/1993 and the layer between 0.75 and 0.90 m in C1/1993. Characteristic to the dwelling are the pseudo-cord decorations with the lower end curved either to the right or to the left (C₃₋₄), decorations of A₂ and D₉ types repertoried on the tronconic cup of CI₁ type and

⁸⁶ Todorović 1977, 134–135; Tasić 1989, 98–99; Benkovsky–Pivovarová 1992, 343–344.

⁸⁷ Szentmiklosi 1998, Pl. I/1; 3/3.

⁸⁸ Radu 1973, Pl. 4/3; 5/2,5; 7/6.

⁸⁹ Todorović 1977, 134–135

⁹⁰ Kapuran, 2019, Pl. 17/2; 23/1–2; 48/2.

⁹¹ Rogoza *et al.* 2018, Pl. 1/7–8.

⁹² Floca 2013, 129, 190, 192, 277.

⁹³ Szentmiklosi 2009, Pl. CXLVI/1–5.

⁹⁴ Szentmiklosi 2009, Pl. CXXXIV/7; CXXX/10–11; XXVIII/3.

⁹⁵ Szentmiklosi 2009, Pl. CXLVI/8; CXIX/6, 15. CXII/6; XCVI/2.

⁹⁶ Fischl *et al.* 2001a; Fischl *et al.* 2001b; Romsauer 2003; Guba 2012.

⁹⁷ Szentmiklosi 2009, Pl. LXXI/18.

⁹⁸ Szentmiklosi 2009, Pl. XXIV.

⁹⁹ Szentmiklosi 2010b, Pl. III/2.

¹⁰⁰ Fischl *et al.* 2001b, 135.

¹⁰¹ Șandor–Chicideanu 2003, 197–199; Szentmiklosi 2006, 234–248. Besides the older data from Balej, one must note a recent absolute date from the necropolis in Plosca–*Cabana de Metal* that places a grave attributed to the classical Žuto Brdo–Gârla Mare phase sometime between 1464 and 1373 BC (Șandor–Chicideanu, Constantinescu 2019, 62, Pl. 27).

the bitronconic cup (CIII₁), respectively. The specific variants (CI₂, CII₁₋₂, CIII₃) that belong to all types of cups, the lobed plates (DI₄), as well as the incised ornaments (D_{8,10}), prominence of E₃ type and the two protome variants are items that differentiate the 0.75–0.90 m layer among the other research units.

From the perspective of shared variables, one mainly notes the presence of cord-like decoration of C₁ type in almost all the archaeological features. Among the frequent ornaments one should also note arches (D₇) and rows of arches associated with short, incised lines that frame an oblong prominence (D₁₁). One can also add conical prominences (E₁) and prominences pulled out of the rims of tronconic plates (E₄). Based on the repertory of pot shapes, one notes that cooking pots were found in C1/1992 and the upper layer of C1/1993. Tronconic plates (DI₁₋₃) also feature both in dwellings and the levels of trench C1/1993. Some of them are encountered both in the upper part and at the base of the stratigraphy in this uncovered area. The same distribution can be observed in the case of the first variant of the bitronconic cup (CIII1) that was found both between 0.40 and 0.60 m and in the layer between 0.60–0.75 m in depth of C1/1993.

The metal items and the clay molds. On this occasion we shall present all the metal items and clay molds discovered in Giroc, including those that we have analyzed in the past¹⁰² in order to bring necessary completions from the new literature or the bibliography we had been unable to gain access to at the time of previous publication.

Regelsbrunn-type bronze bracelet. This is a fragmentary item, broken from antiquity. It displays bluish patina, fallen off in some areas on the spiral (Pl. 20/1). Sections performed through the item indicate that it had been cast in a single-valve mold and the spiral was subsequently hammered (is quadrilateral in section). The band was decorated on both sides of the medial ridge with two rows of parallel incised dots. It has the following preserved dimensions: length 7.3 cm, maximum width (in the broken area) 1.5 cm, width towards the spiral 0.7 cm, spiral diameter 1.6 cm.

This category of bronze items came to the attention of specialists for the first time when A. Mahr published an inhumation grave from Regelsbrunn (North-East Austria, along the Danube, between Vienna and Bratislava)¹⁰³. E. Beninger labeled the two bracelets made of a bronze band and featuring spiral ends as *spiralige Armberge*¹⁰⁴, while K. Willvonseder called them *Armspiralen aus Bronzeblech*¹⁰⁵. Recording several such items in Hungary, Bohemia, eastern Germany, and Poland, Willvonseder dated them starting with stage Reinecke B1. R. Hachmann employed the term *Beinbergen vom Typ Regelsbrunn* for this type of objects. The discoveries made in Bavaria, Austria, Hungary, and Slovakia have been attributed to the Lochham horizon of the tumular graves culture¹⁰⁶. Without paying them much attention, I. Bóna placed the *Armspiraler mit Spiralsenden* in the horizon of Koszider-type depositions¹⁰⁷. A. Mozsolics, on the other hand, analyzed in more detail the term *Beinbergen* for items attributed to the late B III horizon in his chronology. They were presumably produced in the Hungarian area and in the neighboring territories and overlapped the distribution area of dis-buttet axes type B. Items with wider band, such as those found in Pecica or Nagybobróc, are dated later, to the time of the Gáva and Vál I cultures¹⁰⁸. For B. Hänsel they belong to a wider family of spiral bracelets made of bronze sheet (*Blechspiralen*)¹⁰⁹. From a typological perspective, he has identified three groups: items with spiral ends, such as those in Regelsbrunn (*Blechspiralen vom Typ Regelsbrunn mit Spiralscheibenenden*)¹¹⁰, dated to his chronological stages MDI and MD II, that are also the most numerous, simple bracelets with medial ridge and without spiral ends (*Einfache Blechspiralen mit Mittelrippe*) that are chronologically restricted to stage MD I¹¹¹, while he has included in the third type bracelets with wider band, richly decorated, with somewhat smaller spiral ends (*Breite Blechspiralen mit Mittelrippe*)¹¹². Distributed mainly in the southern and western parts of the Carpathian Basin,

¹⁰² Gogáltan 1993=Gogáltan 1994a.

¹⁰³ Mahr 1926, 28.

¹⁰⁴ Beninger 1930, 21.

¹⁰⁵ Willvonseder 1937, 122–123, 387.

¹⁰⁶ Hackmann 1957, 116–117, 129–130.

¹⁰⁷ Bóna 1958, 219, 235, Abb. 5.

¹⁰⁸ Mozsolics 1967, 76–77.

¹⁰⁹ Hänsel 1968, 104–106.

¹¹⁰ Hänsel 1968, Liste 104.

¹¹¹ Hänsel 1968, Liste 105.

¹¹² Hänsel 1968, Liste 106.

items of this type reached as far as Poland and Pomerania, but remained unknown in North–East Hungary and Transylvania¹¹³.

K.F. Rittershofer is the author of the most detailed analysis of the Regelsbrunn–type bracelets¹¹⁴. According to him, the manner in which the bracelets were decorated allows one to distinguish between four variants: 1. items with an even thickness of the bronze sheet, with the medial ridge undecorated or ornamented with dots in the “au répousé” technique (Liste 17); 2. mostly undecorated bracelets, with a small spiral at the ends, and the medial ridge different than in the case of the first type through the fact that it is “full” in profile (Liste 18); 3. Items ornamented with waves made of incised dots (Liste 19); 4. Bracelets decorated with dots that form zigzag patterns (Liste 20). Only two variants can be noted from a technical perspective: one with the bronze sheet even in thickness and the other with the lower part straight (or “full” in section, as we call it)¹¹⁵. The different attempts of structuring these variants of the Regelsbrunn–type bracelets chronologically have led to the confirmed dating to stages MD I and MD II according to B. Hänsel. The distribution area is similar with the one mentioned above.

Publishing in a *PBF* volume the bronze bracelets from Romania, M. Petrescu–Dîmbovița also discussed the eight items (Săpânța, Ghilad, Târgu Mureș, and Pecica II) made of spiral bands, with medial ridge, and spiral ends (*Spiralbänder mit Mittelrippe und Spiralscheibenenden*) discovered in the eastern part of the Carpathian Basin¹¹⁶. If the undecorated bracelets from the deposit in Săpânța can be dated with certainty to the Middle Bronze, in the author’s opinion the item found in Ghilad was contemporary to the items from the deposit in Pecica II and thus belonged to period Ha A1. A simple check of the older bibliography would have shown that the item can be connected to a possible Cruceni–Beleghiș urn cemetery dated slightly earlier than the Ha A1 period.

The terminology related to these bracelets remains uneven today. Thus, the three items from Vienna 23, Sulzengasse are called *Spiralbeinreif*¹¹⁷. The fragments from Hegyhatszentmarton are attributed to a hand bracelet type Regelsbrunn¹¹⁸, while Al. Kapuran, publishing almost 40 years later the two bracelets found in the necropolis from Velebit, uses the British term *spiral greaves*¹¹⁹.

The new items published, such as those from Vienna¹²⁰, Hegyhatszentmarton¹²¹, Kolut–Ribnjak¹²², or the one from Giroc do not change the distribution area of the Regelsbrunn–type bracelets as it has been suggested by R. Hachmann, B. Hänsel, and K.–F. Rittershofer. Two large geographic areas thus become apparent: from South Germany along the Danube until Banat and in the regions of Mecklenburg, Pomerania, and Poland¹²³.

The problems related to their chronology have also been clarified. The earliest items are dated to stage MD I according to Hänsel, the horizon of depositions in Bühl and Ackenbach (the so–called A3 period in South Germany and Slovakia), stage Lochham of the tumular graves culture according to F. Holste, and sometime during period B III according to Amalia Mozsolics. Some of the funerary discoveries from Bačka and Banat, plus the bracelet from the settlement in Giroc, attest to the fact that such items were produced and used also during the Late Bronze Age (Late Bronze Age I/ Reinecke B2–C in the Central European chronology). The different types of bronze sheet bracelets ending in spirals are jewelry pieces still in fashion during the subsequent stages of the Late Bronze¹²⁴.

Even if from a functional perspective they were initially interpreted as decorative elements embellishing the arms (*Armspiralen*)¹²⁵, some of the discoveries prove that at least some of them were also

¹¹³ Hänsel 1968, 104–105, Karte 23. We believe that the items from the deposit in Săpânța, in North–West Romania, belong to this type (Popescu 1963, 99–100, Abb. 6/5–6; Popescu, Rusu 1966, R 8b/7–8; Soroceanu 2012, 97–98, Taf. 30/4–5). They were not included in Rittershofer’s lists of 1983, but feature in Nagy 2007, 285.

¹¹⁴ Rittershofer 1983, 252–265, 390–394 (Liste 17–20).

¹¹⁵ Rittershofer 1983, 254, Abb. 21.

¹¹⁶ Petrescu–Dîmbovița 1998, 27–29.

¹¹⁷ Hahnel 1994, 32.

¹¹⁸ Nagy 2007.

¹¹⁹ Kapuran 2018, 35–37, Fig. 1–3; Kapuran 2019, 81–82, Fig. 75, Pl. 58/6.

¹²⁰ Hahnel 1994, 29–32, Abb. 1–3.

¹²¹ Nagy 2007.

¹²² Putica *et al.* 2017; Koledin 2019, 182, Sl. 5a–b.

¹²³ Hänsel 1968, Karte 23; Rittershofer 1983, Abb. 21; Nagy 2007, 283–285; Blajer 1999, 60–61.

¹²⁴ Kemenczei 1991, 38; Kovács 1997.

¹²⁵ Beninger 1930; Willvonseder 1937; Bóna 1958.

used to decorate the lower limbs (*Beinbergen*)¹²⁶. Two such items were found on the legs of a skeleton in grave 26 from Nove Zámky, in South–West Slovakia¹²⁷. In 1970 specialists have researched grave 80 from the necropolis in Velebit, in North–East Serbia (Bačka). There, two spiral bracelets made of bronze sheet, of the Regelsbrunn type, with bronze loops attached, were discovered on a woman's legs¹²⁸. In 1988 in Vienna 23, Sulzengasse archaeologists discovered the skeleton of a young woman, aged 15–16, who wore a Regelsbrunn–type bracelet on each leg. On her arms she wore two other bracelets of the same type, but slightly smaller. Another woman, aged between 19 and 40 years, also wore a Regelsbrunn–type bracelet on one of her legs¹²⁹. An indirect proof of the way in which such bracelets were used is a fragment from a clay leg discovered in the Věteřov Culture settlement from Böhmeikirchen¹³⁰. The manner in which the two bracelets from the deposit in Lovas were made also seems to suggest the fact that the items were also worn as leg decorations¹³¹.

The presence of bronze loops attached to the spiral of several items could be connected to the sound–making function of the bracelets during ritual dances¹³². Influenced by S. Bergerbrant¹³³, Al. Kapuran wrote in reference to the bracelets from the grave in Velebit: “Since they belong to female costume, we can presume that the chains symbolically represented connections of a wife to her husband or to her home. If we would apply marriage symbols from a modern perspective to the ring on the greaves from Velebit, attached to a chain, it might just underline the connection between a wife and her husband.... We presume that the opinion is also plausible that spiral greaves could have possessed the character of a charm, actually of an object with spiritual powers that limit the free movement of a woman”¹³⁴.

Returning to the bracelet under discussion, this can be dated based not on analogies but on the settlement in which it was found: Late Bronze Age I (Reinecke B2–C in the chronology of Central Europe)¹³⁵. As previously seen, numerous Regelsbrunn–type bracelets were found and they were distributed over a considerable area. Thus, there were numerous variants of the prototype that was continuously changed, either according to the client's demands, or depending on the master's taste and skills. Thus, the closest discovery of this type to the bracelet found in 1867 in Ghilad, probably in an urn necropolis that belonged to the Cruceni–Belegiš communities, is different¹³⁶. It has a much wider bronze band and its section is not “full”. Still, its ornament is similar, consisting of dots made in the “au répusée” technique. The items from grave 80 in Velebit are also different from the bracelet in Giroc, even though the feature includes in its inventory a double–handled cup of “Belegiš” type¹³⁷.

A presumed bronze processing workshop? As previously mentioned, several bronze objects were found in the western corner of C I/1993, over an area of ca. 1 m²: three “drops” (Pl. 21/1–3), a small bronze chisel with a flat active part (Pl. 21/7), a piece of wire that was quadrilateral in section (Pl. 21/7), probably a fragment from a “winged” needle (*Flügelnadeln*) (Pl. 21/8), and two bronze blades (Pl. 21/9–10). Unfortunately, no built structure could be identified there. The trench opened in 2006 was meant to allow us to check the existence of a possible workshop in the area, but no other bronze items were found. Besides the two clay molds and the Regelsbrunn–type bracelet fragment, discovered by chance on the bank of the River Timiș, these artifacts suggest an intense local metallurgical activity. One can add the two small chisels that were uncovered in the area of dwelling L1/1992 (Pl. 21/4–5). They vary in size between 5 and 8 cm. Such items are well known since the Koszider horizon of the Middle Bronze from Banat¹³⁸ and have no chronological value¹³⁹. The chisels had various uses, possibly also in the decoration of metal objects such as the Regelsbrunn–type bracelet

¹²⁶ Schráníl 1928, 127; Hackmann 1957, 116, 129, 220; Mozsolics 1967, 76–77; Schumacher–Mattäus 1985, 114–117.

¹²⁷ Hänsel 1968, 104, n. 1; Ritterhofer 1983, 152; Schumacher–Mattäus 1985, 115, n. 382.

¹²⁸ Kapuran 2018, 35–37, Fig. 1–3; Kapuran 2019, 81–82, Fig. 75, Pl. 58/6.

¹²⁹ Hahnel 1994, Abb. 2.

¹³⁰ Neugebauer 1977, 81, Abb. 12/3, Taf. 16/4.

¹³¹ Ritterhofer 1983, 252.

¹³² Gogáltan 1993, 64.

¹³³ Bergerbrant 2007, 102.

¹³⁴ Kapuran 2018, 36.

¹³⁵ See below.

¹³⁶ Milleker 1897, 44–45; Szentmiklosi, Draşovean 2004, 120.

¹³⁷ Kapuran 2018, 37, Pl. I/8; Kapuran 2019, 74.

¹³⁸ Gogáltan 1999, 155–157.

