WATER MANAGEMENT IN BRONZE AGE FROM SUBCARPATHIAN CURVATURE (MONTEORU CULTURE)

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Abstract: In this material we present a number of five pits, from Bronze Age, Monteoru culture, which we consider that at the time were used as water reservoirs. All the pits were discovered at Cârlomănești-*Cetățuia*, Vernești commune, Buzău County, starting with 2005. We remark the similarities between these five complexes such as a clay layer set on the walls and bottom, cylindrical or conical shape, as well as the special treatment applied to the bottom of the pits. As far as the clay layer is concerned, all cases involve fine, compact, unburnt clay varying between 0.5 and 3 cm of thickness, partially found on walls and fallen on the bottom of the pit were it constitutes a significant sediment, without visible human intervention. This is most likely evidence to the fact that the pits became waste disposal areas when they partially deteriorated.

Cuvinte-cheie: epoca bronzului, cultura Monteoru, gropi lutuite.

Rezumat: În materialul de față prezentăm un număr de cinci gropi aparținând epocii bronzului, cultura Monteoru, despre care considerăm că au servit ca bazine pentru captat și păstrat apa, cercetate la Cârlomănești-*Cetățuia*, com. Vernești, jud. Buzău, începând cu campania arheologică din anul 2005. În ceea ce privește aceste complexe, remarcăm câteva similitudini precum lutuirea pereților și bazei, forma cilindrică sau conică, precum și amenajarea de la bază. În ceea ce privește lutuiala, în toate cazurile este vorba de lut fin, compact, nears, cu grosimi variabile între 0,5-3 cm, surprins parțial pe pereți și căzut pe fundul gropilor, în depunere consistentă și fără imixtiuni de natură antropică. Aceasta constituie, probabil, dovada faptului că respectivele gropi au devenit spații de degajare a deșeurilor în momentul în care s-au degradat parțial.

Access to water in prehistoric communities, as well as the importance of water management has been a widely debated issue in the literature[1]. Based on the geographical area in question, specialists have identified various levels of implementation of the water management systems, as well as the development of related techniques. In the Middle East, it is believed that the need to organize a complex water management system, and create irrigation systems stood for a factor that led to the birth of city-states[2]. If, in this case, building techniques and solutions for water use were developed, it is still in the Middle East that flood prevention systems were identified. Mention must be made, first, of the discovery in Tell Jawa, in northern Jordan, of what is believed to be the oldest dam that has been documented so far, which is thought to have survived from the Bronze Age[3]. This structure is made of a double stone wall and soil and ash filling material, 80 meters long and 5 meters high, with a 42,000-cubic-meter capacity. Constructions with a similar role are documented in Petra[4] as well. We have no intention to dwell on the water intake and flood prevention systems in the Middle East associated to the Bronze Age, however, mention must be made of the rain water intake systems in Hara and Khirbet Dabab[5]. Other water intake systems were also documented on the American continent, the wells of Blackwater Draw (New Mexico), 14 such installations researched, some other 6 in Mustang

[1] Grahame 1944; Mithen 2010.

[2] Steward 1955; Wittfogel 1957; Adams 1966; Adams 1978.

[3] Fahlbusch 2007.

[4] Rawlings, Woodburn 1996; Philip 2008.

[5] Braemer *et alii* 2009.

Springs (Texas) and McClellan Wash (Arizona) that includes 8 wells[6]. Two of the Blackwater Draw wells had red raw clay-finished walls[7].

In Central Europe, several wells were documented. They had walls lined with wooden beams and were dated back to the Early Bronze Age, in Zwerkau, Germany[8]. The Neolithic findings in Altscherbitz, Brodau and Eythra, represented by wells with beam-protected edges, are also known in Europe[9].

As far as the basin of the Carpathian Mountains is concerned, such a find is known from the Foeni-Gaz site in the Timiș County, which is dated back to the Early Bronze Age, the Nagyrev civilisation[10].

The archaeological research at Cârlomăneşti-*Cetăţuia*, Verneşti commune, Buzău County allowed for the identification of over 100 pit-type complexes, which were dated to the Bronze Age, the Monteoru civilisation, based on finds and stratigraphy. In terms of shape, the pits are taper-shaped, cylinder-shaped, and conical. They vary in size and have diameters ranging from 0.60 meters to 2.00 meters (top and bottom), and digging depths of up to 2.00/2.40 meters[11].

The pit-type archaeological complexes are common in Bronze Age settlements. Exceptions are, however, Băneasa and Căţelu Nou, for the Tei I levels, where no pit was identified[12]. Sadly, most often these complexes were not paid too much attention to by researchers and the literature has been dealing with them quite briefly. More detailed information on the pits was provided given that the pits included archaeological artifacts of interest and specific importance in researching certain issues, have sizes that were considered impressive[13] or ritual purposes were assigned to them[14].

As concerns the initial purpose of this sort of structure, few are the cases where clear evidence is identified and many of the statements made are merely a matter of speculation. It is however a certain fact that most of the identified and researched pits, regardless of the reason they were conducted for in the first place, became waste disposal areas, except for the pits with ritual offerings. With a view to define the initial function of the pit-type complexes, the type of artifacts of archaeological relevance, their positioning in the settlement layout, as well as the various construction solutions used (wall shape, finishing) are considered. Several pit types were defined on the basis of these criteria:

a. Storage or supplies pits. Such pits were found and looked into in Morteni, Dâmboviţa County[15] – Gumelniţa culture, Valea Lupului, Iaşi County[16] – Cucuteni culture, Lişcoteanca-*Movila Olarului*, Brăila County[17] – Stoicani-Aldeni culture, Odaia Turcului, Dâmboviţa County[18] – Monteoru culture etc. In these cases, the pits shared certain characteristics related both to the finds, and the wall finishings. In Lişcoteanca-*Movila Olarului*, Nicolae Harţuche and Florin Anastasiu found a clay-finished pit containing a significant amount of burnt seeds[19]. In Morteni, Dâmboviţa County, it is mentioned that *an amount equal to approximately two sacs of botanical material*[20] was found in one of the pits, which most likely gives this cavity the function of a supplies pit. The sites in the Getic settlement of Satu Nou, Oltina commune, Constanţa County[21], are also considered supplies pits. In this case, the pits were positioned in the proximity of the dwellings, were taper shaped, were shallow and had clay-finished walls[22]. The archeologists state that larger pits were found and studied. They had clay-finished walls and, in one case, the pit was supposed to have been intentionally set on fire after the clay finishing had been applied for protection against rodents. However, no mention is made of the content of the pits, which could reveal their function as supplies pits given that tests and palaeoethnobotanic analyses in this site were made on samples collected from the habitation stratum[23]. As far as the first Iron Age is concerned, mention must also be made of the finding in Tăşad, Drăgeşti commune, Bihor County[24]. A taper-shaped from Hallsttat period pit was identified here. It had its bottom diameter larger than its top

[6] Hirst 2010.

[7] Hirst 2010.

[8] Stäuble, Hiller 1998.

[9] Tegel *et alii* 2012.

[10] El Susi 2012.

[11] An analysis of the pit-type complexes in Cârlomăneşti-*Cetăţuia*, com. Verneşti, jud. Buzău was done by Alexandru Oancea in Oancea 1976. The research looked into the pits dated back to the final stages of Monteoru identified in the Cârlomăneşti archaeological site only.

[12] Leahu 1966, 58.

[13] Bobi 1991, 19.

[14] Oancea 1976, 195; Sîrbu *et alii* 2011, 60, 79; Schuster, Popa 1995; Leahu 1966, 59; Ciugudean *et alii* 2000.

[15] Cârciumaru 1996, 91, note 374.

[16] Cârciumaru 1996, 124.

[17] Dragomir 1983, 93; Harţuche 1980.

[18] Cârciumaru 1996, 94.

[19] Harţuche 1980.

[20] Cârciumaru 1996, 91.

[21] Irimia, Conovici 1989.

[22] Irimia, Conovici 1989.

[23] Cârciumaru 1996, 113.

[24] Chidioşan 1987; Chidioşan 1983.

