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Any correspondence will be sent to the editor:
Museum Arad
Piata George Enescu 1, 310131 Arad, RO
e-mail: ziridava2012@gmail.com

Layout: Francisc Baja, Florin Mărginean, Victor Sava

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Contents

One and a Half Century of Archaeology on the Lower Mureş*

Peter Hügel, George Pascu Hurezan, Florin Mărginean, Victor Sava

Abstract: The present study analyzes the archaeological research in the area of Arad from the middle of the nineteenth century until present day. As elsewhere in Europe, the early days of archaeology in Arad were marked by enthusiast amateurs like S. Márki, K. Torma, L. Dömötör, I. Haller, F. Juhász, and J. Záray. M. Roska's excavations in Pecica "Șanțul Mare" opened new perspectives for the technique of archaeological excavations. Despite the fact that Roska set new standards in the archaeology of the Carpathian Basin, his research methodology remained unique. The era of the numerous systematic researches, test trenches, excavations, and field research, started with D. Popescu's work in Vărșand. New road infrastructure works (2008–2011) led to large-scale preventive researches on sites such as Șagu "Site A1_1", Pecica "Site 14", and Pecica "Site 12", "Site 13".

Keywords: Arad County, Museum Arad, Lower Mureș/Maros, archaeology, research.

It is difficult to establish when interest in antique vestiges started. The fact that Roman building materials were reused in the masonry of monasteries built during the 12th and 13th centuries on the Mureş Valley indicates a very pragmatic approach to the vestiges of classical antiquity which, though in ruin, were still standing. The question one still cannot answer is, where such building materials were taken from: the ruins in the close proximity of medieval edifices or those in Micia and Apulum, thus transported over dozens of kilometers. At any rate, the use of ancient monuments as sources of building materials, a habit perpetuated until the Modern Age, proves the lack of historical consideration towards them. The situation involves a paradox: on the one hand, monasteries preserved the spiritual legacy of Classical Antiquity and on the other hand they disregarded its material heritage. There is, nevertheless, proof that even since the 10th–11th centuries treasure hunters searched Roman sites for valuable objects (including *terra sigillata* fragments) that they later sold to monastic establishments. The situation is documented for Western Europe[1].

The earliest "archaeological excavations", clearly attested, were performed by curious and enterprising locals from Pâncota. Around 1847, they searched the ruins on Dealul Cetății in Pâncota (the site is also known as "Cetatea turcească" or "La mănăstire"). Though they uncovered ancient walls and even tombs, excavations were abandoned since none of the thought-for objects were found, i.e. items with high intrinsic value, such as those made of gold. The chance of finding a treasure consisting of several thousands of republican coins in Bârsa, in 1862, determined the archaeological dilettantes to return to the site of Pâncota for new excavations, in 1862–1863[2].

The first professional field research has been undertaken by a specialist in Roman antiquities – Fl. Rómer[3] –, delegated by the National Museum of Antiquities in Budapest to identify antiquities in the Lower Mureş area. In 1868, he was in Bulci. During the same year, Al. Mocioni started the renovation and extension works of the local castle, that he had just bought. It is unclear if the Roman materials that Rómer later mentioned as coming from Bulci, were discovered during excavations for the foundation of the castle's northern wing or during archaeological excavations performed on the site of "Cetate" or "La Mănăstire" located just 200 m North–West of the castle[4].

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* The present paper is the revisited and up-to-date version of Hügel's text – Hügel 1999. English translation: Ana M. Gruia.

1 We owe this piece of information to Prof. Dr. Sigmar von Schnurbein.

2 Barbu *et al.* 1999, 73, Pâncota, pt. 1; Barbu *et al.* 1999, 34, Bârsa, pt. 1.

3 Rómer Floris (1815–1889), clergyman and teacher from Bratislava, later active in Györ and Budapest, became member of the Hungarian Academy of Science. Before being delegated to Bulci, he had earned a reputation among the Hungarian Academia by publishing an art–archaeological guide in 1865–1866 (Rómer 1865; Rómer 1866); according to IDR III/1, 23.