¹³⁹ For the rest of the Carpathian Basin see Gävan 2015, 107–108.

in Giroc. The fragmentary item from Pl. 21/8 seems to belong to a pin (with the preserved length measuring 4.5 cm). It could be a winged needle (*Flügelnadeln*), well-known in Banat on the level of the LBA I chronological horizon and in the Crucești-Belegiš world¹⁴⁰. A needle fragment very similar to the item under discussion is known from the necropolis in Vrșac-*Ludoș*¹⁴¹. A needle of this type was also found in close proximity of the settlement in Giroc, at Uliuc¹⁴², also on the banks of the Timiș River, besides human bones and other bronze items (a sword and a spearhead)¹⁴³. D. Popescu has also analysed the item, attributing it to the “Vulva-Nadeln” type¹⁴⁴. Another fragment was found in grave 101 from Crucești¹⁴⁵. Like the item from Vrșac-*Ludoș*, our fragment does not display the relief ornament described by D. Popescu as a “vulva”, one of the characteristics of these *Flügelnadeln*. We cannot exclude the possibility that the item is a discarded pin with pod-shaped head and without a twisted bar (*Hülsenkopfnadeln*), objects also well-known in Banat during the Middle Bronze Age and the beginning of the Late Bronze Age¹⁴⁶. The two bronze blades (11 and 14 cm in length) display no teeth that would allow us to include them in the category of saw-blades (Pl. 21/9–10), as are the items from Șagu, another Late Bronze Age settlement in Banat¹⁴⁷, and the necropolises in Beograd-*Karaburma*¹⁴⁸ and Timișoara-*Fratelia*¹⁴⁹. Maybe these were half-finished artifacts that would be transformed into saws or other tools. The three bronze drops, measuring between 1 and 1.5 cm (Pl. 21/1–3), and the bronze wire fragment (Pl. 21/7) are further clear indications of the fact that bronze objects had been produced in the settlement from Giroc.

Single-valve clay mold for casting sickles. The fragmentary mold for the casting of bronze sickles, found in Giroc, raises a series of problems (Pl. 20/2). Finding an analogy would be much easier if the handle end had been preserved. In the item’s current stage of preservation one can mention that it is a clay single-valve mold with traces of secondary firing, indicating that it had been used. In negative it preserves the shape of a blade measuring approximately 6 cm in length and 2 cm in maximum width, with a medial ridge. The blade was triangular in section. As only the tip end of the blade has been preserved, one cannot exclude the possibility that the mold was used for casting knives. In order to verify this hypothesis, let us look at the main types of knives in Central Europe dated towards the end of the Middle Bronze Age and the beginning of the Late Bronze Age. The ridge and the fact that this was a single-valve mold exclude its possible use in casting artifacts such as Periam-type knives¹⁵⁰. A type of knives with a ridge on the blade that had been cast in single-valve molds have been documented in the tumular environment from Bohemia, but also further towards the center of Europe (Oberpfalz, Mittelfranken), during a stage called the “Anfang der jüngeren Phase der mitteldanubischen Hügelgräberkultur” and dated to Br. C¹⁵¹. Still, Brunn-type knives had the ridge farther from the blade and much taller than the one on the mold from Giroc. Besides, their area of distribution does not include the Carpathian Basin¹⁵².

In order to better mark this discovery and, thus, to be able to decide its position among the early items of such tools, one should briefly discuss the first metal sickles that appeared in the central and south-eastern parts of Central Europe. Starting from a deposit preserved in the collections of the museum in Augsburg, found in Friedberg, in Upper Bavaria, in 1940, F. Holste talked about the first

¹⁴⁰ Vasić 2003, 18–20, with the older bibliography.

¹⁴¹ Majnarić-Pandzić 1971, 15, 21, Tab. III/2.

¹⁴² Specialized literature includes the erroneous mention of the municipality of Unip. In fact, the 1906 discoveries were made during the construction of the dam in the territory of the municipality of Uliuc (the entire discussion in Floca 2020).

¹⁴³ Milleker 1906, 151–152.

¹⁴⁴ Popescu 1944, 129, Taf. XV.

¹⁴⁵ Radu 1973, Pl. 9/4.

¹⁴⁶ Gogăltan 1999, 168–169. For the rest of the Carpathian Basin see Găvan 2015, 140.

¹⁴⁷ Sava et al. 2012, 86, Pl. 3/5, 8.

¹⁴⁸ Todorović 1977, 57 (grave 200), 74 (grave 251).

¹⁴⁹ Medeleț 1996, 235.

¹⁵⁰ The shape of the blade, as much as it has been preserved, is similar to the blade of such knives, three items of which are known in Banat, dated to the end of the Middle Bronze (Middle Bronze III – B B1 Central European). See the discussion and the bibliography in Gogăltan 1999, 150–152, Fig. 21.

¹⁵¹ Jirán 2002, 15–17, Taf. 1/3–7.

¹⁵² The item from Maierisch in Lower Austria (Niederösterreich) is interpreted as already outside of the distribution area of this type of knives (Říhovský 1972, 10–11, Taf. 1/1).

metal sickles from Central Europe¹⁵³. The deposit from Friedberg included, besides eight button sickles (*Knopfsicheln*), the blade of a flanged axe (*Randleistenbeile*) that Holste included in the Langquaid type, thus placing the deposit in what is described as the Early Bronze in South Germany. To this discovery one can add other items from Moravia and West Hungary, thus sketching a first sickles horizon characteristic to the beginning of the so-called “Hügelgräberbronzezeit”.

I. Bóna did not mention this item when he discussed the structure of the deposition from Mezőberény, even if he illustrated the find through a button sickle¹⁵⁴. According to him, sickles were not known during the local Middle Bronze Age¹⁵⁵. A. Mozsolics analyzed together the knives and the sickles of his B III period from the Carpathian Basin¹⁵⁶. In the first two types (A and B), that do not display the small button on the handle, the sickles can hardly be distinguished from the knives. This is also the case of the items from the deposit in Deva I attributed to type A¹⁵⁷. All the sickles characteristic of the Koszider horizon were included in type C and display one or two buttons on the side of the handle.

B. Hänsel also noted the fact that the first sickles appeared in large numbers in the Carpathian Basin along with the Koszider horizon¹⁵⁸. Some sickles were dated earlier (Hänsel MD I), i.e. those in the shape of curved knives (*Rebmesserform*), such as the ones from the deposit in Deva or the item from Békásmegyer. Middle Bronze Age sickles in the area presented three basic shapes, established according to the way in which the handle ends and how many ridges are on the blade¹⁵⁹. Each type includes two variants, according to the shape of the blade: suggesting a curved knife (*Rebmesserförmige Sicheln*) or with a thin blade, with the tip upwards (*Schlanke Sicheln mit aufgewippter Spitze*). All these shapes are encountered in the deposit from Dunapentele–Kosziderpadlás (Hänsel MD II), and some also feature in the deposit from Uzd (Hänsel MD III). Beginning with the Late Bronze Age (Hänsel SD I), their shape changed. Based on this typology, the fragmentary mold from Giroc can be attributed to any one of these shapes. In any case, the datings suggested by Hänsel for these sickles cover what we define as Middle Bronze Age II (MBA II) and Middle Bronze Age III (MBA III)¹⁶⁰.

The necropolis from Tápé can be dated slightly later, to the beginning of the Late Bronze Age (LBA I)¹⁶¹. The only inventory item in grave 30 was a sickle with a medial ridge and a simple handle, without button or step¹⁶².

In a volume published in the *PBF* series, M. Petrescu Dîmbovița discussed the sickles from Romania. The earliest items, included in type I, belong to the so-called *Rebmesserartige Sicheln*¹⁶³. However, they do not display a medial ridge on the blade and cannot be considered as analogies for the mold in Giroc. An interesting find is the sickle discovered in the settlement from Otomani “Cetatea de pământ”¹⁶⁴. The existence of a medial ridge and the shape of the blade are arguments supporting the similarity with the item from Giroc. One should also mention that the sickle from Otomani ends in a wide button, just like a mold discovered in the same site of Otomani “Cetatea de pământ”¹⁶⁵. As previously argued, B. Hänsel dated this type of sickle during an MD I horizon¹⁶⁶, which is the “mittlere rumänische Mittelbronzezeit” for M. Petrescu Dîmbovița¹⁶⁷.

¹⁵³ Holste 1940.

¹⁵⁴ Bóna 1958, 216, Taf. V.

¹⁵⁵ Bóna 1958, 238.

¹⁵⁶ Mozsolics 1967, 66–68.

¹⁵⁷ Such items were nevertheless attributed to the group of archaic sickles and dated to the Middle Bronze II (Reinecke A2) on the horizon of the Wietenberg II Culture in Transylvania (Popa 2005, 149, 154).

¹⁵⁸ Hänsel 1968, 51–53.

¹⁵⁹ „Sicheln mit breitem Querwulst am Ende des Blattes”, „Sicheln mit großem, blattständigem Endkopf” and „Sicheln mit doppelter Rippung” (Hänsel 1968, 183–184, Liste 33–35).

¹⁶⁰ Gogáltan 1999, 75–78. More recently Gogáltan 2015, 70–79.

¹⁶¹ See the new absolute dates in O’Shea *et al.* 2019, 608–609, Tab. 3, Fig. 5.

¹⁶² Trogmayer 1975, 16, Taf. 4.

¹⁶³ Petrescu–Dîmbovița 1978, 8–10, Nr. 1–4. A presentation of the first types of sickles from Romania can also be encountered in Popa 2005, 149.

¹⁶⁴ Ordentlich 1963, 136–137, Fig. 16/13.

¹⁶⁵ Roska 1942, 215, nr. 72. According to M. Petrescu–Dîmbovița they belong to type II (“Sicheln mit Querwulst am Blattende”), Breaza variant (Petrescu–Dîmbovița 1978, 10).

¹⁶⁶ Hänsel 1968, 52.

¹⁶⁷ Petrescu–Dîmbovița 1978, 12.

A. Hochstetter has attributed seven items to the tumular horizon in Lower Bavaria (Niederbayern), structured into three variants¹⁶⁸. The oldest items (Pattendorf, Pörendorf, Painten) were included in the category of *Rebmesserförmige Sichel*n and were dated to stages MD II and MD III in B. Hänsel's chronological system. The sickles included in the second variant are of interest for the present discussion, such as those from the deposit in Sandsbach. They display a ridge on the blade and have been dated to stage Br. C2.

In the context of rediscussing the deposit in Bühland, the so-called A 3 stage in South Germany, K.-F. Rittershofer also analyzed the sickles of this horizon from Central Europe¹⁶⁹. In his opinion, the deposits from Bühl and Ackenbach include five types of sickles also called *Rebmesserförmige Sichel*n. The first type displays a single ridge, in the margin, and two buttons on the handle. The second type displays a single button on the handle, while the third has the tip of the blade slightly arched upwards. Items of the fourth type have a ridge on the blade, but their fragmentary state provides no indication on the way in which the handle ended. Unlike them, items type five end in a straight handle. The final two types are similar from a typological perspective to the items cast in the mold from Giroc.

The earliest metal sickles known in Central Europe belong to the so-called Böheimkirchen-type spread in South Germany. In the *PBF* volume dedicated to sickles from Central Europe, M. Primas did not discuss these tools under the term "*Sichel*n" but as *leicht gekrümmten Erntmessern*¹⁷⁰. Still, their functional role is as clear as can be, namely in harvesting grain¹⁷¹. Due to the existence of the medial ridge, some of them could be good analogies for the mold in Giroc. As for their dating, a series of certain contexts allow for the chronological identification of these items at the earliest during the transition period from the Early Bronze Age to the Middle Bronze Age according to the Central European chronology. After the publication of Margarita Primas' monograph, new items were discovered and ensured the suggested dating: two new deposits in South Bavaria, in Sittling¹⁷² and Pfakofen¹⁷³, dated to the transition period between the Early Bronze Age and the Middle Bronze Age (the Bz. A2c stage according to Ruckdeschel), i.e. during a phase between the Langquaid (Bz. A2b) and Lochham (Bz. B)¹⁷⁴ type deposits. The deposit discovered in the high-altitude settlement from Schloßberg near Schöngesing, also in Bavaria, has been dated similarly¹⁷⁵. The latter deposit consisted of two sickles of the same type as those mentioned above. Through this, the distribution area of this early type of sickles becomes clearly apparent in South Bavaria (Südbayern) and Upper Austria (Oberösterreich), with a few items reaching Lower Austria (Niederösterreich) (for example those in Böheimkirchen) and Bohemia¹⁷⁶. As M. Schefzik also noted, it is interesting that if the majority of the sickles in Austria were discovered in settlements, while those from Bavaria and Bohemia were part of deposits or were found in water. The intention of depositing such items with a sacred purpose is obvious and it is less possible that they were hidden in order to be recovered later¹⁷⁷.

J. Říhovský included the first sickles from Moravia in group I (*Rebmesserartige Sichel*form) of button sickles (*Knopfsichel*n). Based on the fact that they were found in deposits, they can be dated to stage Koszider, B IIIb according to Mozsolics or MD I according to Hänsel, like all of the early items from the Carpathian Basin¹⁷⁸.

R. Vasić published in the *PBF* series a volume dedicated to the sickles in the center of the Balkan Peninsula. Based on comparisons with the shape of the blade or the absence of the medial ridge, none of the early sickles dated to the Middle Bronze Age or the beginning of the Late Bronze Age in Vojvodina or the rest of Serbia can be interpreted as analogies for the mold in Giroc¹⁷⁹. One should

¹⁶⁸ Hochstetter 1980, 58–59.

¹⁶⁹ Rittershofer 1983, 200–208.

¹⁷⁰ Primas 1986, 46–48, Taf. 1/1–13.

¹⁷¹ Primas 1986, 47.

¹⁷² Rind 1991.

¹⁷³ Möslein 1998.

¹⁷⁴ On the chronology of this area see Gogăltan 1999, 18–19, 28, 30, 43, 46.

¹⁷⁵ Schefzik 2003.

¹⁷⁶ Čujanová–Jílková 1970, 87, nr. 70, Abb. 20 A (Smedrov).

¹⁷⁷ Schefzik 2003, 63.

¹⁷⁸ Říhovský 1989, 16–19.

¹⁷⁹ Vasić 1994, 18–19.

also mention here the fragment of a tanged sickle (*Zungensicheln*) discovered in the Vatina tell from Feudvar¹⁸⁰. The archaeological context proves the possibility that sickles of this type were also introduced during the Middle Bronze Age.

North of the Carpathian Basin, in Poland, one notes the existence of early sickles with medial ridge and the shape of the blade very similar to that of the mold under discussion. The closest analogy that includes these characteristics is a sickle part of the deposit in Czarnówko, dated to the second phase of the so-called Period II of the Bronze Age there¹⁸¹. This corresponds to the first stage of the Late Bronze Age in Banat¹⁸².

The earliest sickles from Slovakia were found in the settlements of the Otomani ceramic style¹⁸³. The second deposit from Včelince included a sickle that displays a medial ridge on the blade, the tip slightly curved upwards, and two buttons on the handle¹⁸⁴. The deposit, and implicitly the sickle, was dated to a Koszider horizon (Bz. B2). A similar item was also discovered in the settlement from Nizná Myšľa¹⁸⁵, that can be attributed to the end of the Middle Bronze Age in the area (Bz. B1) based on the analogy with the item from deposit II in Včelince. The sickle from the tumular graves culture from the deposit in Vyškovce nad Ipľom does not have a medial ridge¹⁸⁶, just like the mold from Veselá¹⁸⁷. These early items from Slovakia display no similarities with what could have been cast in the mold from Giroc¹⁸⁸.

During the rescue excavations performed along Highway M3 archaeologists have also researched the cemetery of the tell in Polgár “Ásotthalom”¹⁸⁹. Besides other inventory items, the grave 14 has revealed a small bronze sickle in a rather poor state of preservation¹⁹⁰. An inhumation grave (no. 21) was also researched in the proximity of this cemetery. Although there were indications that the grave has been robbed already in ancient times, the body was found in crouching position. The discovery has been dated to the period of the tumular graves (*Hügelgräberkultur*) based on the ceramic pot it contained¹⁹¹. It seems that the robber was not interested in a bronze sickle, found near the skeleton’s right shoulder. Due to the presence of two rivets on the handle, the items were correctly interpreted as an “Unikum in ihrer Art”. It is important to point out that the two sickles display a medial ridge, like the items possibly cast in the mold from Giroc. T.–T. Daróczy argued that besides the much more famous iron sickle from Gánovce¹⁹², the object found in grave 21 could be considered to be a razor, with analogies among the slightly earlier items from the Aegean Bronze Age¹⁹³.

Recently, the rescue excavations performed near Doroslovo, in Bačka, in the proximity of the Danube River, have led to the identification of several features among which one can note a pit containing, besides pottery fragments attributed to the Late Bronze Age, a fragment from a single-valve sickle casting clay mold¹⁹⁴. This is an analogy that must be remembered for our item in Giroc.

The brief presentation of the first sickles from the central and south-eastern parts of Central Europe prove that starting with the Middle Bronze Age these tools were already a constant presence in deposits and settlements. The mold under discussion could have been used for casting sickles such as the one from the deposit in Mezőberény that also contained a fragment from a Regelsbrunn type

¹⁸⁰ Hänsel, Medović 1995.