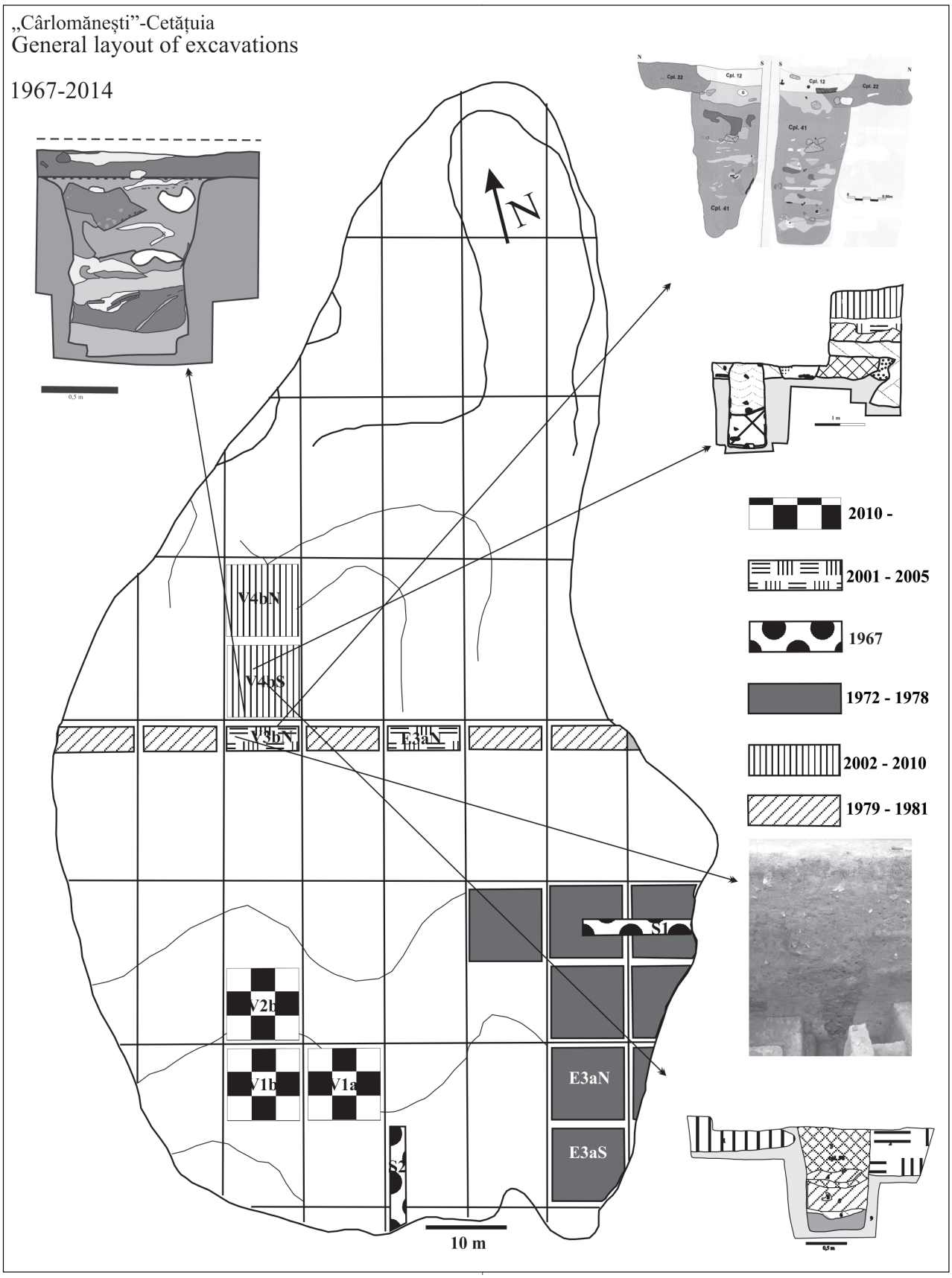

Fig. 1 – General layout of the Cârlomăneşti-*Cetăţuia*, Verneşti commune, Buzău County, archaeological excavations. Positioning of the discussed complexes.

diameter and clay-finished walls. Approximately 5 kilos of seeds were found in it[25]. Given the fact that those are *triticum* seeds, this find may be considered to have had the function of a storage pit.

Unfortunately, the literature most often uses the term of *storage or supplies pit* alone and does not provide explanations to uphold such alleged func-

[25] Cârciumaru 1996, 119.

tion as it is, in general, customary to believe that many of the pit-type sites had the role of supplies storage, at times ethnographic examples being mentioned to support such assumptions[26]. Another argument in favour of such interpretation is the presence in the said pits of pottery fragments coming from large-sized containers[27].

b. Clay winning pits. This category is considered to include pits that were more or less found in the sterile layer. For the so-called Suciu de Sus culture group, with regard to the Petea settlement, mention is made that the pits reaching the sterile layer were clay winning pits[28]. An equally clay winning role is assigned to the Tei pits[29] as well etc. The archaeological research of the latest years in Bronze Age, and Monteoru culture sites, in Buzău, Cârlomăneşti-*Cetăţuia*, Verneşti commune, Pietroasa Mică-*Gruiu Dării*, Pietroasele commune and Târcov-*Piatra cu Lilieci*, Pârscov commune, have enabled the identification of such complexes that do not reach the sterile level, which is conducive to the conclusion that they did not have the function of clay winning pits. As to the sites of Pietroasa Mică-*Gruiu Dării* and Târcov-*Piatra cu Lilieci*, we should mention that the archaeological sterile is mostly represented by the bedrock and clay rich in iron components, which was not suitable to be used as building material. We believe that any endeavours to excavate such pits were pointless, particularly considering that the areas in the nearest vicinity provided alternative solutions. As concerns a correlation between pit shape and pit initial function, clay winning, we do not believe that a behavioural pattern can be defined, at least not in the sites in question.

This is the general context of the discussions on the pit-type complexes in the Bronze Age settlements where we focus on several of the pits identified and researched in the Monteoru culture settlement in Cârlomăneşti-*Cetăţuia*. There are five clay-finished pits, found in the 2005-2008 excavation campaigns: complex 36/2005, complex 39/105 – the research of which started in 2005 and was completed in 2008, complex 41/2005, complex 71/2007 and complex 96/2008.

*Complex 36/2005 (*Fig. 2/1, 2*)*. Identified in the W3bN section, 2.10 meters from the current floor level – with an upper diameter of approx. 0.75 m. The pit had a conical shape and had been dis-

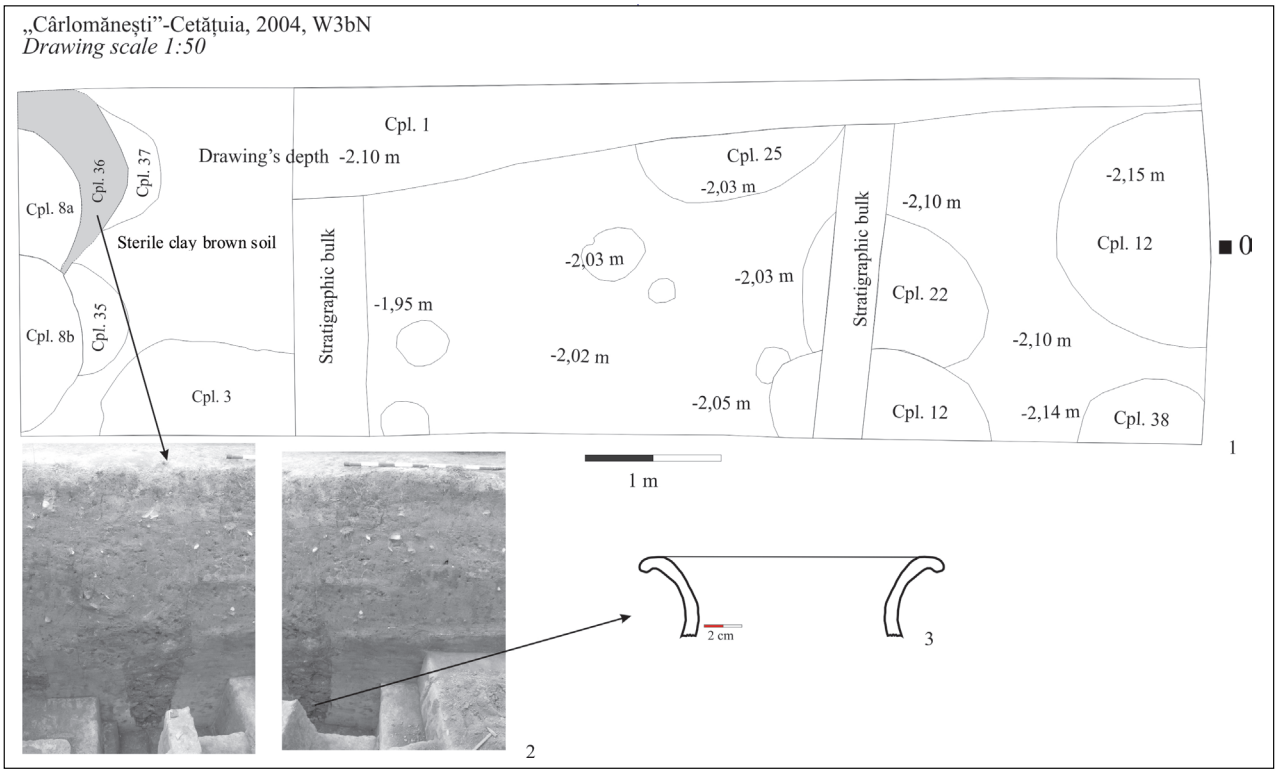

Fig. 2 – Cârlomănești-*Cetățuia*, Vernești commune, Buzău County. 1. Plan of area W3bN, -1.95/2.10 m level; 2. Complex 36; 3. Cup fragment found on the bottom of complex 36.