4 Barbu *et al.* 1999, 37, Bulci, pt. 2–4.

Rómer continued his field research in the area of Arad during subsequent years as well. Thus, in 1870 he was in Pecica, where, together with J. Hampel, he performed the first measurements of the site called "Şanțul Mare". The brief data noted on that occasion was taken over in I. Parecz's monograph overview; he stated that "the mound between Semlac and Pecica, that seems to have fulfilled military functions, was surrounded by ditches and is very high"[5]. Probably based on Rómer and Hampel's findings, the Historical Monuments Commission in Budapest delegated the topographer engineer P. Molnár in order to produce a topographical sketch of the "fortification" in "Şanțul Mare" (1872)[6].

Already in 1862–1863 groups of intellectuals from Arad were debating on the opportunity of founding a society supervising the discovery, preservation, and valorization of historical vestiges[7]. Nonetheless, the society was not founded. While in Deva G. Téglás established the Society for the History and Archaeology of Hunyad County(1870)[8] and in Timişoara the Society for History and Archaeology (SHA) was founded on Zs. Ormós's initiative (1872)[9], the elite of Arad was still under the strong impression of the 1848/1849 Revolution. The pious approach to such events, collecting data and relics related to them, were fashionable attitudes. While in neighboring cities, museum collections *per se* were established, in Arad people gathered objects for a reliquary that was rather a worship place than a museum[10]. On the long run, "The Revolution Complex" marked the development of the Hungarian intellectual elite in the city; later on, Romanian intellectuals responded with a cult for the Union Movements and events related to December 1st 1918.

Following the indications of the Ministry of Culture and Public Instruction from Budapest, on the enrichment of didactic materials, the high schools from Arad and Lipova established their own collections of antiquities. Data is available on such collections created by the high school in Lipova and the Royal High School of Arad. They mostly consisted of coins and medals, but also other relics of the Revolution. In 1876, professor I. Kövesdi arranged the objects, part of the collection in Arad, chronologically and placed them on display in the high school library. There were ca. 270 objects, mostly coins and medals, some of antique origin. The impact on the public opinion was significant. As a first result, Grof B. Török donated "225 books and 25 very old objects" to the high school in question[11].

Meanwhile, between 1873 and 1877, priest F. Varga and the Benedictine monk I. Miletz, both members of the SHA Timişoara (the latter was even custodian of the collection and editor in chief of the society's periodical) supervised each summer the town planning works performed in Păulişul Nou, thus saving a significant Neolithic and Bronze Age archaeological material that entered the collection of the SHA museum (since 1877). In 1877 Varga financed, from his own resources, archaeological test excavations in the area of the cemetery in Păulişul Nou[12].

In Arad, even if the prefect officially encouraged his son, A. Török, to gather data on the area's distant past, field research faced problems[13]. It was only in 1881 that the "Kölcsey"[14] cultural society was founded, reuniting the most significant intellectuals from Arad. The association aimed at giving impetus to Arad's cultural life[15]. S. Márki, a history teacher, was elected head of the society's history department[16]. In the spring of 1882 he took over the antiquity collection of the Royal High School, writing its first inventory register[17]. Subsequently, he addressed the SHA Timişoara a request of including historical and archaeological studies regarding Arad county in their published