¹⁸¹ Gedel 1995, 22–23, no. 1, Taf. 1/1.

¹⁸² The older bibliography in Gogáltan 1999, 37–38. To this one can add Blajer 1999, 9–16; Dąbrowski 2004, 100–105.

¹⁸³ General data in Furmánek 2000; Furmánek 2003; Furmánek, Novotná 2006, 8–17.

¹⁸⁴ Furmánek, Marková 1996, Abb. 1/1. Another sickle with two ridges on the blade was found in the tell from Včelince (Furmánek, Marková 1986, 81; Furmánek 2000, 155, Abb. 3/3), thus it cannot be an analogy for the mold in Giroc.

¹⁸⁵ Gašaj 2003, 43, Photo 35.

¹⁸⁶ Furmánek 2000, 156, Abb. 3/1.

¹⁸⁷ It was initially attributed to the tumular horizon (Točík, Budinský–Krička 1987, 77, Fig. 5/4), but subsequently connected to the Mad’arovec habitation there and dated “in die beginnende mittlere Bronzezeit” (Bartík 1995, 36, 44, Fig. 7/16). See also Furmánek 2003, 162.

¹⁸⁸ A recent systematic presentation of all sickle molds from Slovakia in Furmánek 2003.

¹⁸⁹ Dani *et al.* 2003.

¹⁹⁰ Máthé 2000, 183–184, Abb. 1.

¹⁹¹ Máthé 2000, 184, Abb. 2.

¹⁹² Furmánek 2000.

¹⁹³ Daróczy 2019.

¹⁹⁴ Putica, Jončić 2019, 96, Fig. 7. We thank Prof. Marjia Ljuština for the data kindly provided about the items from Doroslovo.

bracelet. The deposit was dated to stage B IV according to Mozsolics, thus to the beginning of the Late Bronze Age¹⁹⁵. The absolute dates from the necropolis in Tápé, that included a sickle, similar to the ones produced in Giroc, are relatively contemporaneous to the Cruceni–Belegiš I stage¹⁹⁶.

Single-valve clay mold for casting crescent-shaped pendants (Halbmondförmige Anhänger). The mold has a maximum length of 6.5 cm and a width of 4.5 cm. The negative shape of the pendant measures 2.5 cm in length. Pendants of this type are well-known over an ample area in the Carpathian Basin, as jewelry items used throughout the Middle and Late Bronze Ages¹⁹⁷. The first items were found in the graves of the Kisapostag and Vatyá I communities, such as the sandstone mold for the casting of two such pendants from grave 960 in Dunaujváros¹⁹⁸, while the latest were discovered on the level of an “Anfang der Mittleren BZ3” horizon¹⁹⁹. Still, they were used for longer periods, as such ornaments were also employed by the Cruceni–Belegiš communities²⁰⁰ and those of the tumular graves culture (*Hügelgräberkultur*) in the Pannonian Plain, such as the necropolis in Tápé²⁰¹.

Conclusions. More than 50 years after the definition of the Cruceni–Belegiš I and II ceramic style (culture) in the low plain area of Banat, Srem, Bačka, and Slavonia²⁰², we believe that this phenomenon remains open for debate. The Late Bronze Age settlement from Giroc–*Mescal* should be dated, based on the ¹⁴C dates obtained from samples collected during the 2006 researches and the dates from the settlement in Foeni–*Gomila Lupului II*, sometime between 1700/1600 and 1400 BC²⁰³ (Fig. 11). From a stylistic point of view, this chronological stage is defined in the low plain area of Banat by the presence of incised ceramic ornaments combined with pseudo-cord decoration. During stage LBA II (after 1450/1400 BC) they were replaced by various types of grooves that became generalized at that time.

Analyzing the pottery from the Late Bronze Age settlement in Şagu, Victor Sava correctly noted in a recent article the inconsistent definition of the ceramic styles present in Banat and the Lower Mureş Basin²⁰⁴. To this end, the pottery from Şagu provides a different picture of this period in the High Vinga Plain area. Grooves were much employed there ever since LBA I, besides incisions, impressions, and relief decorations. On the other hand, Sava remarked the absence of pseudo-cord ornaments²⁰⁵. Taking this fact into consideration, we believe that the cultural identification of the mega-fort from Corneşti²⁰⁶, located just 15–20 km in a straight line from Şagu, must be reconsidered.

Grooves were also identified in the ornaments’ repertory from Giroc. They feature either in combinations with relief decoration (Pl. 9/2; 11/4; 16/4–5) or separately (Pl. 13/1; 14/3). The same association of ornaments can be encountered in Foeni–*Gomila Lupului II*, in L.2, a feature dated in absolute terms sometime between 1500 and 1400 BC²⁰⁷ (Fig. 11) as well as in the settlement from Timișoara–*Fratelia*, where grooves represented 19 % of all decorated fragments²⁰⁸. The presence of grooves among the decorative repertory of the first stage of the Cruceni–Belegiš ceramic style is seen as an inheritance from the local Vatin background of the Middle Bronze Age²⁰⁹. In necropolises, grooved vessels

¹⁹⁵ Mozsolics 1967, 67, Taf. 67/2

¹⁹⁶ O’Shea et al. 2019, Tab. 3, Fig. 5; Sava 2021.

¹⁹⁷ For general considerations see Mozsolics 1967, 87; Hänsel 1968, 115–118, list 121; Furmánek 1980, 20–23, Taf. 10/178–245; Gávan 2015, 122–124.

¹⁹⁸ Mozsolics 1967, 87, Taf. 19/1–2; Vicze 2011, Pl. 75/12.

¹⁹⁹ Bóna 1975, 285.

²⁰⁰ Beograd–*Karaburma* (Todorović 1977, 84, grave 271); Jakovo–*Kaluđerske livade* (Petrović 2006, 137).

²⁰¹ Trogmayer 1975, Taf. 3/5 (grave 25), 15/2 (grave 182), 31/2 (grave 342), 39/3 (grave 444), 40/2 (grave 452), 47/4 (grave 526), 55/10 (grave 656).

²⁰² Horedt 1967, 17–20; Tasić 1968, 23; Morintz 1978, 40–45; Gumă 1997, 55–57, 65–67; Tasić 2001; Szentmiklosi 2010a; Ljuština 2017; etc.

²⁰³ Szentmiklosi 2009, Pl. CXCI. According to V. Sava, and we fully share his belief, the very early date of Beta–256562 (sampled from feature Giroc L. 2/2006) is most likely an indication of the old wood effect (Sava 2021). The beginning of this settlement can probably be dated sometime after 1600 BC.

²⁰⁴ Sava 2020.

²⁰⁵ Sava 2020, Fig. 8–9.

²⁰⁶ It was attributed to the Cruceni–Belegiš Culture (Szentmiklosi et al. 2011, 832; Bălărie et al. 2016, 3; Lehmpful et al. 2018, 32; etc.). During the four campaigns of systematic researches in Corneşti to which both authors took part (2007–2010), we saw no pottery fragment decorated in the pseudo-cord technique.

²⁰⁷ Szentmiklosi 2009, Pl. XXXII–XXXIV; CXC/1; Sava 2020, Fig. 11.

²⁰⁸ Stavilă 2012, 39–40.

²⁰⁹ Szentmiklosi 2009, 131–132, n. 566; 270.

are rarer during this chronological horizon. Still, one can mention a series of cups from Livezile that feature associations of rows with grooves, incisions, and pseudo-cord decorations²¹⁰, or a mug with globular body from Peciu Nou, in M.17/1988, whose surface displays impressions, conical prominences, pseudo-cord motifs, and wide grooves²¹¹.

The brief presentation above indicates that during the stage LBA I, the stylistic characteristics of the pottery from South-Western Romania were very different. Compared to the settlement from Șagu, located on the banks of the River Timiș approximately 45 km to the South, in Giroc, the impressed decoration – pseudo-cord type – was the distinctive element of the local pottery decoration. To this one can add incisions, relief decorations, grooves, and protomes. The shapes of the pots preserved the tradition of the Cornești-Crvenka local background and no allogeneic elements have been noted. Certainly, the publication of older and more recent researches will reveal more variables of the ceramic style under discussion. Their corroboration with new absolute data will allow specialists to (re)define, in the future, the stylistic beginnings of the Late Bronze Age in the plain of Banat.

Regarding the metallurgical activity of the Cruceni-Belegiš first horizon, it continued the local tradition of the Middle Bronze Age from Banat and the areas in its close proximity²¹², to which one can add the use and probably the production of new types of weapons and jewelry items²¹³.

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²¹⁰ Gogâltan 1998, Pl. IV/2; V/1–2;

²¹¹ Szentmiklosi 2009, 270–271.

²¹² Gogâltan 1999, 76–77.

²¹³ Sava, Ignat 2014.

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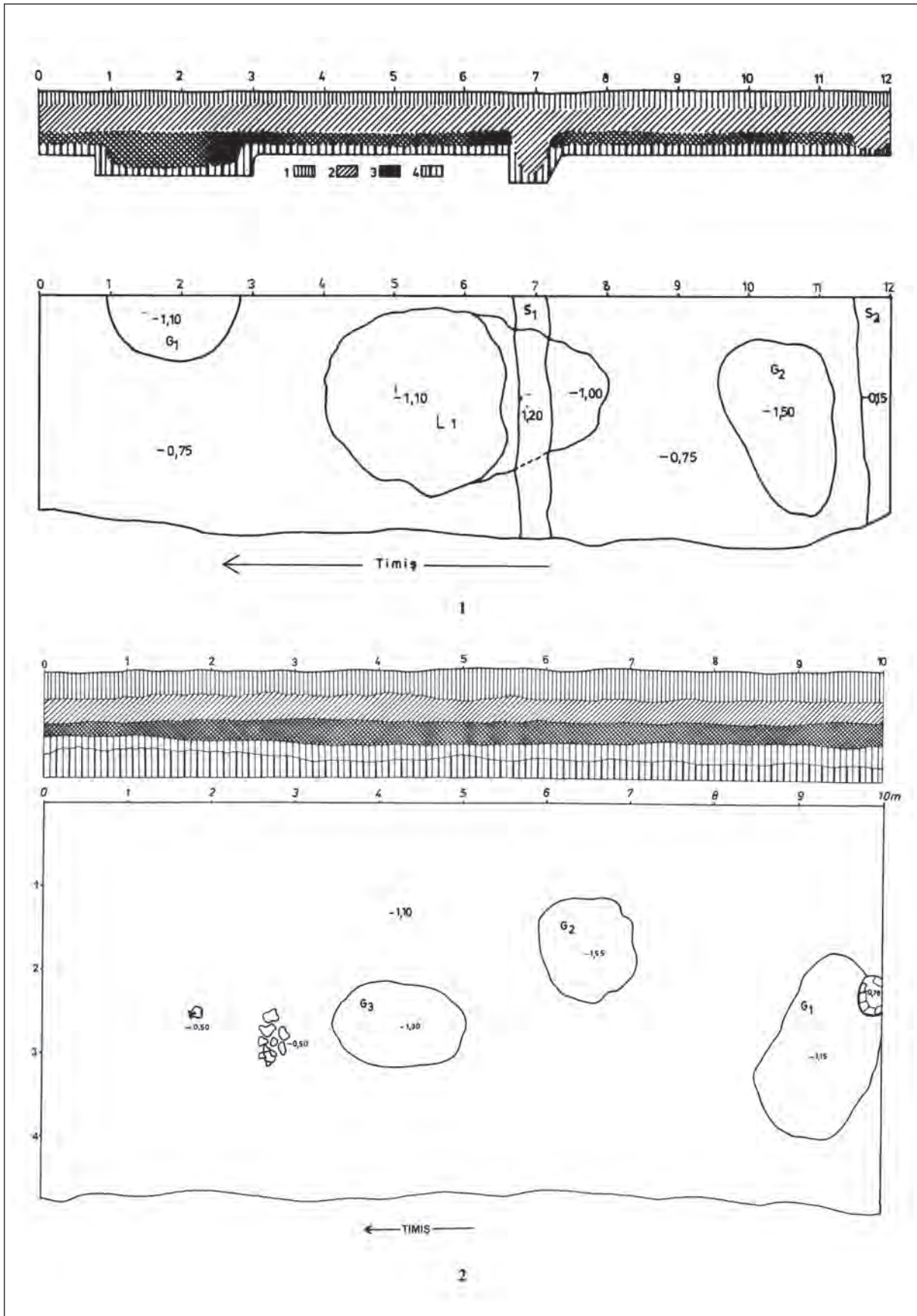


Plate 1. Giroc–Mescal. Profile and ground C I/1992 (1) and C I/1993 (2): 1. Alluvial sand. 2. Black–gray hard soil (Gornea–Kalakača level); 3. Yellow–gray soil, strongly pigmented with coal, shards, flour–like in structure (Cruceni–Belegiș level); 4. Sand (virgin soil). 5. Sand (virgin soil).

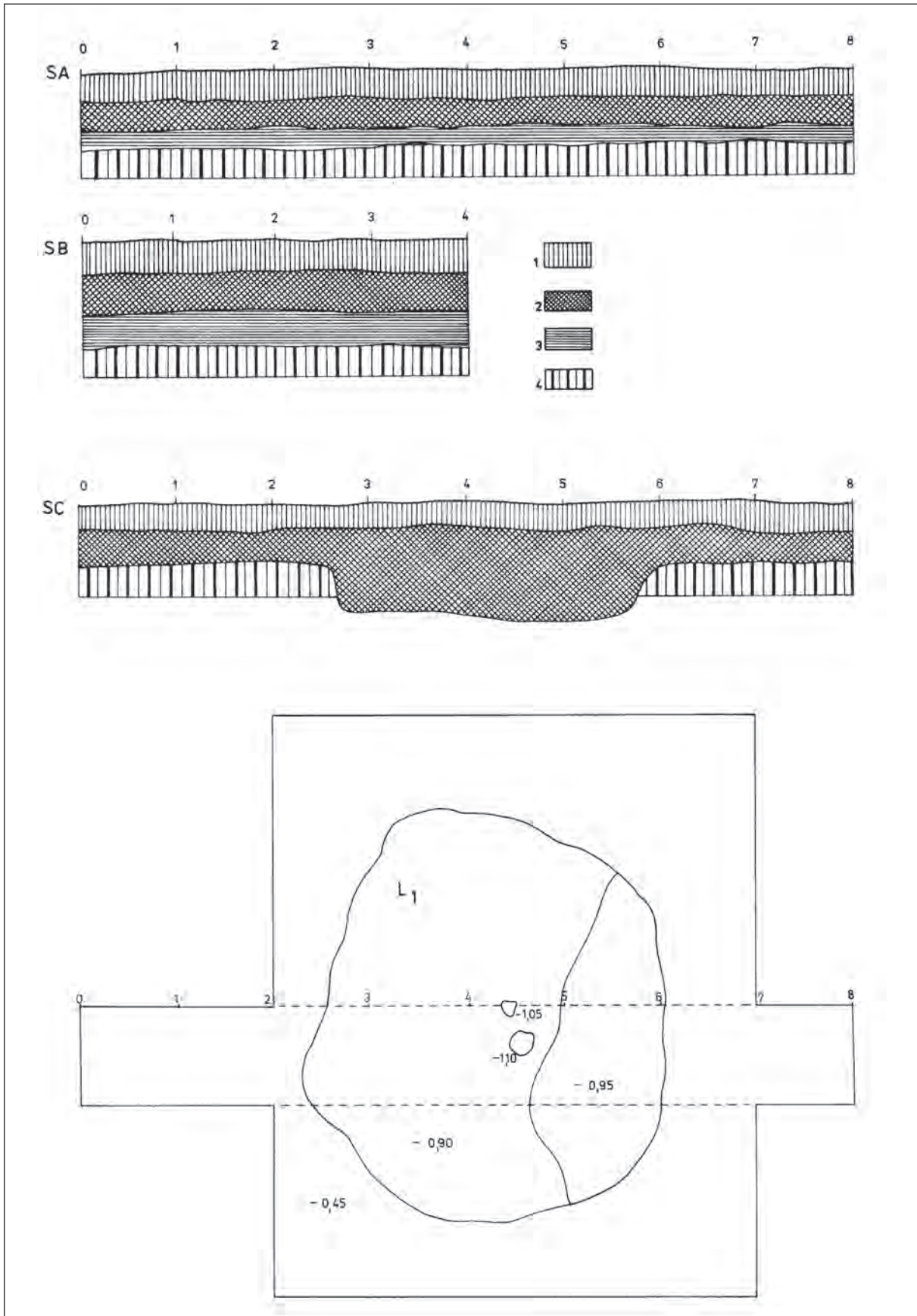


Plate 2. Giroc-Mescal. Profile in S A/1993, S B/1993, profile and ground in S C/1993. 1. Alluvial sand. 2. Black-gray soil (Cruceni-Belegiš level). 3. Yellow-gray soil, strongly pigmented in red (Gornea-Foeni level). 4. Yellow-brown hard clay.