[26] Vasiliev *et alii* 2002, 32.

[27] Vasiliev *et alii* 2002, 32.

[28] Pop 2009, 12.

[29] Leahu 1966, 58.

turbed by Iron Age human intervention, complexes 8a, 8b and 37 (Fig. 2/1). It had walls finished with white-greenish clay, at places, on an average, 0.5-2 cm thick. Several large river rocks were set at its base. Their layering position reveals the fact that they were set in position after the clay application. The filling of the complex was made of brown-grey, comparatively compact soil, highly pigmented with bits of coal and burnt clay, incorporating small amounts of ash film, pottery fragments, hardened hearth burnt pieces and bone fragments. Among the pottery finds stands out a fragment coming from a cup with everted rim, made of semi-fine, well-homogenized paste, grey in colour and polished on the outside, and grey with brown and blackish shades in the inside (Fig. 2/3). The shard was found among the stones on the pit bottom. Some other three pottery shards were found with it, one most likely coming from a globular-shaped cup, a fragment from a dish with an upper inner rim, as well as a burnt hearth piece 4.5 cm thick.

Complex 41/2005[30] (Fig. 5, 6/5, 6). It was identified in area W3bN, at approx. -1.00 meter from the floor level and it is conical in shape. Medium-sized stones (10x15 cm) were set on the bottom of the pit. As the upper part of this complex was affected by some Iron Age intervention (complex 12)[31], it is impossible to indicate the pit starting level – complex 41. The pit was also studied in section as deep as 1.70 meters. Starting the level where it was identifiable, it had an oval plan, had a 0.90x0.95 meter diameter and clay-finished walls and bottom. The filling consisted of brown-yellowish soil, pigmented with coal bits, raw clay white-greenish in colour, coming from the wall clay layer, yellow clay films varying in terms of thickness and texture, burnt clay bits, bone fragments, and pottery shards[32]. Among the finds of archaeological relevance, mention must be made of a particularly interesting psal jaw piece that was the subject matter of a recent study[33], a large-size incisive tooth, a fragment of a bronze saltaleone[34], as well as several pottery fragments coming from dishes that could be fully or partially restored[35] (Fig. 4/1-4). Based on the analysis of the ceramic material, and the stratigraphic position of the complex, it is dated back to the later stages of the Monteoru culture.

Complex 39/105 (Fig. 3, 4/1). It was identified in areas W3bN/W4bS, at approx. -1.90/1.95 meters from the floor level, is rather conical in shape and has a 0,60-meter hollow area at its bottom. The pit had an approximately oval plan, had a 0.90x0.66 m diameter, and its bottom and walls were covered in a clay layer, on an average, 1-2 centimeters thick. The filling composition reveals that the clay in the upper part of the pit collapsed and formed

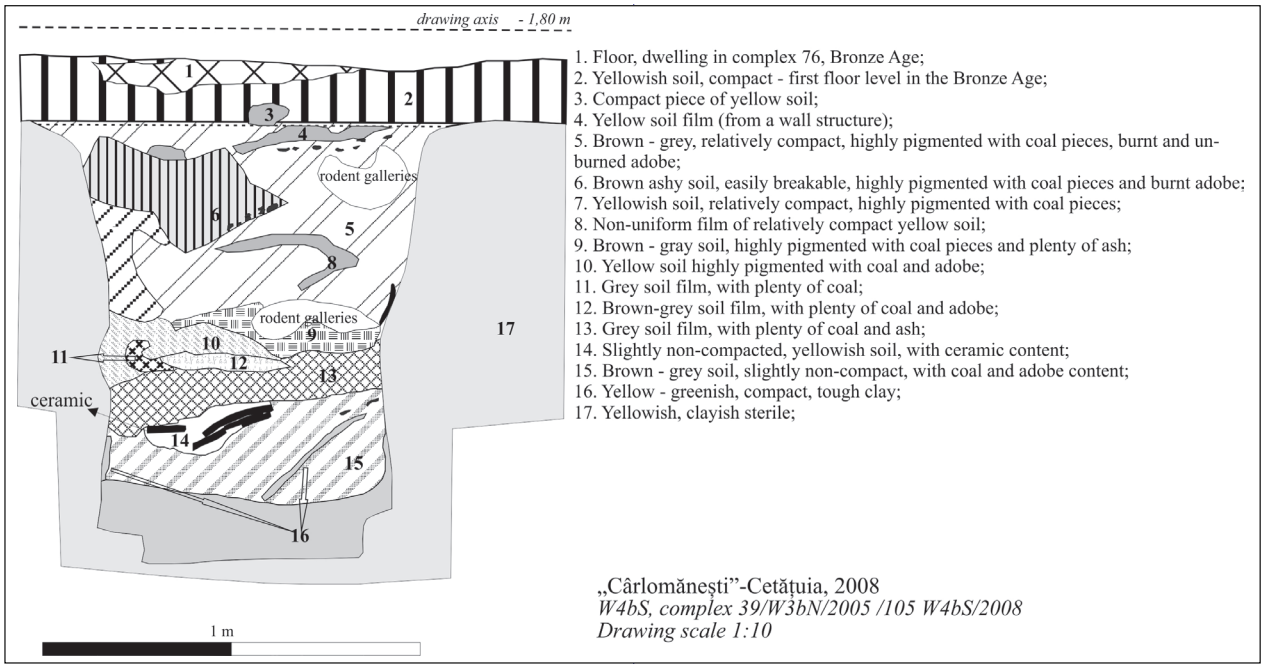

Fig. 3 – Cârlomănești-*Cetățuia*, Vernești commune, Buzău County. Southern profiles of complex 39/W3bN/2005/105, W4bS/2008.

[30] Motzoi-Chicideanu *et alii* 2012.

[31] Motzoi-Chicideanu *et alii* 2012, 86, fig. 7.

[32] Motzoi-Chicideanu *et alii* 2012, 66.

[33] Motzoi-Chicideanu *et alii* 2012, 65-95.

[34] Motzoi-Chicideanu *et alii* 2012, 89, fig. 10/13.

[35] Motzoi-Chicideanu *et alii* 2012, 88-89, fig. 9-10.