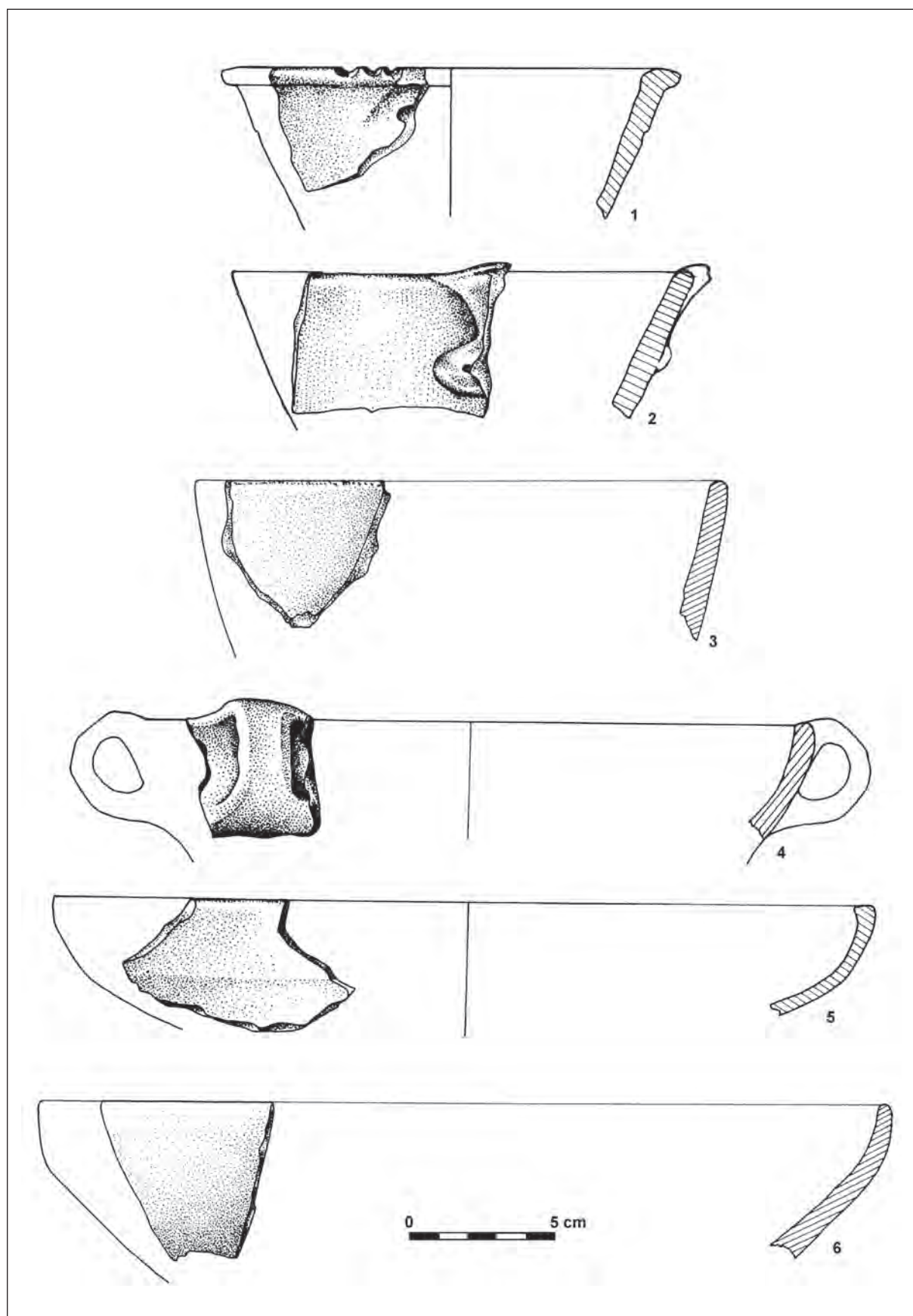


Plate 3. Giroc-Mescal. 1-6. Pottery from L 1/1992.

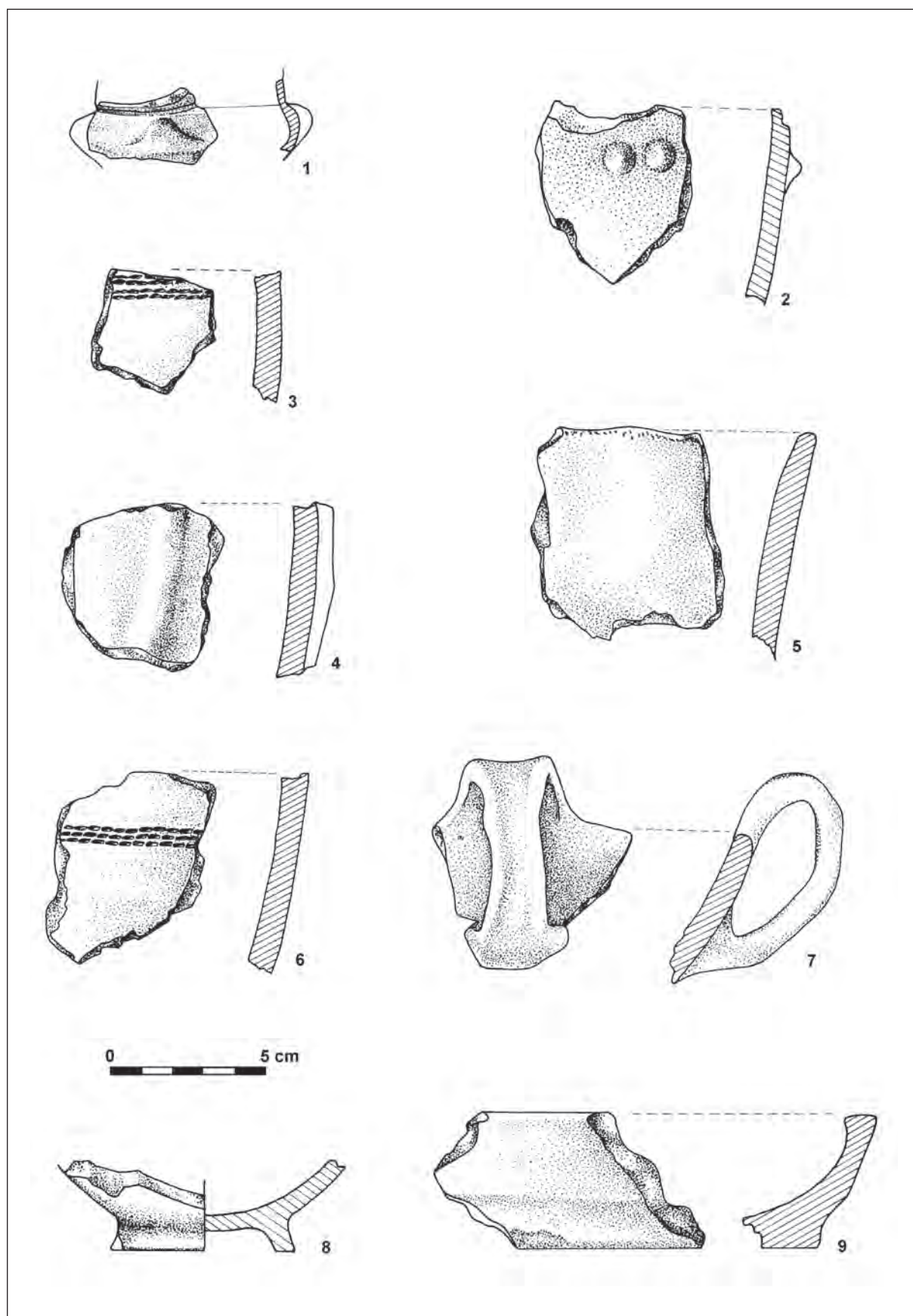


Plate 4. Giroc-Mescal. 1-9. Pottery from L 1/1992.

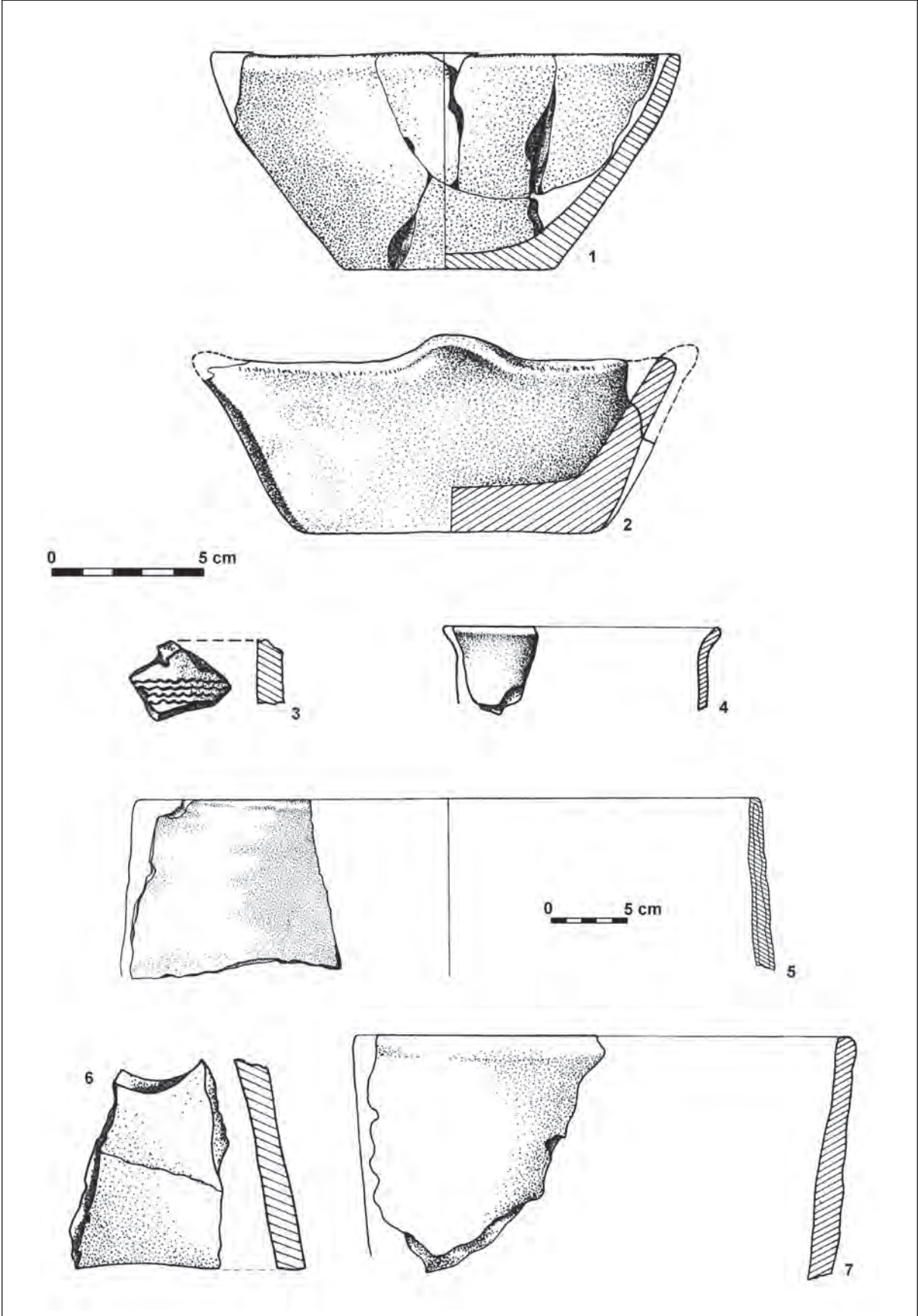


Plate 5. Giroc–Mescal. 1–2. Pottery from L 1/1992. 3–7. Pottery from G 1/1992.

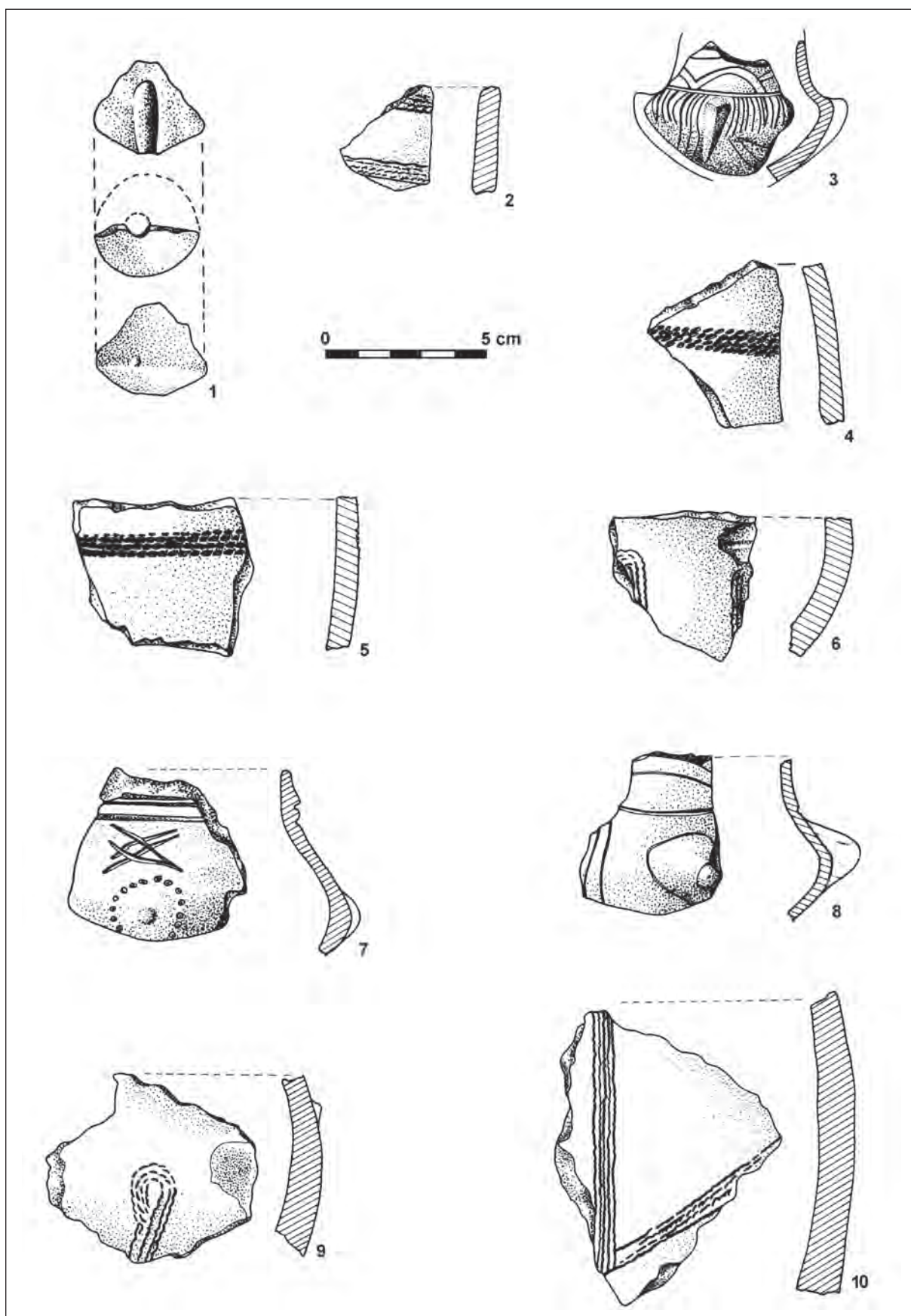


Plate 6. Giroc–Mescal. 1–10. Pottery from C I/1992.

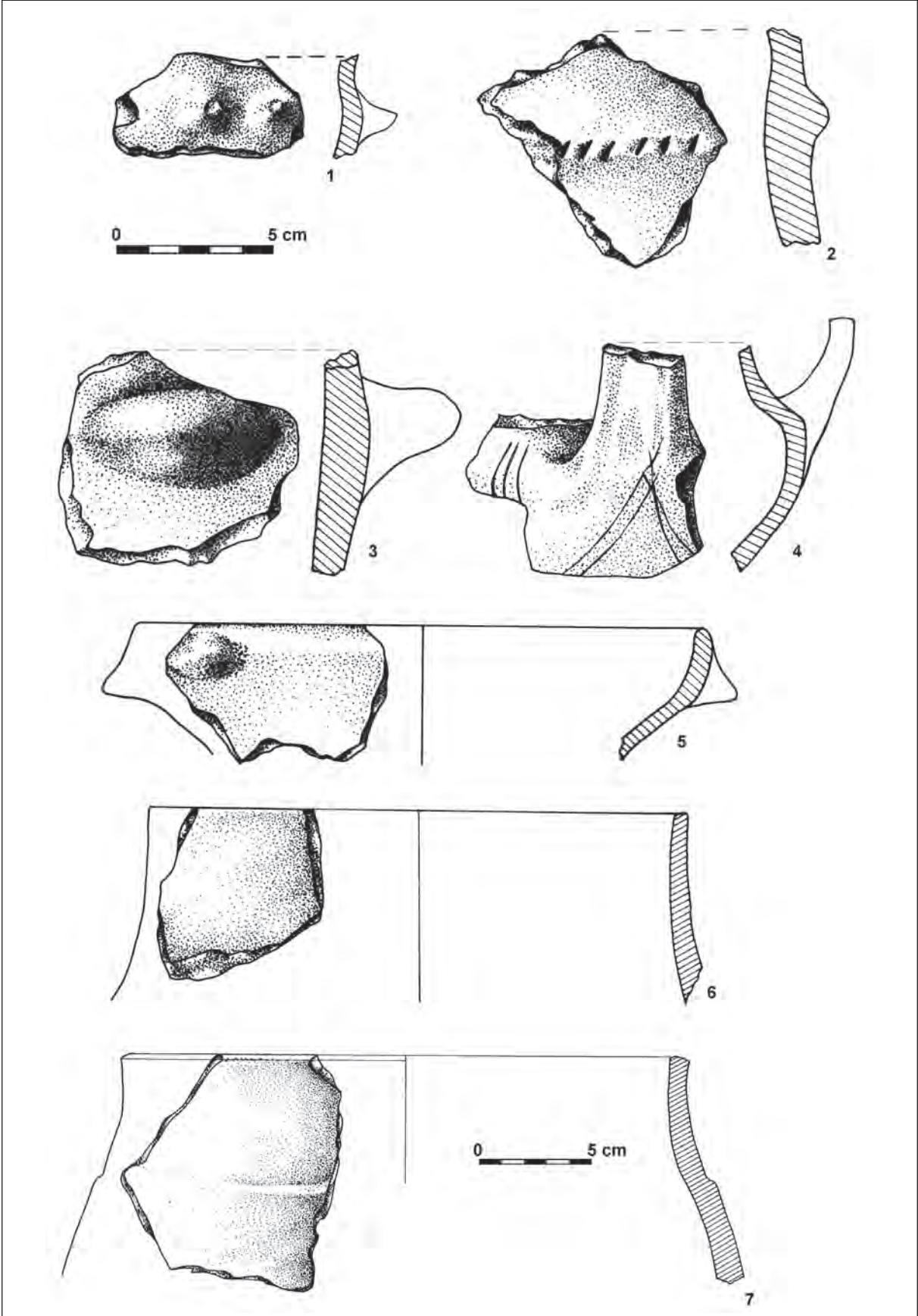


Plate 7. Giroc-Mescal. 1-7. Pottery from CI/1992.

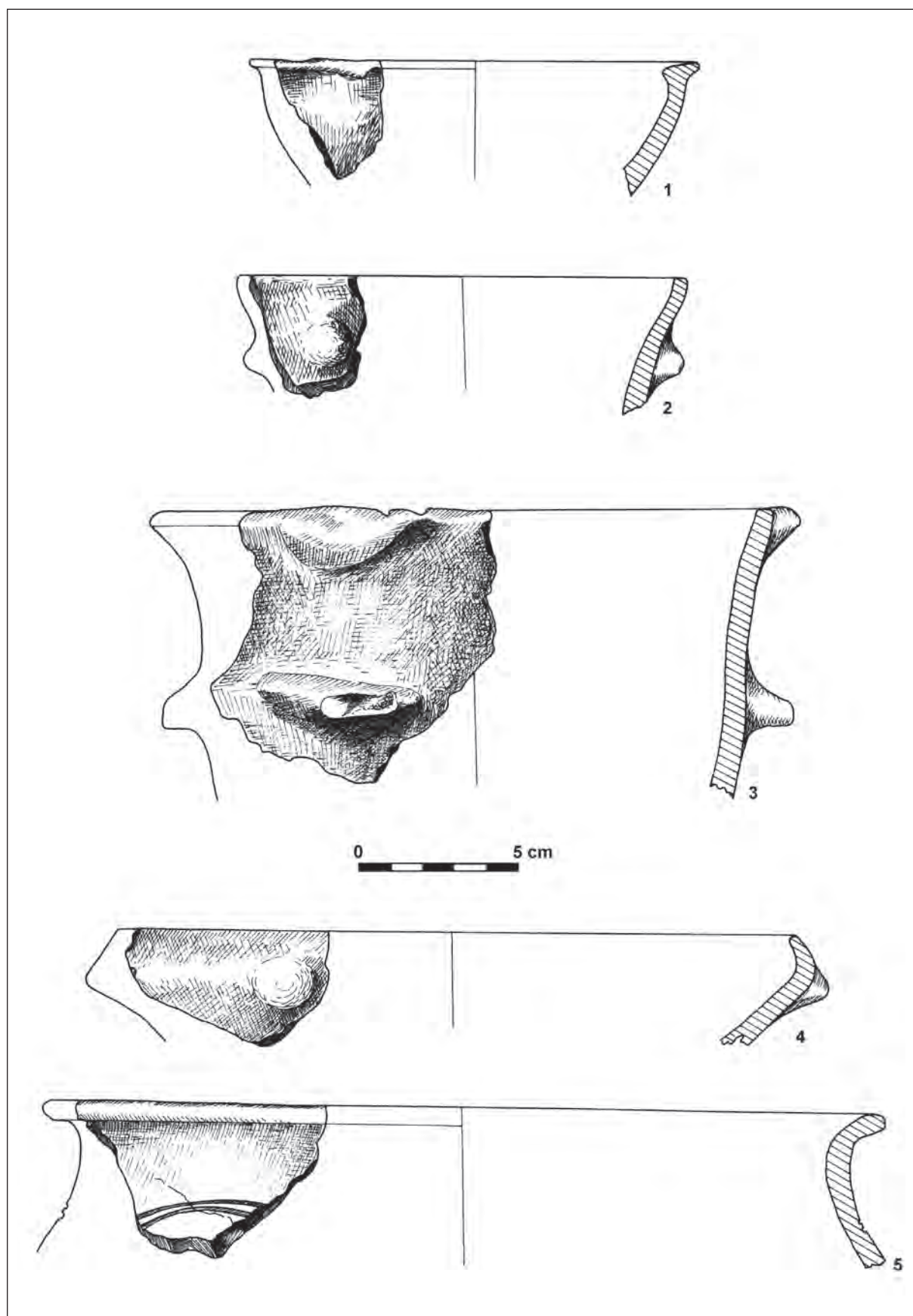


Plate 8. Giroc-Mescal. 1-5. Pottery from L 1/1993.

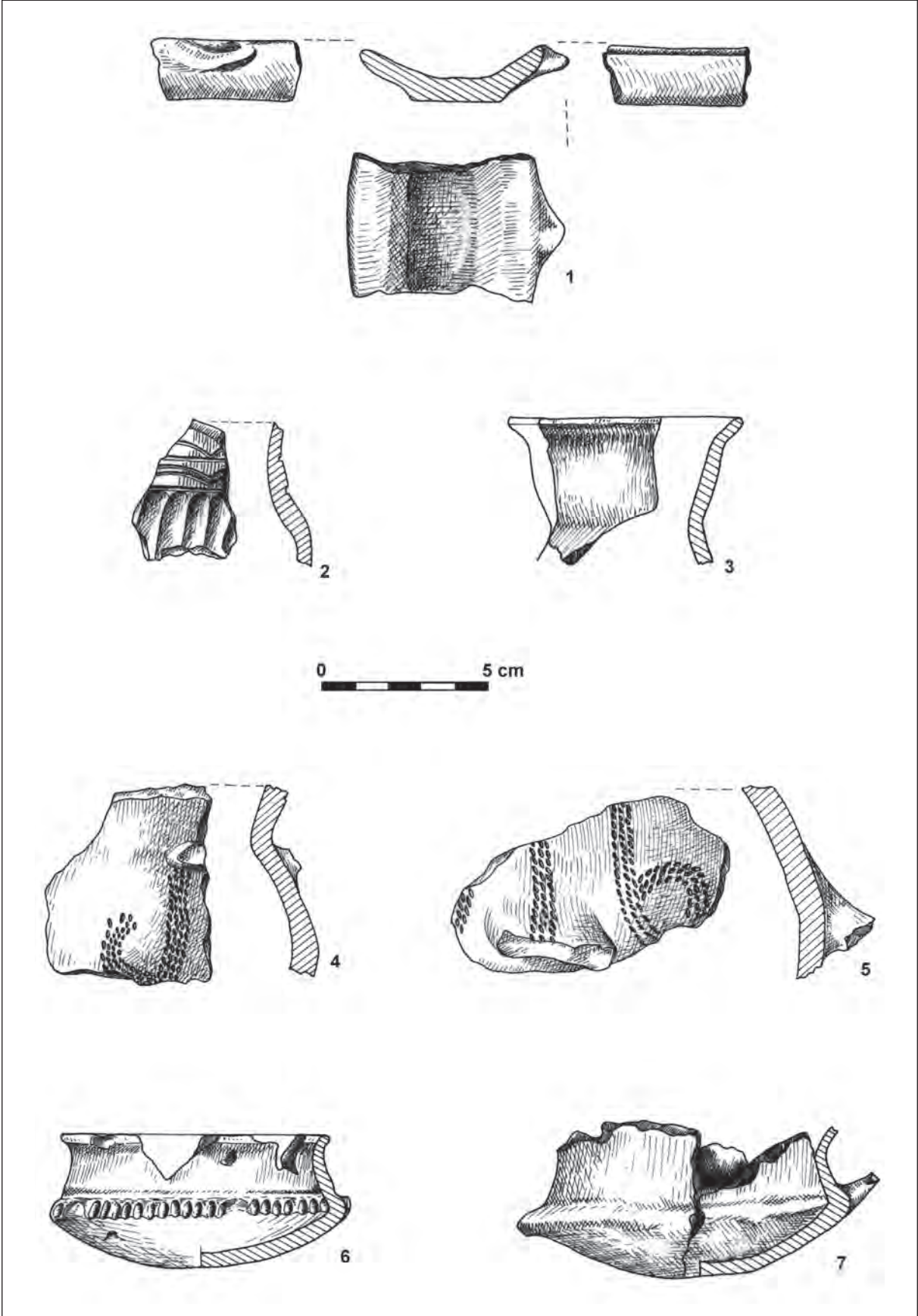


Plate 9. Giroc-Mescal. 1-5. Pottery from L 1/1993.

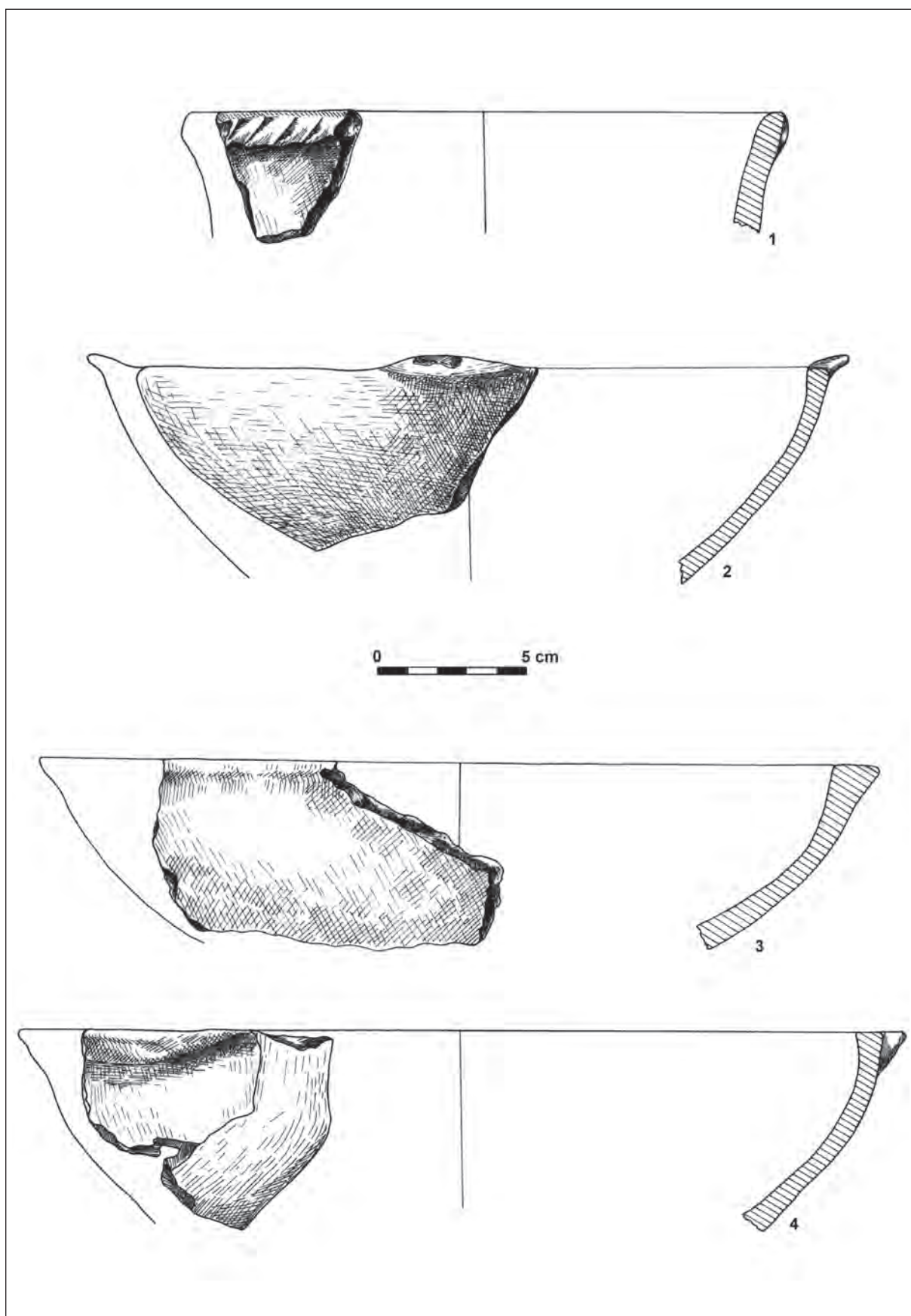


Plate 10. Giroc–Mescal. 1–4. Pottery from C I/1993. Depth 0.45–0.60 m.