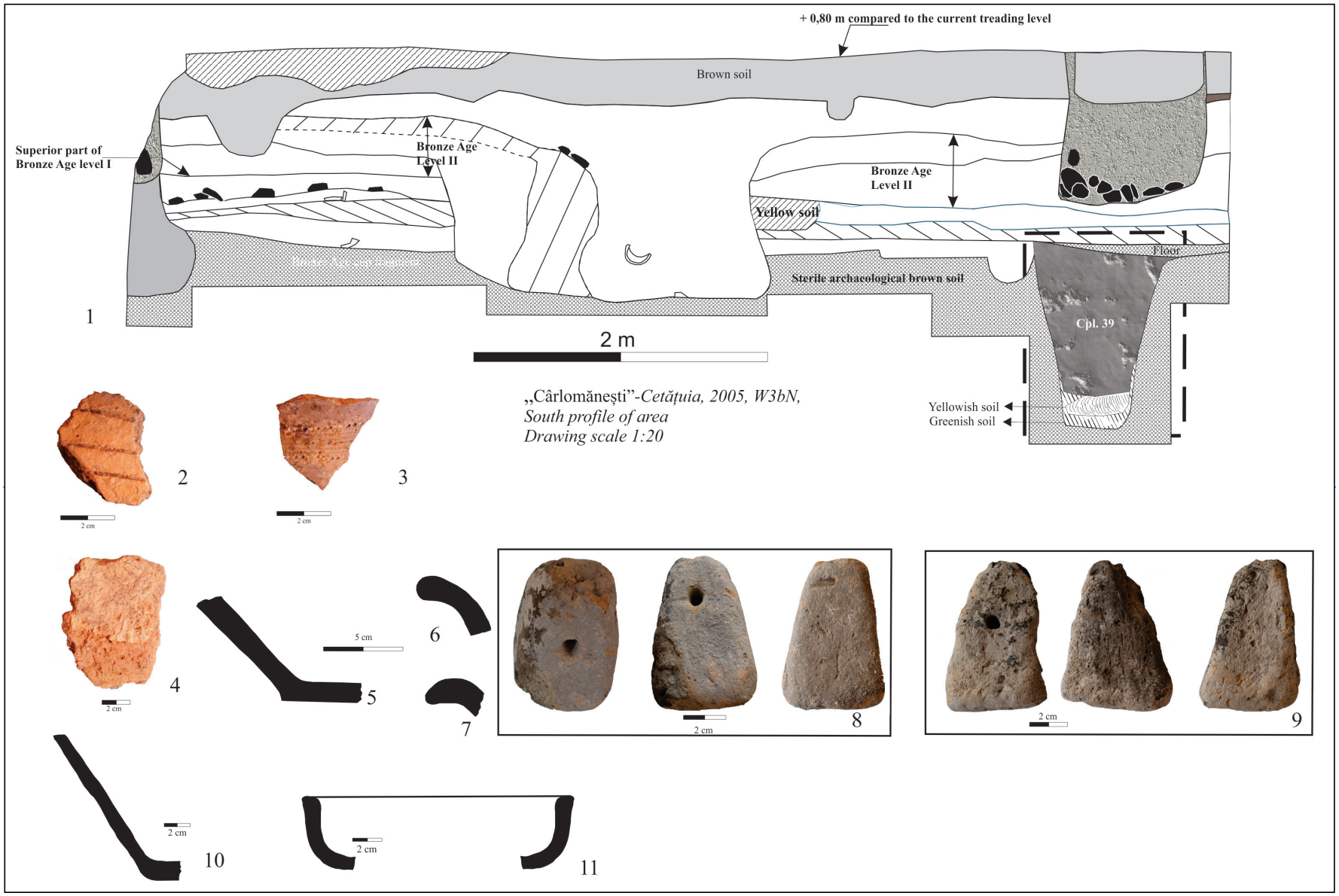

Fig. 4 – Cârlomănești-*Cetățuia*, Vernești commune, Buzău County. 1. Southern section of area W3bN; 2-7,10-11. Pottery fragments found in complex 39/2005; 8,9. Pyramid-shaped weights made of clay, found in complex 39/2005.

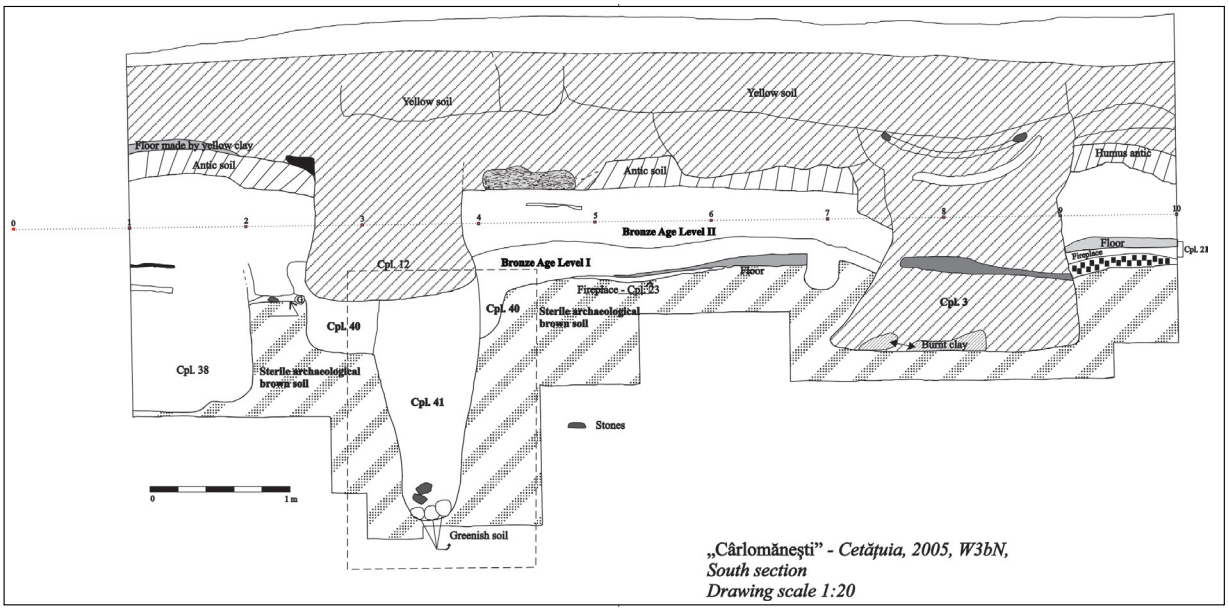

Fig. 5 – Cârlomănești-*Cetățuia*, Vernești commune, Buzău County. South section of area W3bN (*apud* Babeș 2010, 142, pl. 5).

compact sediment, on an average, 15-20 cm thick in the lower part of the complex. The pit depth is 1.40 m. The filling overlapping the clay layer is dark-brown to medium brown in colour and features irregular films of yellow-greenish raw clay that fell off the walls, and dark brown soil with burnt clay bits coming from the walls above the ground, with lengths ranging between 3 and 12 cm. The filling included burnt and unburnt clay bits, thin ash sediments, coal pigment and bone and pottery fragments. The filling of this complex consisted of several pottery shards that could be fully or partially restored, a fragment coming from a curved stone knife, two partially preserved whetstones, a bone pendant and two pyramid-shaped clay weights (Fig. 4/8, 9). A fragment of a bowl made of semi-fine, well-homogenized paste grey-blackish in colour on the outside, black and polished in the inside (Fig. 4/11) stands out among the identified ceramic finds (a total of 60). Beside it, there is also a fragment of a wide-rimmed dish made of semi-fine paste, red-orange and grey in colour, with grey and blackish spots on the outside and a polished orange-reddish surface in the inside (Fig. 4/10). In terms of stratigraphy, the complex is overlapped by the floor of a semi-sunken dwelling dated back to the later Monteoru culture (Fig. 1/1). Based on a pottery analysis, the complex is dated to the period of Ic3 pottery style of Monteoru culture. The pit filling composition enables us to identify several aspects that are characteristic of the community

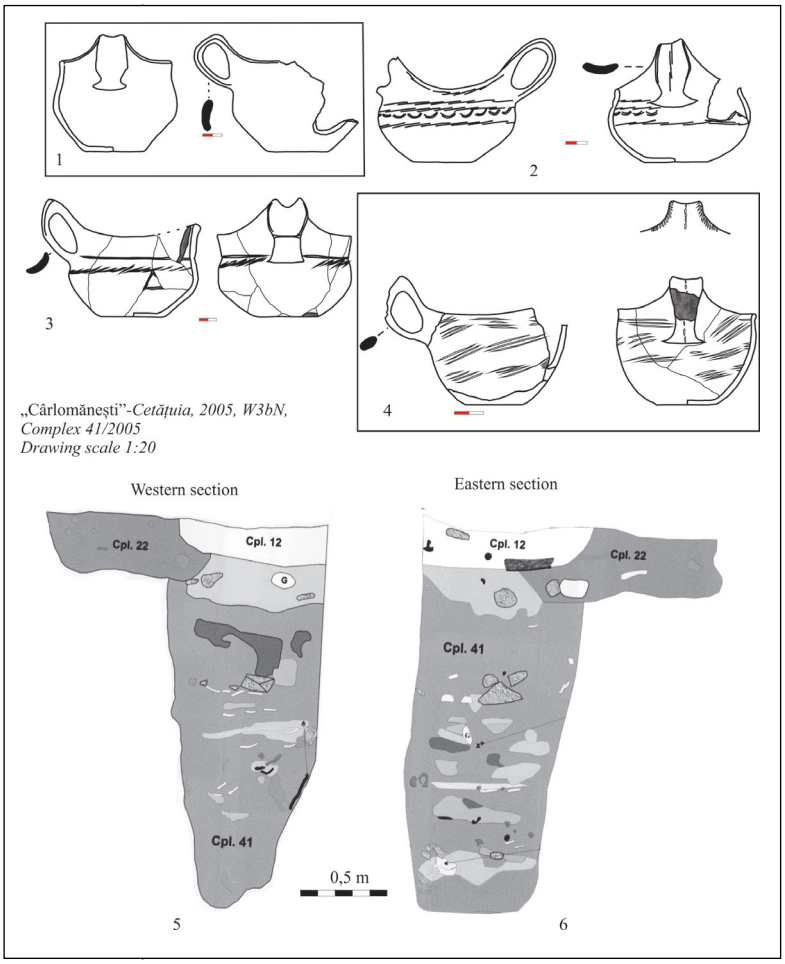

Fig. 6 – Cârlomănești-*Cetățuia*, Vernești commune, Buzău County. 1.-4. Ceramic fragments found in complex 41/2005; 5. Western section of complex 41; 6. Eastern section of complex 41 (*apud* Motzoi-Chicideanu *et alii* 2012, 87/pl. 8, 88/pl. 9).

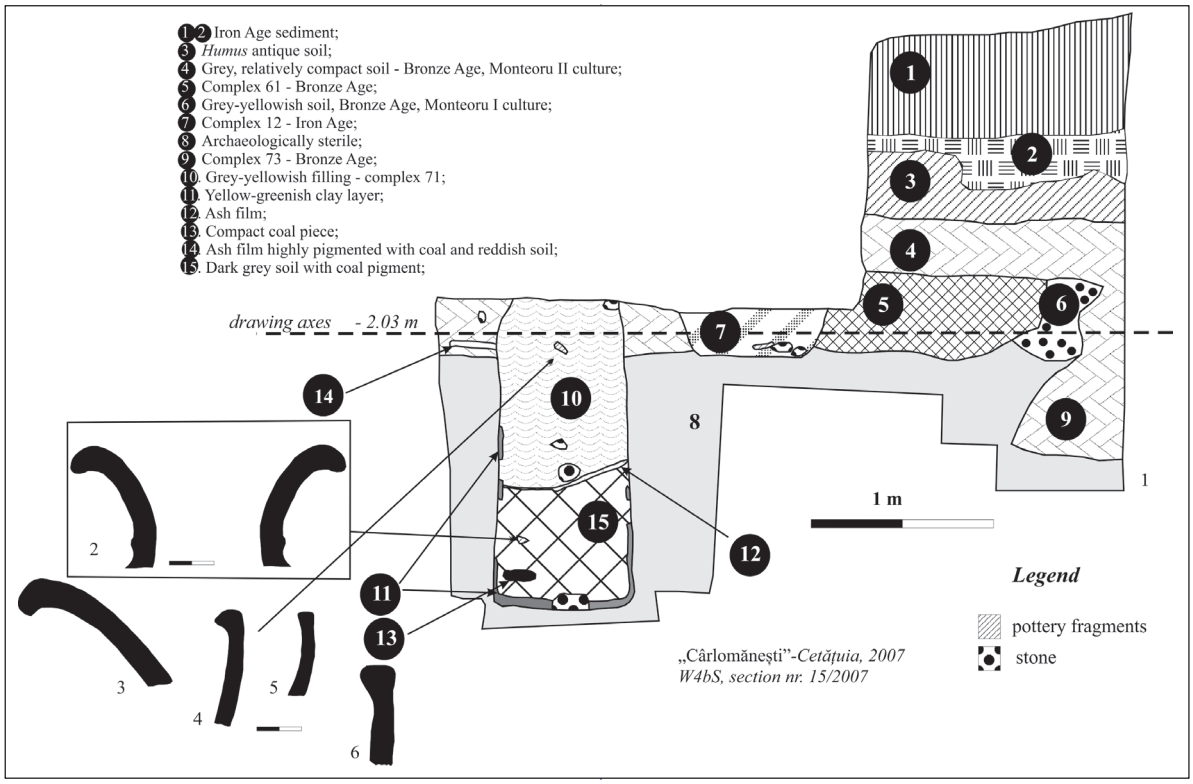

Fig. 7 – Cârlomănești-*Cetățuia*, Vernești commune, Buzău County. 1. Eastern section of complex 71/2007; 2-6. Ceramic fragments found in complex 71/2007.

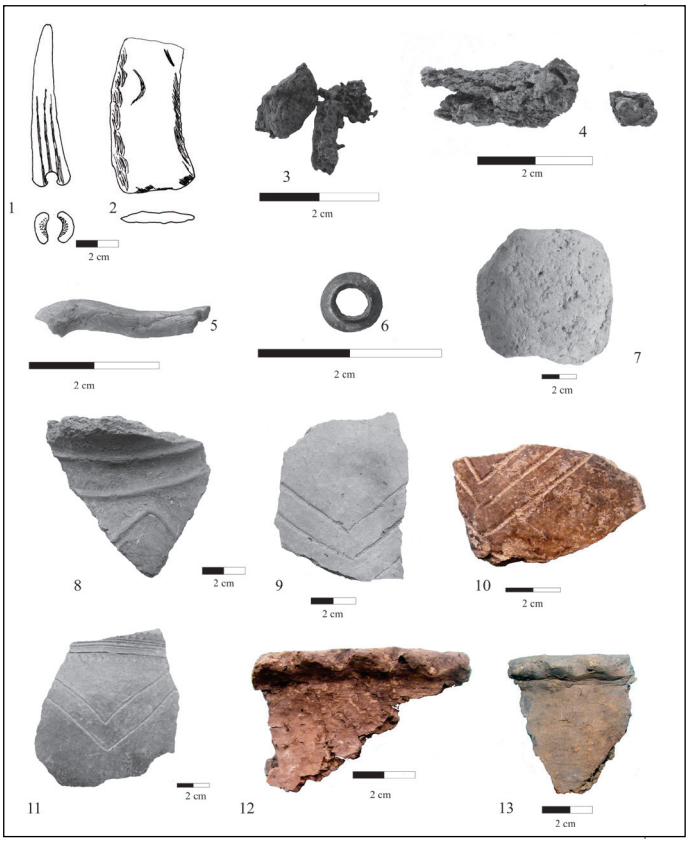

Fig. 8 – Cârlomănești-*Cetățuia*, Vernești commune, Buzău County. Archaeological inventory of complex 71/2007, 1. Bone psal-jaw (?); 2. Curved stone knife; 3, 4. Bronze fragments; 5. Coral fragment with perforation; 6. Glassy paste bead; 7. Clay weight fragment; 8-13. Ceramic fragments.

members' behaviour. The films that were found on the pit walls, having a composition similar to clay, are indicative of the fact that this complex was diabled at a time when degradation had partially occurred. The identification of domestic waste, debris from dismantled buildings – burnt clay, compact coal fragments, pottery shards, burning waste – ash etc. – could be conducive to the secondary function of the pit, waste disposal / hygienization space.

Complex 71/2007 (Fig. 7/1). It was identified in areas W4bS, box trench C2, at approx. -1.93/1.95 meters from the floor level and is rather cylindrical in shape. The pit had an almost oval plan, has an 0.50x0.55 m top diameter, 80 cm bottom diameter and an approx. 1.70 meter depth. The pit had its bottom and walls covered in a clay layer 1-3 cm thick diameter, and several medium- and large-sized stones (15x20 cm) set on the bottom. Their positioning shows that they were set at a time subsequent to the clay layer application. The pit filling consists of grey soil that was not compacted, with marked coal pigmentation. Its texture also reveals a grey film, on an average, 3-4 centimeter thick. In the upper part, the filling is grey-yellowish and more compact. The following were taken out of the filling of the complex: pottery shards (Fig. 7/2-6, 8/8-13, 9/1-14,10/1-3), a fragment of curved stone knife (Fig. 8/2), a processed bone frag-

ment, possibly a psal jaw piece (?) (Fig. 8/1) several metal (bonze?) bits the function and origin of which could not be determined due to their advanced stage of physical and chemical degradation (Fig. 8/3-4), a glassy paste bead (Fig. 8/6), a coral fragment with circular perforations (Fig. 8/5), a fragment of a clay weight (Fig. 8/7) and several bone fragments. We should note the small amount of bones and ceramic fragments. The structure of the filling, as well as the *in situ* positioning of the clay layer at the upper part of the pit could be the result of the deactivation of the complex at a time immediately following the degradation of the structure. Based on the ceramic analysis, the complex may be categorized as belonging to the Ic2 pottery style of Monteoru. The fragments decorated with girdles in relief arranged horizontally or zigzagging on the walls of the dishes are associated with pottery fragments with Ic3 decorations, which would place this complex at a time post-complex 39/105. We should highlight the fact that in Cârlomănești-*Cetățuia*, just as in the stratigraphy of Pietroasa Mică-*Gruiu Dării* and Târcov-*Piatra cu Lilieci*, no chromatic and texture differentiation among the so-called stages of evolution of Monteoru, Ic3 and Ic2, can be seen in any of the major sections or stratigraphic bulks. Hence, dating is possible only by analysis of the pottery based on the Sărata Monteoru[36] pattern.