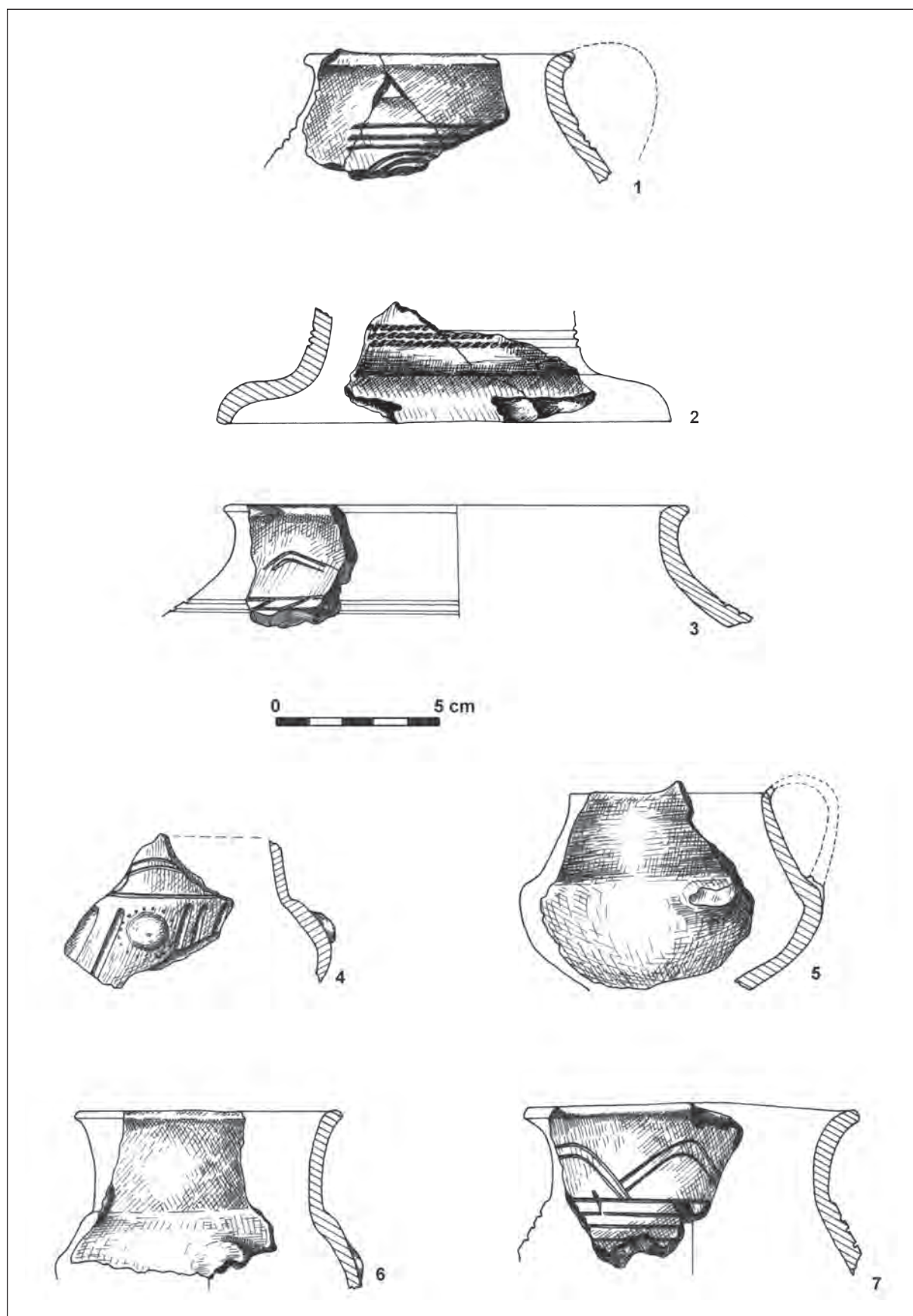


Plate 11. Giroc-Mescal. 1-7. Pottery from C I/1993. Depth 0.45-0.60 m.

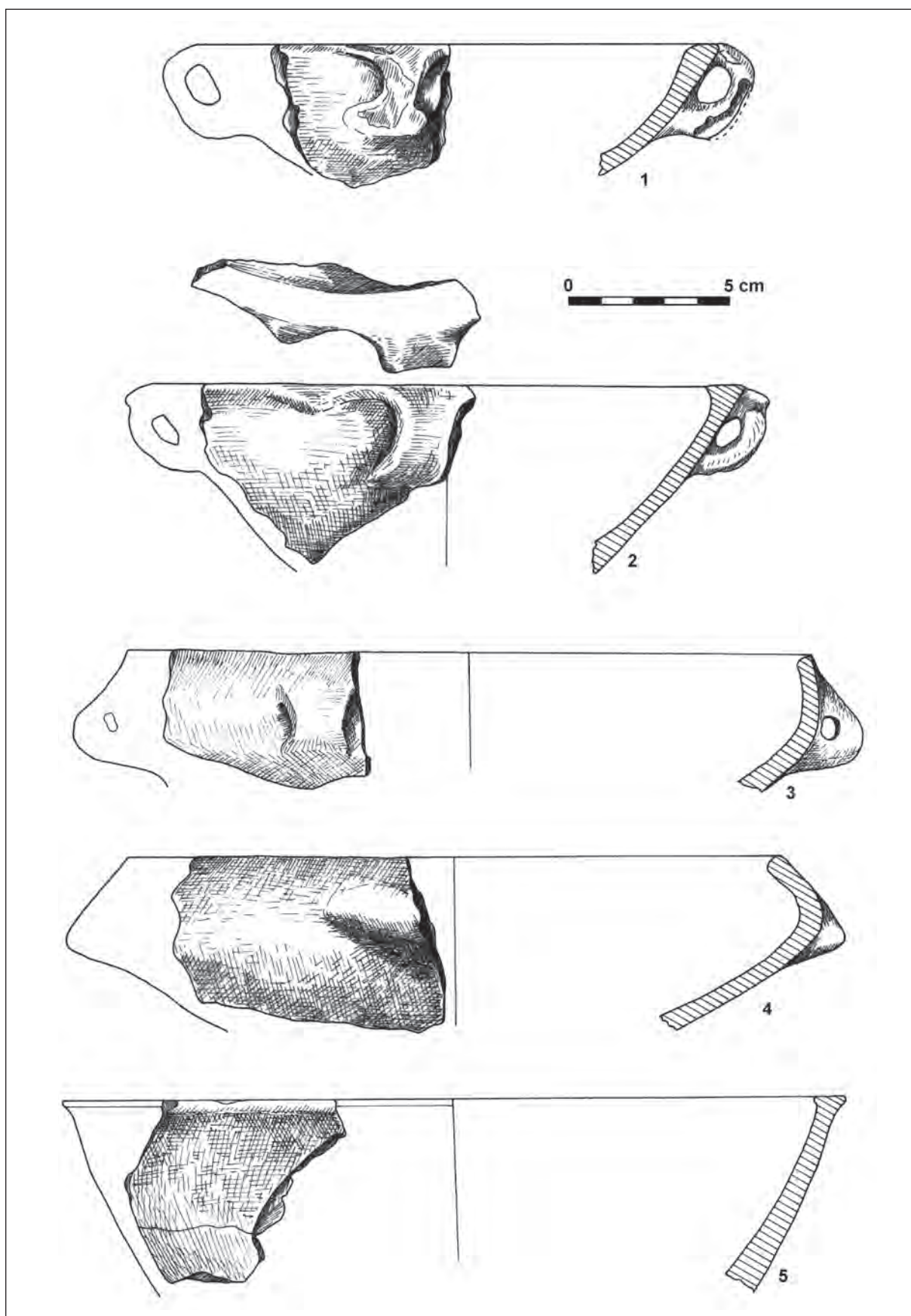


Plate 12. Giroc-Mescal. 1-5. Pottery from C I/1993. Depth 0.60-0.75 m.

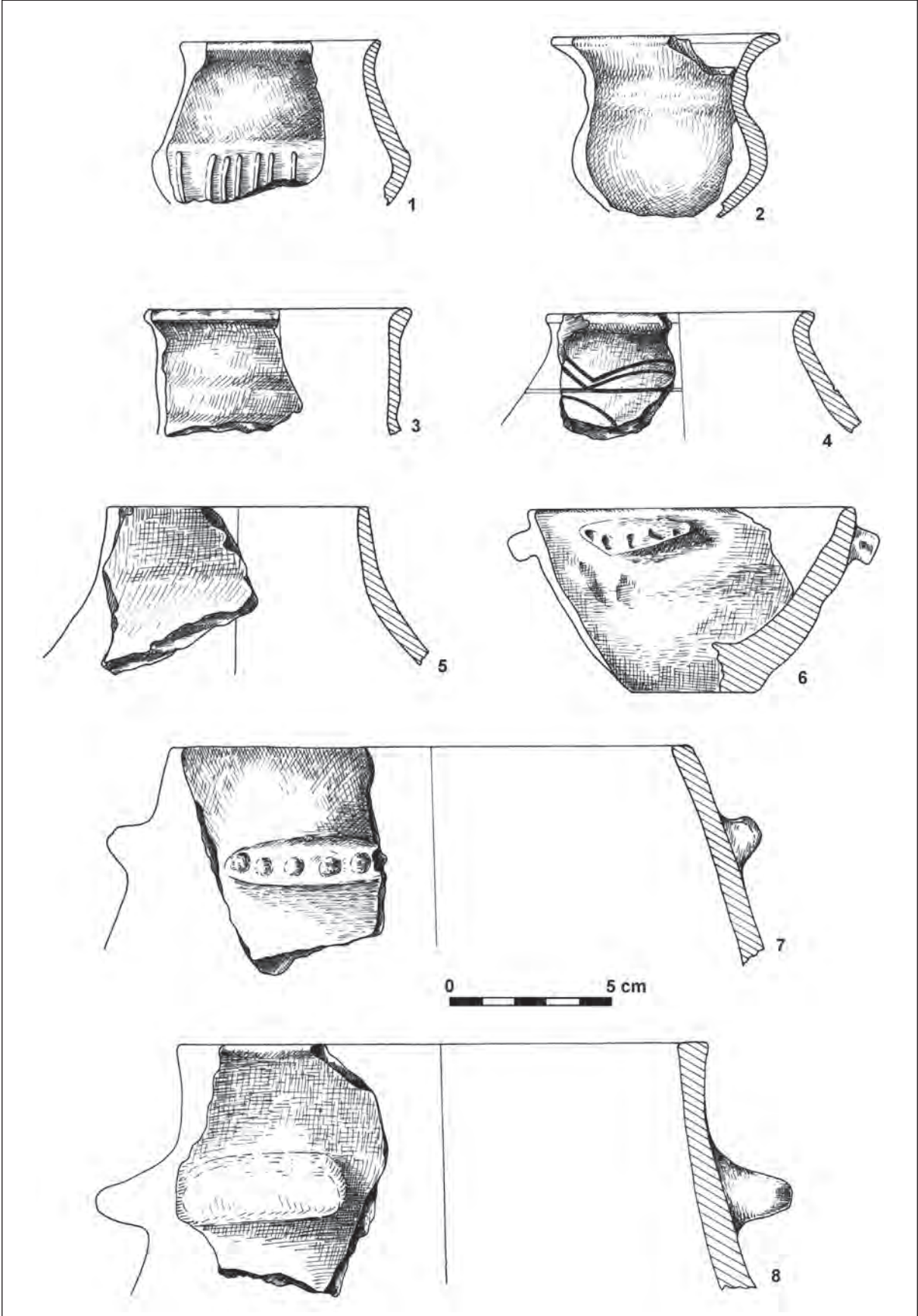


Plate 13. Giroc–Mescal. 1–8. Pottery from C I/1993. Depth 0.60–0.75 m.

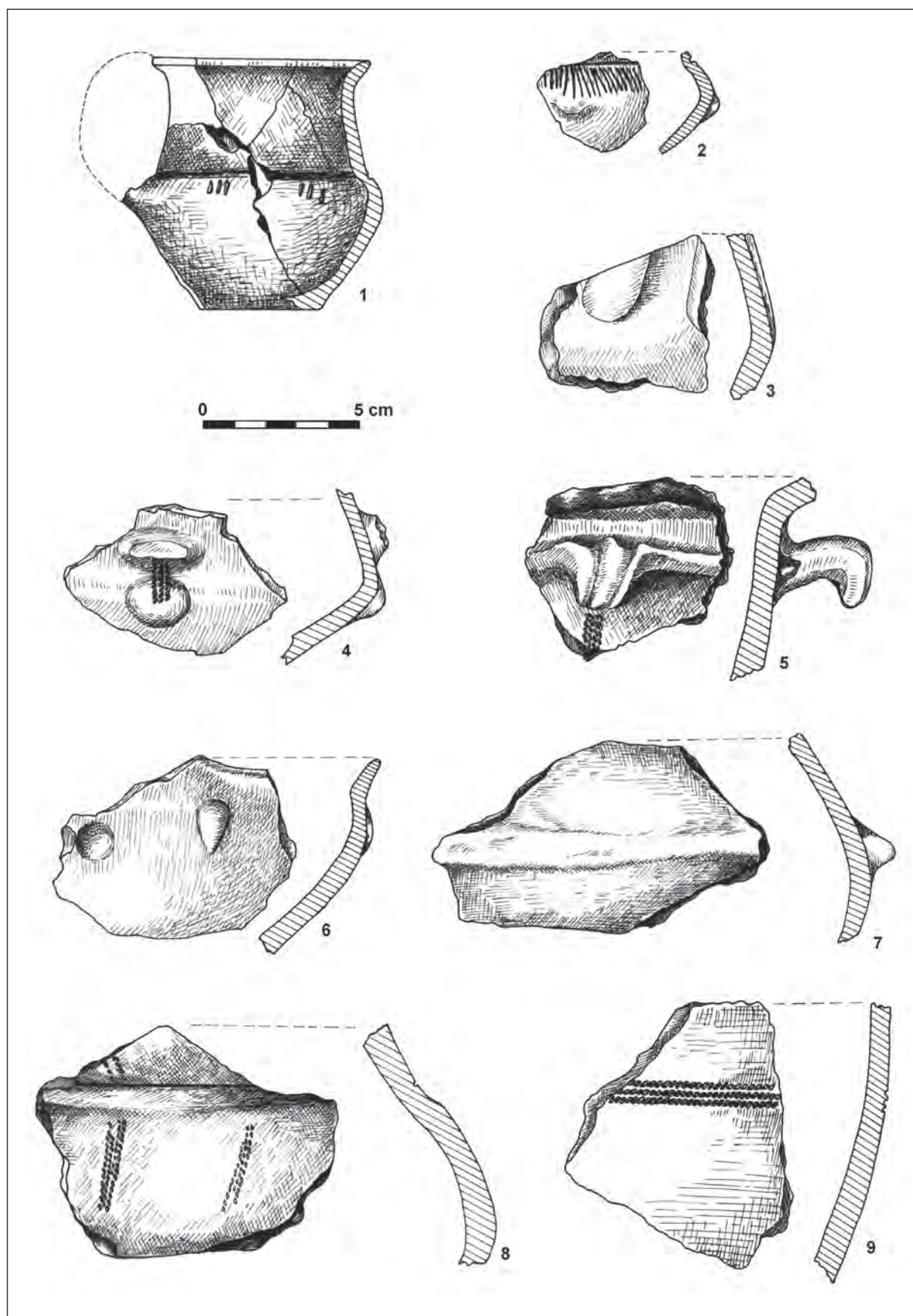


Plate 14. Giroc–Mescal. 1–9. Pottery from C I/1993. Depth 0.60–0.75 m.

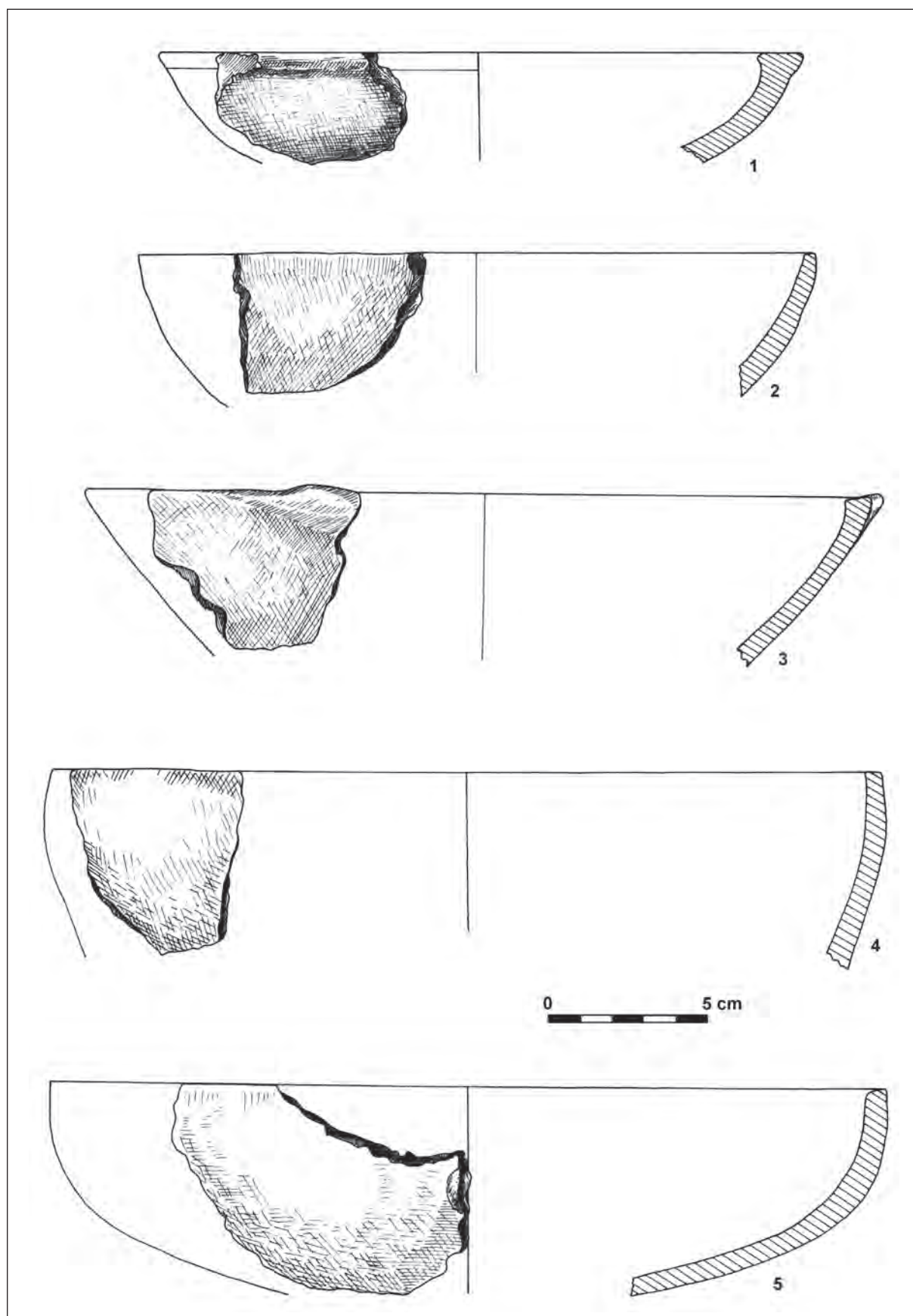


Plate 15. Giroc-Mescal. 1-5. Pottery from C I/1993. Depth 0.75-0.90 m.