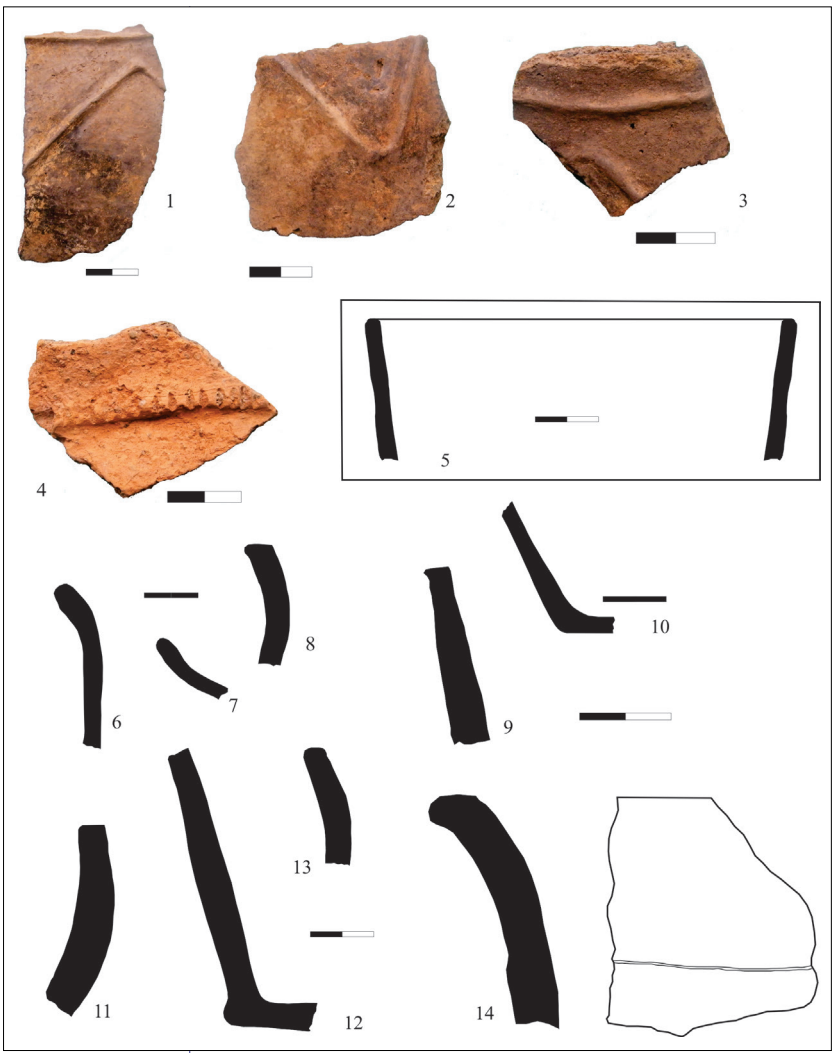

Fig. 9 – Cârlomănești-*Cetățuia*, Vernești commune, Buzău County. Arheological inventory of complex 71/2007; 1.-14. Ceramic fragments.

Complex 96/2008 (Fig. 9/1). It was identified in areas W4bS, box A4-A5, at approx. -2.00 meters from the floor level and is rather cylindrical in shape. The complex had an almost oval plan, had an upper diameter of 0.90x0.70 meters, a lower diameter of 0.70 meters and is approx. 1.40/1.45 meters deep. The pit had its base and walls covered in a clay layer that was, on an average, 1-3 centimeters thick. Four medium- and large-sized stones (15x20 cm) were placed on the bottom of the pit at a time immediately following that when the bottom was finished with clay. The filling of the pit is not uniform and several levels can be identified. We cannot precisely say to what extent they correspond to different filling stages. In the lower part, an approx. 20 cm thick layer of raw clay is visible, that is yellow-greenish, compact, similar in structure and composition with the clay found *in situ* on the pit walls, and that comes from the clay fallen from the upper part of the walls. Fine traces of organic residue can be seen in this layer which reveals no archaeological material of relevance. The clay present on the pit walls as well enabled us to identify the same fine traces of organic residue on the outer part of the clay layer, on an approx. 2-3 mm area, with quite uniform positioning. A comparatively large amount of ash was thrown in within a very brief period of time after the complex was degraded due to the clay on the upper part of the walls having fallen off. An approx. 10 cm thick layer of ash pigmented with coal bits was noted. Another stage is shown by significant sedimentation of brown-grey soil that was not uniform, pigmented with coal and burnt clay layer, where compact clay pieces from the clay layer of the pit walls can be seen. At its upper part, the filling is made of dark brown-grey uniform soil also pigmented

[36] Zaharia 1987; Zaharia 1990; Zaharia 1991; Zaharia 1993.

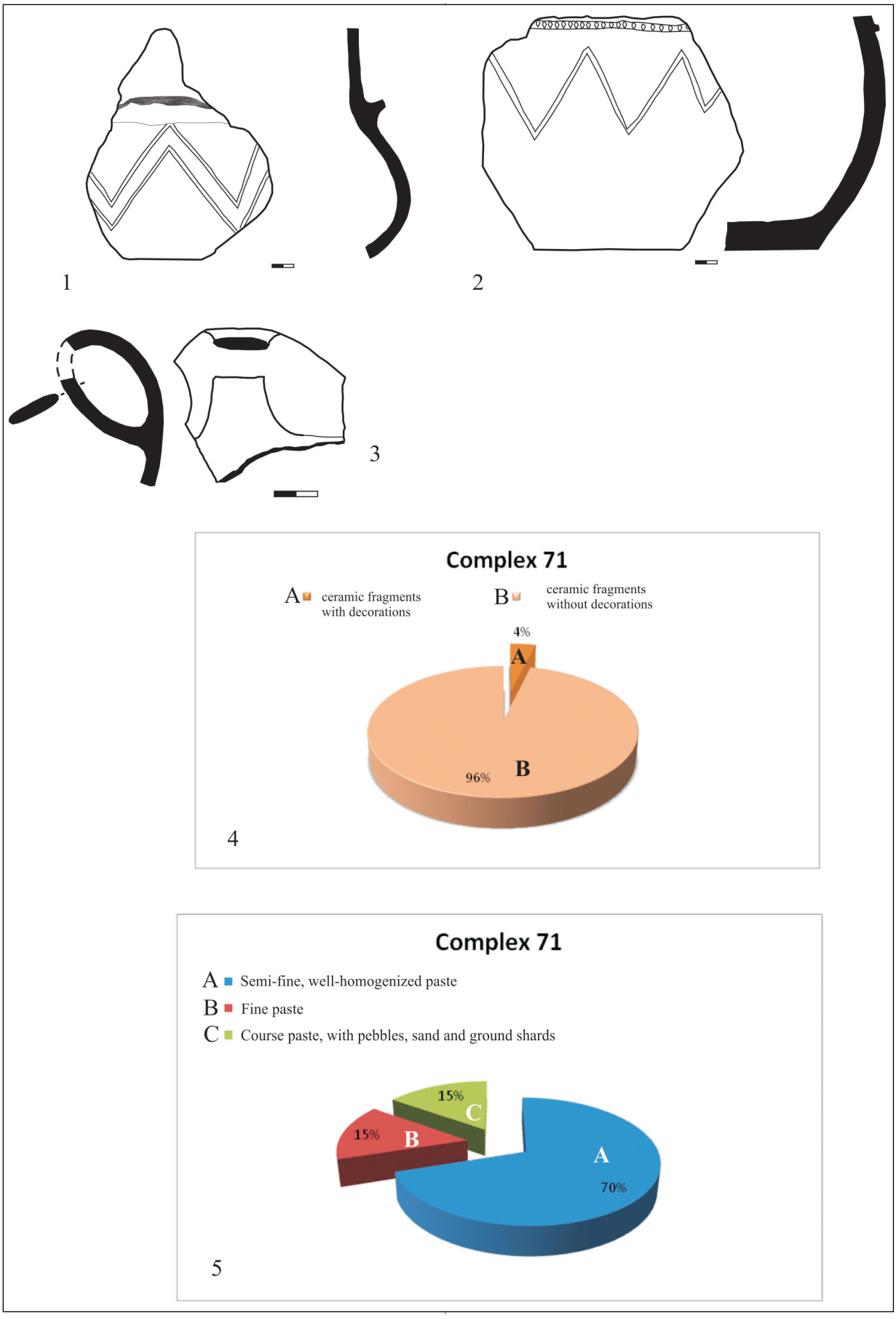

Fig. 10 – Cârlomănești-*Cetățuia*, Vernești commune, Buzău County. 1-3. Ceramic fragments found in complex 71/2007; 4, 5. Graphic statistics based on the ceramic material from complex 71/2007.

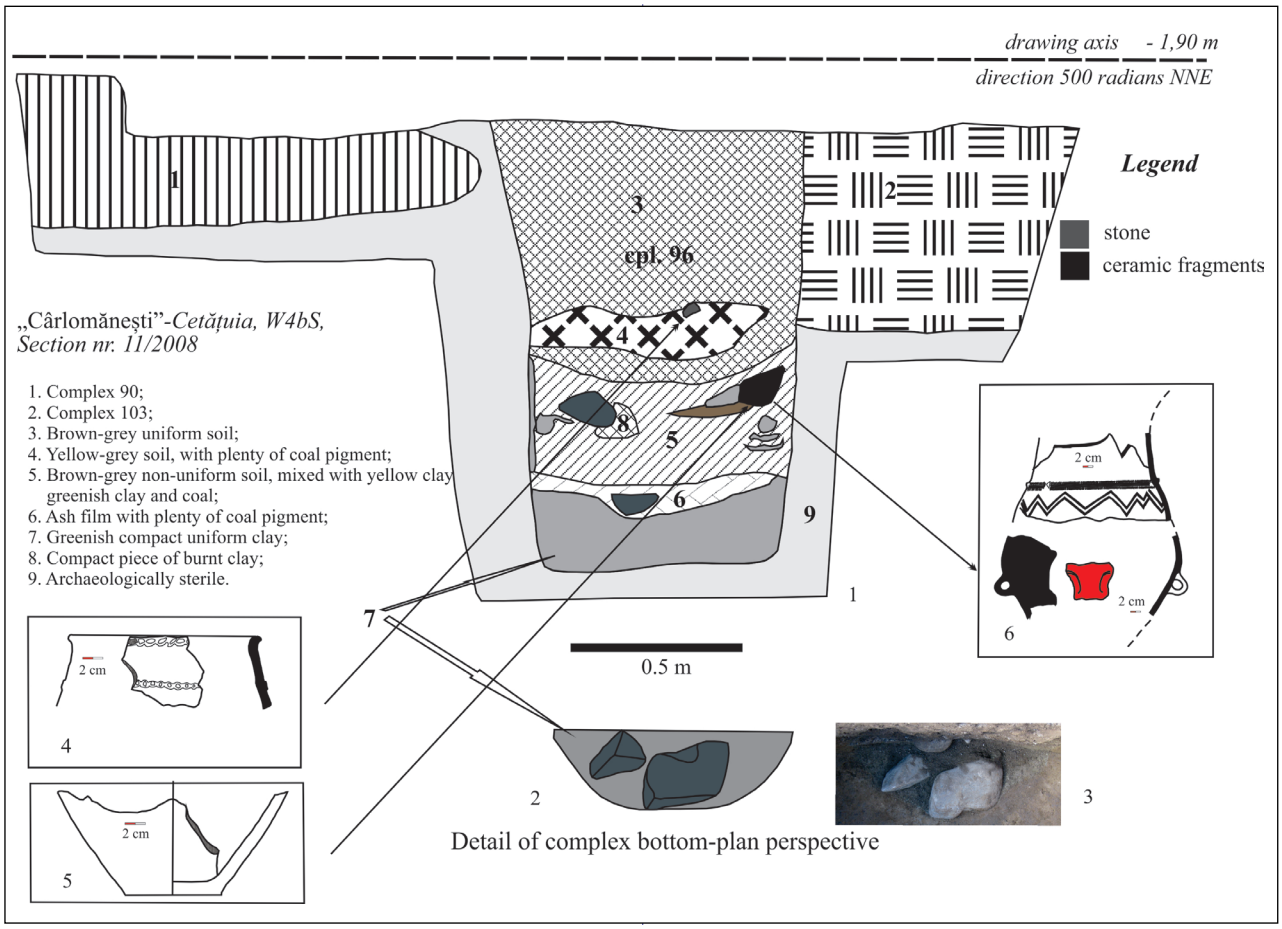

Fig. 11 – Cârlomănești-*Cetățuia*, Vernești commune, Buzău County. 1. Southern section of complex 96/2008; 2.-3. Details of the bottom of the complex 96/2008; 4.-6. Ceramic fragments found in complex 96/2008.

with coal bits and burnt clay layer. The presence of the comparatively compact yellow-greenish clay pieces, that are similar in structure and composition with the clay seen *in situ* on the pit walls at various filling levels, can be a consequence of the fact that the pit was turned into a domestic waste disposal area at a time following its degradation, and also that it took some time for the pit to be completely filled up. Pottery shards (Fig. 11/4-6), a metal (bronze?) fragment of unknown function due to the severe physical and chemical deterioration, two bone fragments with processing/use marks (Fig. 11/1, 2), a stone axe damaged by extensive use (Fig. 12/5) and several bone fragments from various animals collected from the filling. The total number of the pottery fragments identified and taken out of the site was 208 among which minimum 12 pottery shapes could be identified. Among them, there are several pottery fragments coming from a *Spendegefäß* (13 fragments) (Fig. 11/6), with very good analogies in Sărata Monteoru site[37]. The analysis of the ceramic material, as well as the stratigraphy of the complex allows us to date it to the period of the Ic3 pottery style of Monteoru culture. Another remarkable find is a ceramic fragment with perforations under its rim (Fig. 12/12), with analogies in the Zănoaga IIb phase of Monteoru culture[38]. Also, similar finds were recently signaled in Pietroasa Mică-*Gruiu Dării*, Buzău County[39] as well.

Assumptions. First, it is worth noting that, for all complexes in Cârlomăneşti-*Cetăţuia* that have been subject to analysis, several common elements were found, the clay layer set on the walls and bottom, cylindrical or conical shape, as well as the special *treatment* applied to pit bottom. As far as the clay layer is concerned, all cases involve fine, compact, unburned clay, their thickness varying between 0.5 and 3 cm, partially found on walls and fallen on the bottom of the pit as significant sediments, having suffered no human intervention. This is most likely evidence to the fact that the pits became waste disposal areas when they became partially deteriorated.

The clay applied on the walls and at the bottoms of the pit is good quality material, with no burnt clay, coal, ash, pebbles and other such materi-

[37] Zaharia 1987, fig. 11/8.

[38] Motzoi-Chicideanu, Şandor-Chicideanu 1999, 80, fig. 15/7.

[39] Sîrbu *et alii* 2011, 254, fig. 66/8.

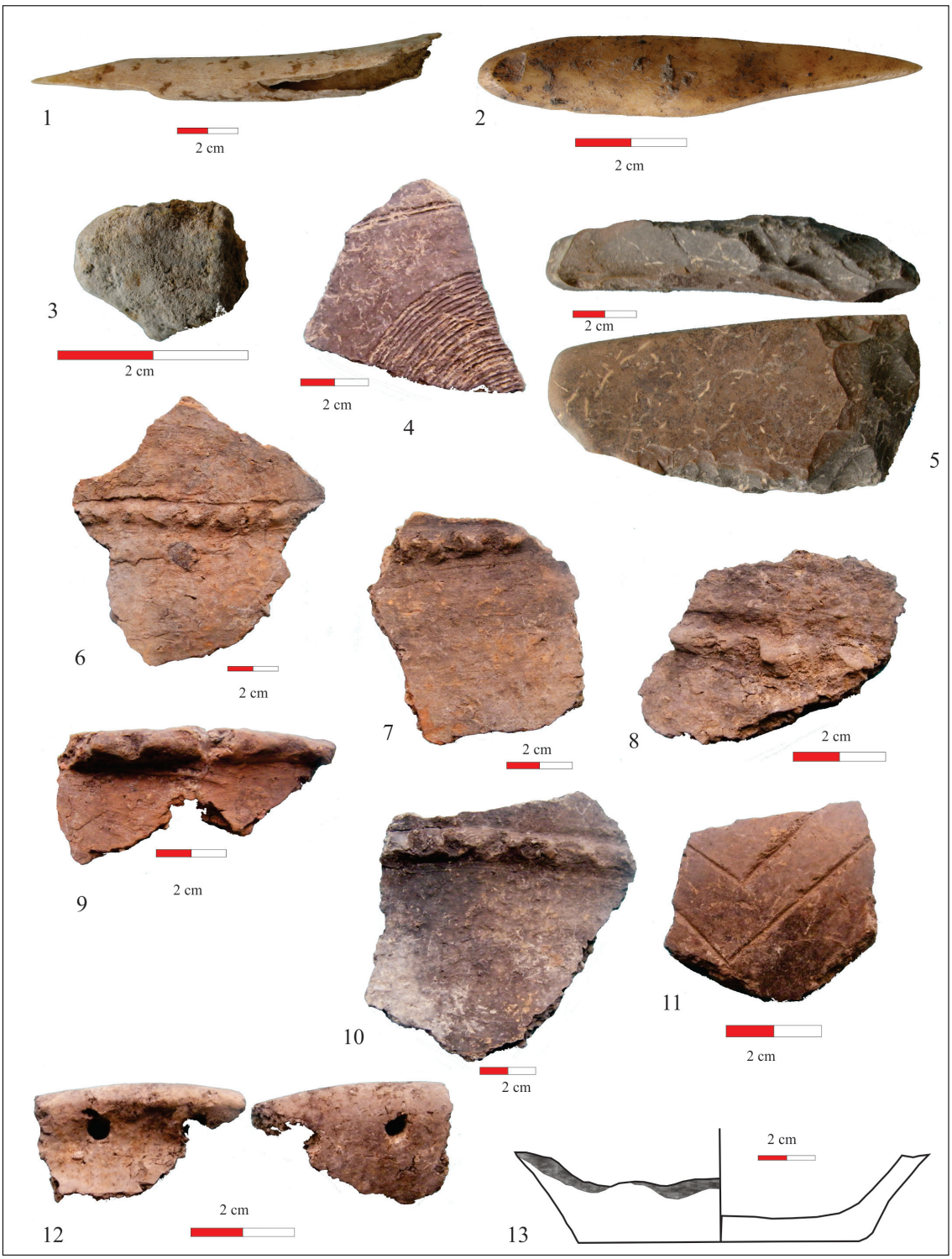

Fig. 12 – Cârlomănești-*Cetățuia*, Vernești commune, Buzău County. Archaeological artifacts of complex 96/2008. 1. Bone point; 2. Bone tool (needle?) under processing; 3. Metal (bronze?) fragment; 5. Stone axe; 4., 6.-13. Ceramic fragments.