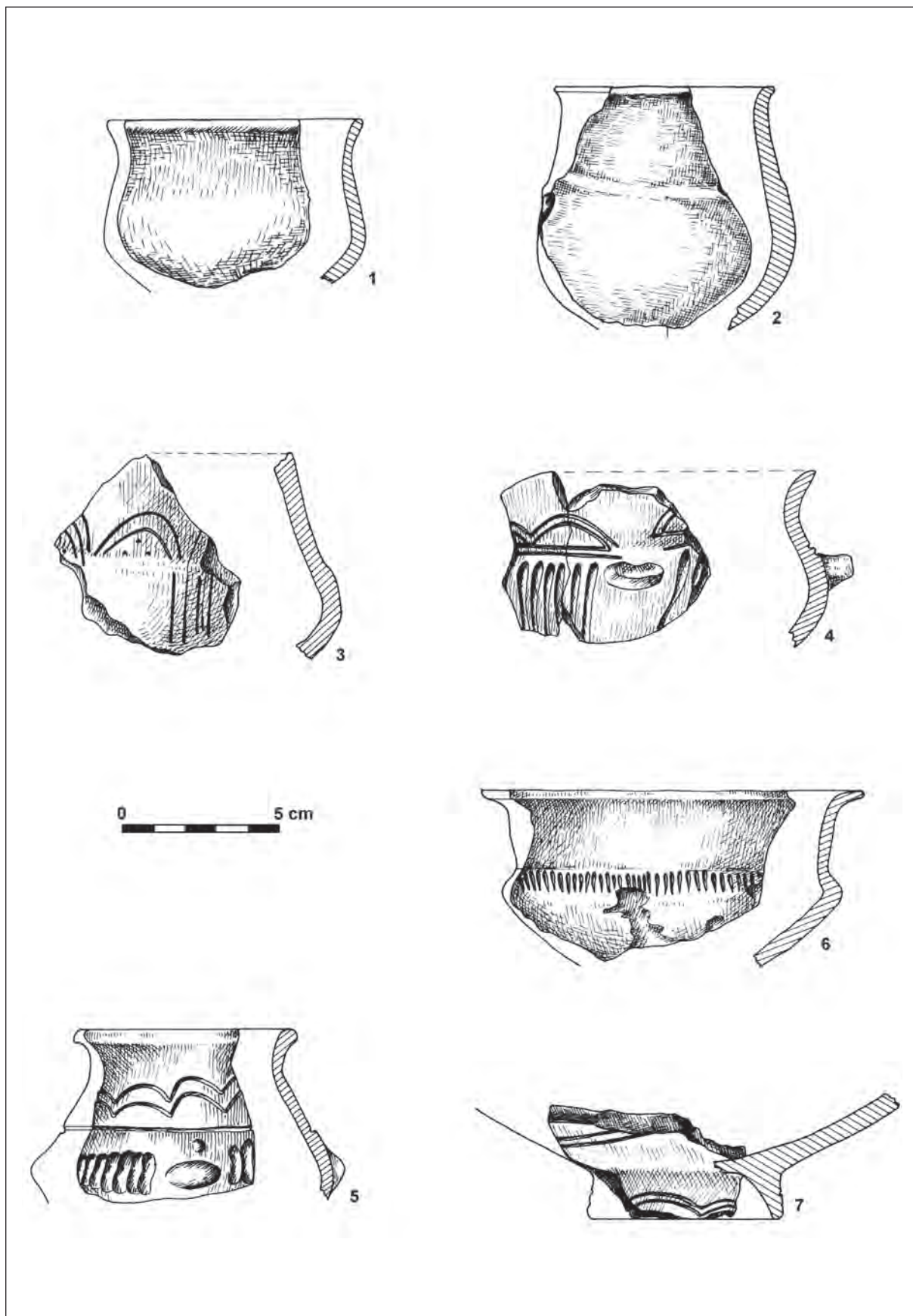


Plate 16. Giroc-Mescal. 1-7. Pottery from C I/1993. Depth 0.75-0.90 m.

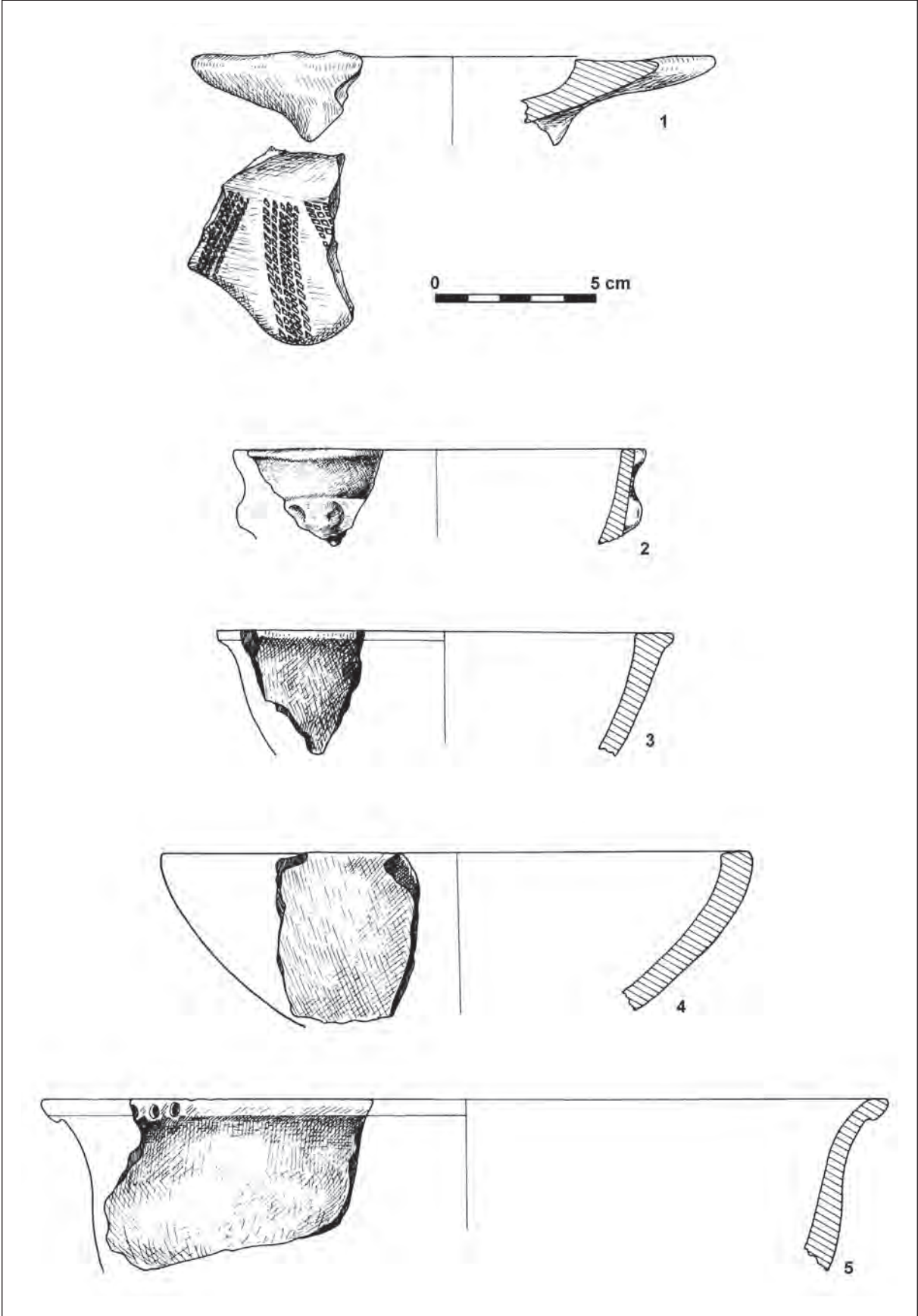


Plate 17. Giroc–Mescal. 1–5. Pottery from C I/1993. Depth 0.75–0.90 m.

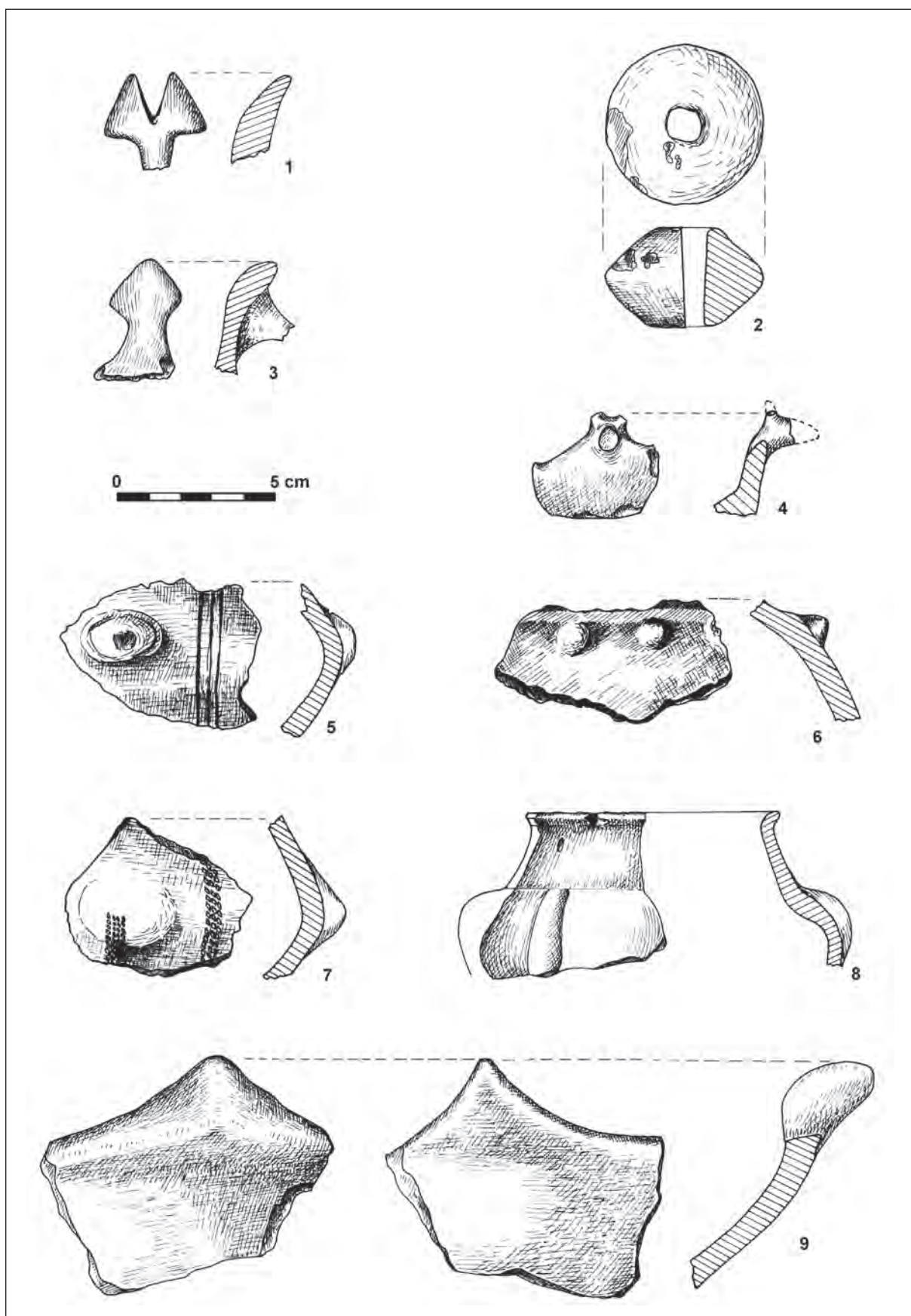


Plate 18. Giroc–Mescal. 1–9. Pottery from C I/1993. Depth 0.75–0.90 m.

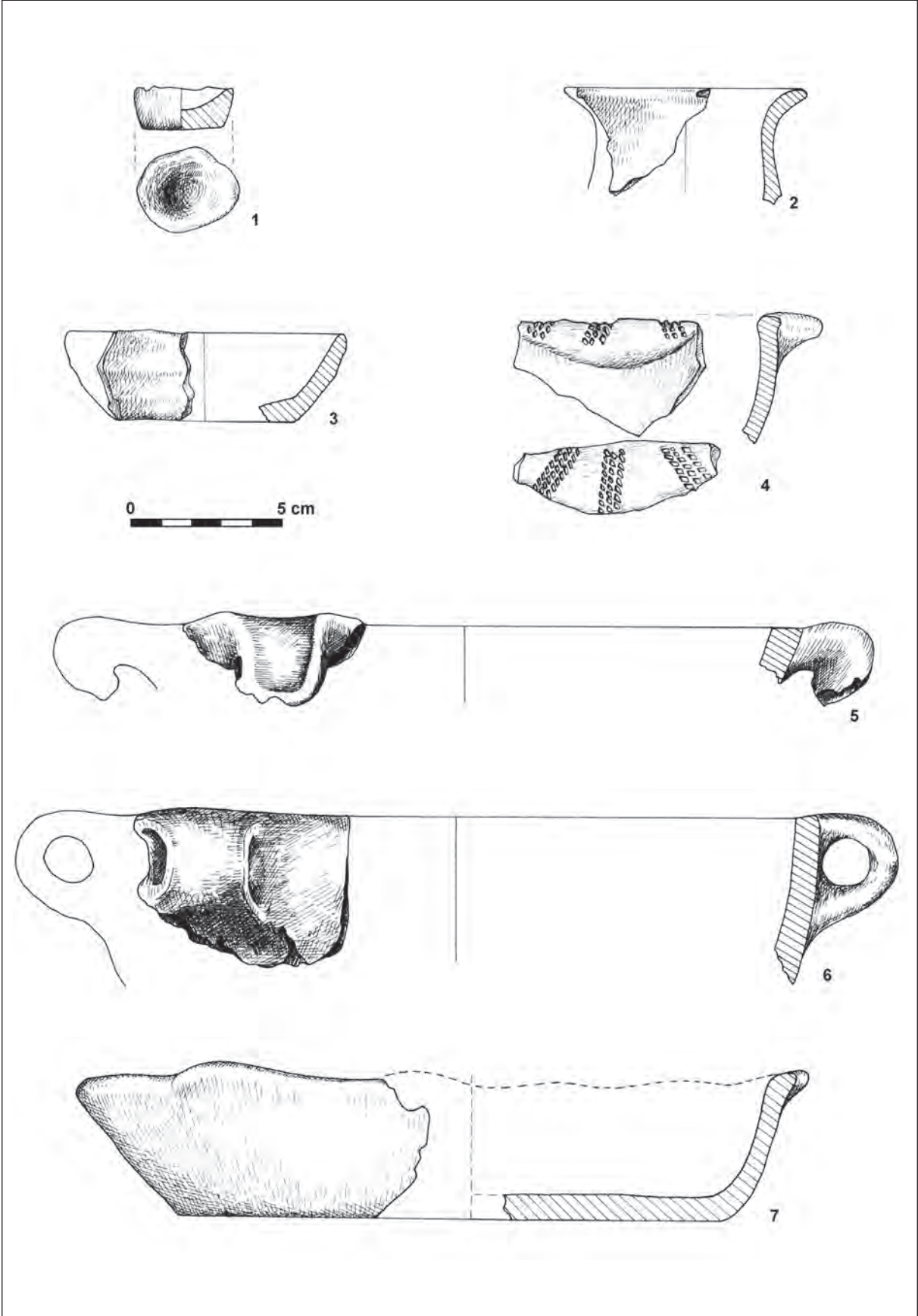


Plate 19. Giroc–Mescal. 1–7. Pottery from C I/1993. Depth 0.90–1.05 m.