als in its composition. As concerns the constructive solutions implemented to *set up* the bottoms of these complexes, three patterns can be seen: hollow area on the bottom of the pit (Fig. 3), stones set after clay layer application, and conical bottom with stones (Fig. 5, 7, 9/2, 3). In terms of stratigraphy, most complexes were excavated in the sterile layer. Another common characteristic is the comparative scarcity of archaeologically relevant material in the filling, which could be indicative of the fact that they were filled up within a rather brief period of time. The limited amounts of ceramic material – 38 fragments in pit 39/105, 325 pottery fragments in pit 71/2007, 208 pottery fragments in pit 96/2008, 60 pottery fragments in complex 41/2005 – could be just another proof in this respect; comparative report including other pit complexes identified and studied at Cârlomăneşti-*Cetățuia* dated back to the same time frames. In

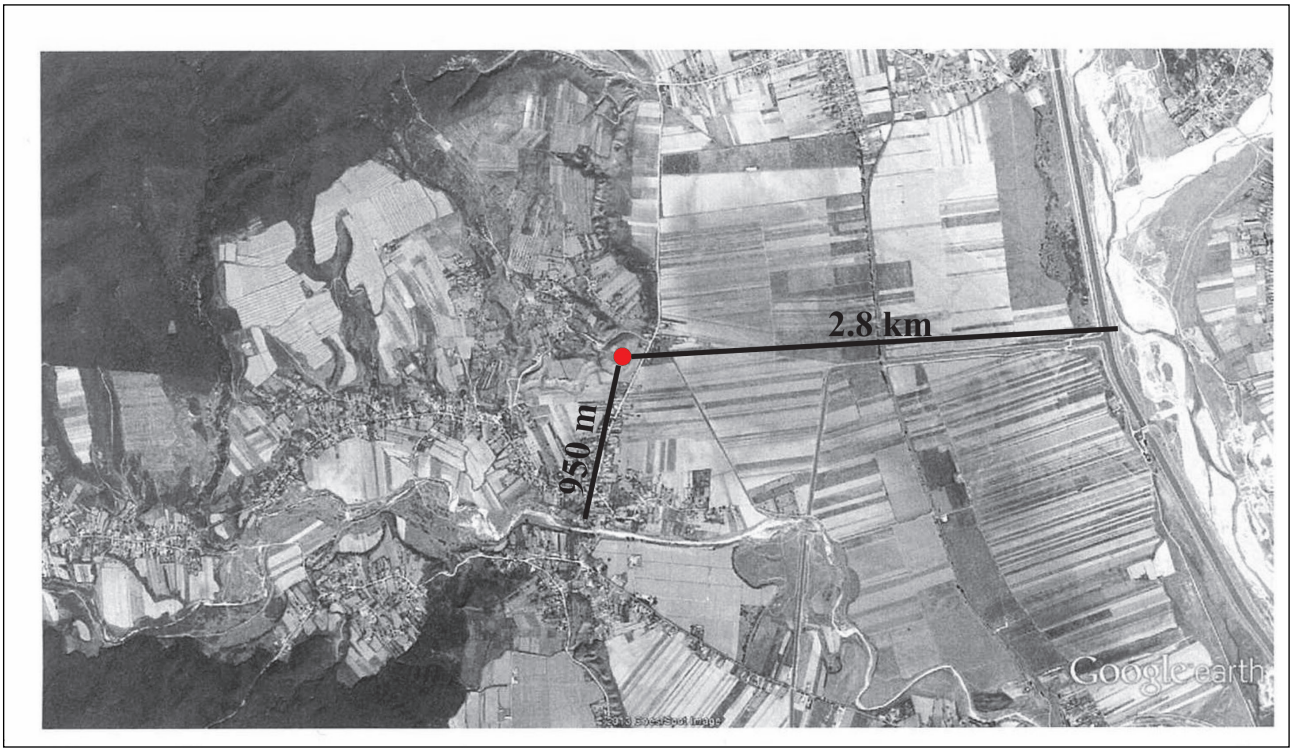

Fig. 13 – Cârlomănești-*Cetățuia*, Vernești commune, Buzău County. 1. Location of the archaeological site in relation to available water resources.

terms of pit shape, following a quantitative analysis comparing other pit complexes, they are rare in the settlement in questions, standing for approx. 5% as most of them are taper shaped.

These complexes are assigned the function of cistern pits, playing a role in rainwater storage[40]. In our opinion, the long-term presence of water in these complexes is proved by a series of elements identifiable in all five complexes: fine traces of vegetal residue imprinted in the wall clay layer, both in the *in situ* fragments and in the films set on the bottoms of the pits and in the filling, pit bottoms set up with stones or the creation of a niche having a role in macroscopic residue sedimentation on the bottom of the cistern (Fig. 11/3).

To support this hypothesis, we should discuss here a permanent water source in the near vicinity of the Cârlomăneşti-*Cetăţuia* settlement. The site is located on a promontory protruding out of a high terrace, where the Buzău and Nişcov Rivers[41] meet. The closest water source is in the west, the Nişcov River, flowing some 950 meters away, in a straight line. However, the Nişcov River, included in the extended basin of the Buzău River, is 22 kilometers long[42] and a feeble water course for the most part of the year. The other water source available to the community in the Bronze Age in Cârlomăneşti-*Cetăţuia* is the Buzău River. It flows in the east, 2.8 kilometers away in a straight line (Fig. 13/1). Unlike Cârlomăneşti, in other cases, settlements had water courses flowing in their proximity. In Sărata Monteoru-*Cetăţuia,* the Sărata Spring gathers the water drained from the slopes the settlement is located on; hence, it was not hard for the community living here to find water. A similar situation is that of the Pietroasa Mică-*Gruiu Dării* where the vicinity of the Dara Spring provided the necessary amount of water for the community living here in the Bronze Age. The presence of complexes of such use would be most likely justified by the scarcity of water.

Based on the analysis of the ceramic finds, as well as the layer reports, one may note that a preoccupation for the intake, and particularly storage, of water existed since as early as the first human Bronze Age settlements, as is the case of complexes 39/105 and 96/2008. We believe this excludes the idea that there was a water course in the vicinity of Cârlomăneşti promontory which had dried up or abandoned its water bed at a time following the start of habitation here. From this perspective, we find the reasons why the Monteoru culture people may have decided to settle here, despite certain water scarcity, increasingly puzzling.

[40] This is also discussed in a recent study by I. Motzoi-Chicideanu: *"We might think of it as being a water storage pit, given the greenish layer on its bottom. We lack however clear clues about what the purpose of this pit and (complex 41/2005) pit no. 36 may be"*. Motzoi-Chicideanu *et alii* 2012, 66.

[41] Babeş *et alii* 2002, 98.

[42] Muică 2012, 39.

Other issues raised are the considerable effort to supply water to the settlement and the status of these complexes in the community. Did they serve one or several families? Were they joint property or the property of one individual / family / clan? As concerns the amounts of water these pits could store, they were quite significant as shown in the table below[43].

[43] Calculations done by engineer Sorin Bolocan whom we would like to thank for his effort.

Another issue concerns the possible structures at the upper part of the discussed pits. So far we have no evidence indicating any special structure in this respect, however, possible wooden covers or protection systems made of light perishable material that could not be found in the archaeological excavations should not be excluded.

Table 1

Complex 39/W3bN/2005	**Area**	**Radius**
H = 1.4	0.66	0.594
Top diameter = 0.9		
Bottom diameter = 0.8		0.5024
Diameter of hollow on the pit bottom = 0.6		0.4
Volume		**0.767 m^3 = 767 liters**
Complex 36/2004		
H = 1.6		
Top diameter = 0.75		0.4415625
Bottom diameter = 0.4		0.1256
Volume		**0.428 m^3 = 428 liters**
Complex 41/2005		
H = 1.7		
Top diameter = 0.9	0.95	0.855
Bottom diameter = 0.45		0.1589625
Volume		**0.783 m^3 = 783 liters**
Complex 96/2008		
H = 1.425		
Top diameter = 0.7	0.9	0.63
Bottom diameter = 0.7		0.38465
Volume		**0.716 m^3 = 716 liters**
Complex 71/2007		
H = 1.7		
Top diameter = 0.7	0.75	0.525
Bottom diameter = 0.7		0.38465
Volume		**0.770 m^3 = 770 liters**

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