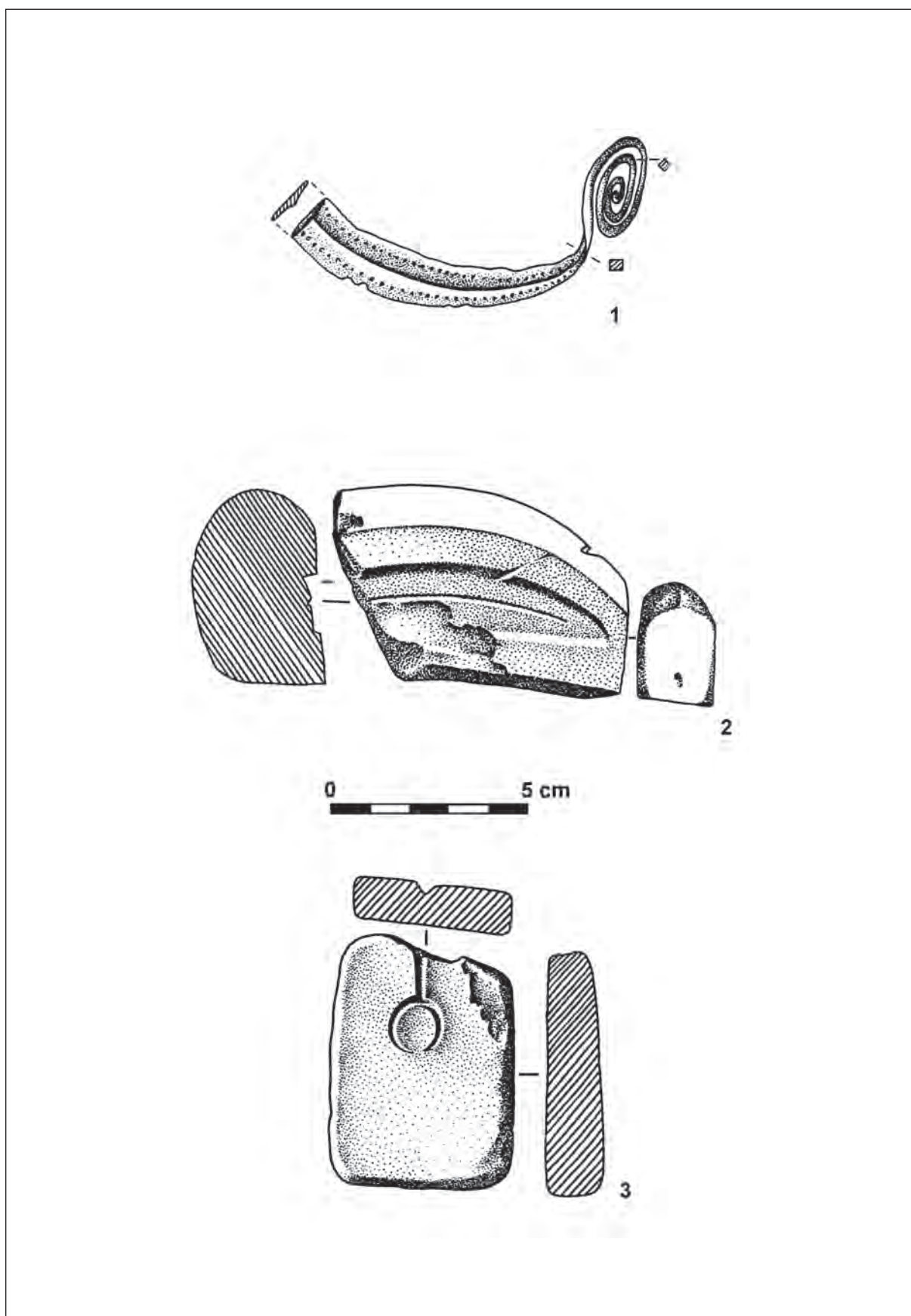


Plate 20. Giroc-Mescal. 1. Bronze bracelet fragment. 2. Fragmentarily preserved clay mold for a sickle. 3. Clay mold for casting heart-shaped pendants.

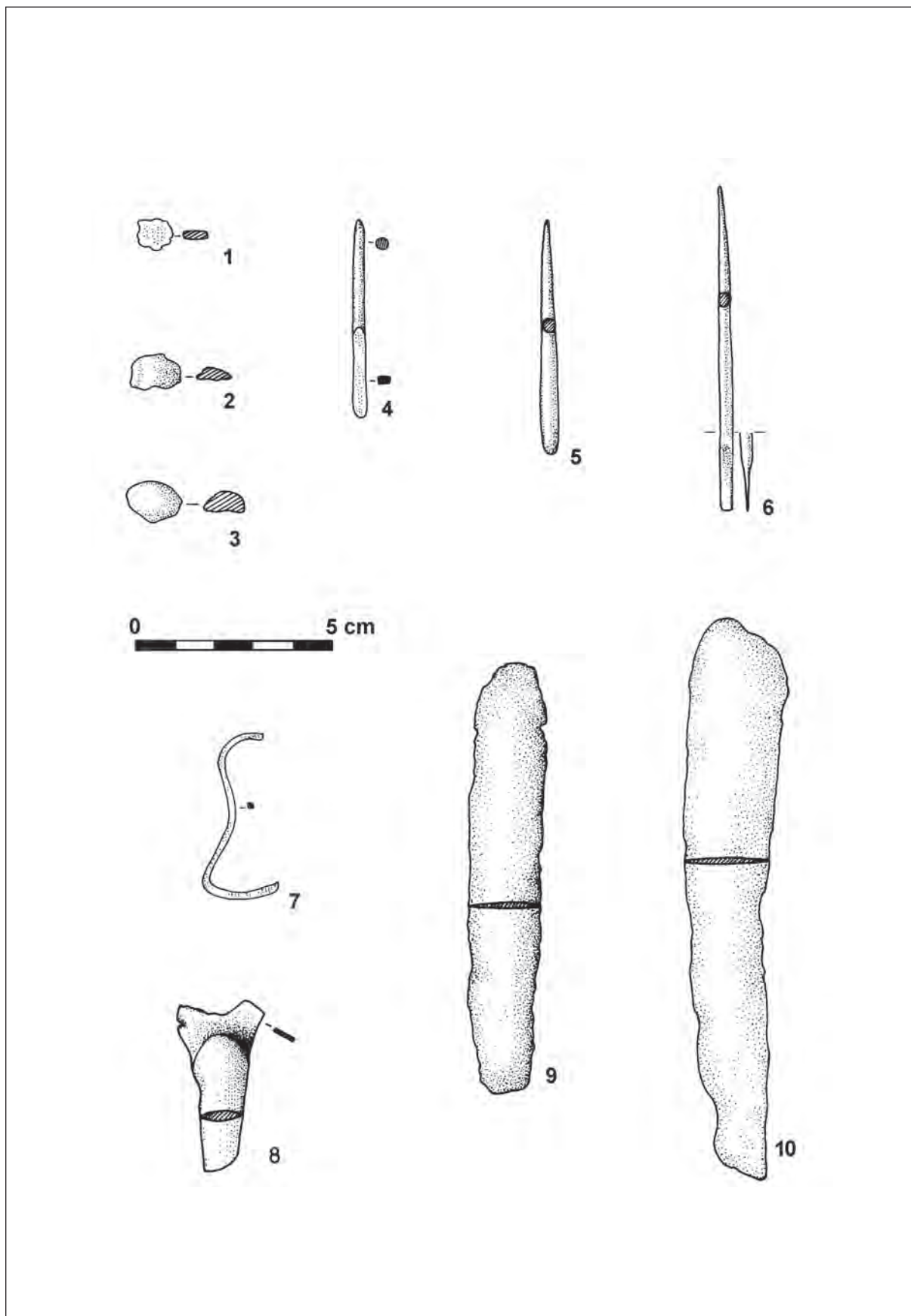


Plate 21. Giroc–Mescal. 1–3. C I/1993. Bronze drops; 4. C I/1993. Small bronze chisel; 5–6. C I/1992. Small bronze chisels; 7. C I/1993. Bronze wire fragment; 8. C I/1993. Fragment of a winged bronze pin (*Flügelnadel*); 9–10. C I/1993. Bronze blades.

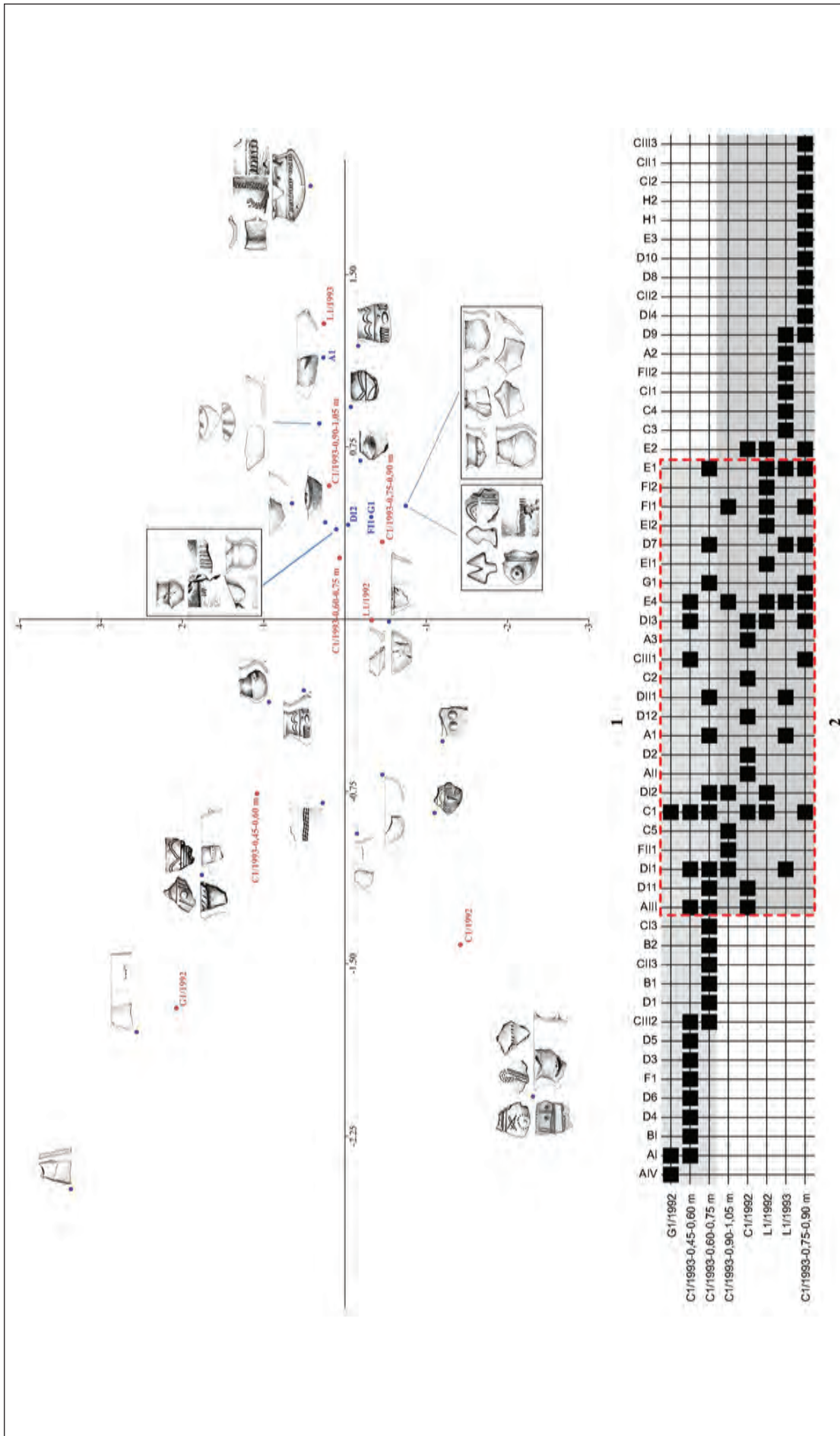


Plate 22 Correspondence analysis (1) and seriation (2) of pot shapes and decorative motifs in Giroc-Mescal.

Abbreviations

ActaArchHung	Acta Archaeologica Academiae Scientiarum Hungaricae.
AAC	Acta Archaeologica Carpathica, Cracow.
ActaMN	Acta Musei Napocensis, Cluj-Napoca.
ActaMP	Acta Musei Porolissensis, Zalău
AnArchRessoviensia	Analecta Archaeologica Ressoviensia, Rzeszów.
AAS at CEU	Annual of Medieval Studies at CEU, Budapest.
Apulum	Acta Musei Apulensis – Apulum, Alba-Iulia.
Alba Regia	Alba Regia, Székesfehérvár.
Antaeus	Antaeus, Budapest.
Arrabona	Arrabona, Győr.
ArhMed	Arheologia Medievală, Cluj-Napoca, Brăila, Reșița.
ArchBaltica	Archaeologia Baltica, Vilnius.
Arch.Inf	Archäologische Informationen.
ATS	Acta Terrae Septemcastrensis, Sibiu.
ArchÉrt	Archaeologiai Értesítő, Budapest.
Banatica	Banatica, Reșița.
BBMÉ	A Béni Balogh Ádám Múzeum Évkönyve, Szekszárd.
BUFM	Beiträge zur Ur- und Frühgeschichte Mitteleuropas.
BCMI	Buletinul Comisiei Naționale a Monumentelor, ansambluri situri istorice. București.
CommArchHung	Communicationes Archaeologicae Hungaricae, Budapest.
CCA	Cronica Cercetărilor Arheologice, Comisia Națională de Arheologie, București.
CIL	Corpus Inscriptionum Latinarum, Berlin.
CMA	Complexul Muzeal Arad.
Dolgozatok	Dolgozatok az Erdélyi Múzeum érem- és régiségtárából, Cluj.
Dolg.	Dolgozatok a Magyar Királyi Ferencz József Tudományegyetem Archaeologiai Intézetéből, Szeged.
Dolg. ÚS	Dolgozatok az Erdélyi Múzeum Érem- és Régiségtárából, Új Sorozat. Cluj-Napoca / Kolozsvár.
EphNap	Ephemeris Napocensis, Cluj-Napoca.
HOMÉ	A Hermann Ottó Múzeum Évkönyve. Miskolc.
JAHA	Journal of Ancient History and Archaeology, Cluj-Napoca.
JAM	Jósa András Museum, Nyíregyháza.
JPMÉ	Janus Pannonius Múzeum Évkönyve.
JRGZM	Jahrbuch des Romisch-Germanischen Zentralmuseums, Mainz.
KRRMK	Kaposvári Rippl Rónai Múzeum Közleményei, Kaposvár.
LMI	Lista monumentelor istorice, updated in 2015.
MittArchInst	Mitteilungen des Archäologischen Instituts der Ungarischen Akademie der Wissenschaften.
MOL	Magyar Olaj- és Gázipari Részvénytársaság / Hungarian Oil and Gas Public Limited Company
Marisia	Marisia, Târgu Mureș.
NyJAMÉ	A nyíregyházi Jósa András Múzeum Évkönyve, Nyíregyháza.
PBF	Praehistorische Bronzefunde. Berlin.
Przegląd Archeologiczny	Przegląd Archeologiczny, Wrocław.
Rad	Jósa András Museum, Archaeological Archive
RégFüz	Régészeti Füzetek, Budapest.

RKM	Régészeti Kutatások Magyarországon/Archaeological Investigations in Hungary, Budapest.
RAJ Arad	Repertoriul Arheologic al Mureşului Inferior. Judeţul Arad. Timişoara 1999.
RAN	Repertoriul Arheologic Naţional.
Sargetia	Sargetia. Acta Musei Devensis, Deva.
SCIV(A)	Studii şi Cercetări de Istorie Veche şi Arheologie, Bucureşti.
SGB	Studii de Geografie a Banatului, Timişoara.
SIB	Studii de Istorie a Banatului, Timişoara.
Slavia Antiqua	Slavia Antiqua, Poznań.
SlovArch	Slovenská Archeológia, Nitra.
SMK	Somogyi Múzeumok Közleményei, Kaposvár.
SovArh	Sovetskaja Arheologija, Moskva.
SRTM	Shuttle Radar Topography Mission.
StudiaUBB Historia	Studia UBB Historia, Cluj-Napoca.
SzKMÉ	A Szántó Kovács Múzeum Évkönyve, Pécs.
Századok	Századok, Budapest.
Terra Sebus	Terra Sebus. Acta Musei Sabesiensis, Sebeş.
Tibiscum S. N.	Tibiscum S. N., Caransebeş.
TransRev	Transylvanian Review, Cluj-Napoca.
ZalaiMúz	Zalai Múzeum, Zalaegerszeg.
ZSA	Ziridava. Studia Archaeologica. Arad.
Živa Antika	Živa Antika, Skopje.