5 Parecz 1871, 77.
6 Dörner 1978, 16.
7 Móré Heitel 2006, 11.
8 IDR I, 59, no. 38.
9 Medeleț, Toma 1997, 13.
10 Petranu 1922, 26.
11 For this first registry of the antiquity collection of the royal high school in Arad, see: Barbu *et al.* 2000; Barbu *et al.* 2002.
12 Medeleț, Toma 1997, 18, 19, 21, 83.
13 Márki, *Jegyzetek*, 1.
14 F. Kölcsey (1790–1838) was a Hungarian writer, active during the Enlightenment. The Society functioned between 1881 and 1949; it was re-established in 1990; see also Kiss 1968, 148, no. 2.
15 Petranu 1922, 121.
16 Márki Sándor (1853–1925) graduated high school in Oradea and the university in Budapest (history – geography, 1872–1876). He was secondary school teacher in Arad (1877–1886), then professor at the universities in Cluj (1892–1912) and Szeged (1919–1925). Since 1892 he was corresponding member, and since 1912 full member of the Hungarian Academy of Science; Barbu *et al.* 2002, 295.
17 Márki, *Jegyzetek*.

bulletin (*TRÉT*). In the summer of 1882, Márki accompanied K. Torma in his research of earthen ramparts and Roman remains in the area of Chesinț, Neudorf, Cladova, Păuliș,[18] and Sâmbăteni[19]. The issue of Roman vestiges from Banat entered the attention of the SHA Timișoara that actively supported Torma's project: already in 1881, he started to identify the roads and road stops mentioned on *Tabula Peutingeriana* in eastern Banat. During subsequent years, I. Pontelly continued to research and map earth ramparts between Timișoara and Mureș, also noting the earth fortification located east of Frumușeni, from where he collected "Turkish pottery shards" in 1884[20]. In the same year, Márki published an article on "the Avar ring in Sântana" in the annual of the "Kölcsey" society and presented an erroneous historical interpretation of the site "Cetatea Veche" that was widely accepted until the middle of the subsequent century[21]. In the same article, Márki mentioned the tell "Dâmbul Popilor/Papokhalma/ Holumb" located 4.65 km North–West of the fortification; "in a recently–excavated ditch" he discovered "one burnt soil fragment" and eight pottery fragments (inventory of the High School in Arad no. 141–149); one must mention the fact that Márki believed that the Copper Age tell was an advanced bastion of the Avar ring in "Cetatea Veche"[22].

During his field trips, Márki was accompanied by the enthusiastic drawing teacher of the State Royal High School in Arad, L. Dömötör, who was, for two decades, the main, if not the only promoter of field archaeological research in Arad.

The museum, historical, and archaeological movement in Timișoara continued to polarize the efforts of both specialists and amateurs of antiquities from Banat. Thus, nine members from the County of Arad were part of the Museum Society of History and Archaeology in Southern Hungary (MSHA), established in 1884 through the merge between the SHA and the Museum Association[23].

Between 1883 and 1885, the interest of the public opinion from Arad was again focused on discoveries from Pâncota – "Cetatea Turcească". The new excavations, in which dilettantes again played an important role, also involved Márki who offered the first archaeological–historical description of the site to note Neolithic items, the earth fortification built on a timber grate, the basilica, the monastery and the Turkish fortification[24]. Two altars were also discovered during the last interventions[25]. The significance of the site for the area of Zarand was out of the ordinary, since the archdeaconry of Pâncota was also mentioned since 1332, enclave of the bishopric in Eger, strategically placed between the dioceses of Oradea and Cenad[26], besides the medieval fortification and the monastery there[27] attested by written sources.

In the spring of 1888, workers laboring on the embankment of the rail road between Arad and Oradea discovered a gold treasure weighing ca. 0.5 kg by canton "Cetatea Veche", ca. 4 km south of Sântana[28]. "Rescue excavations", that A. Török immediately started, led to the discovery of two tombs lacking inventory. The treasure, dated to the end of the Bronze Age[29], ended up in Vienna from where it never returned to Arad, despite L. Dömötör's repeated letters[30]. Using the interest raised by the spectacular discovery, Dömötör requested sub-prefect P. Ormós to approve and provide the financial support for archaeological excavations on the pasture near the cemetery in Păulișul Nou; his request was granted[31]. The size and results of this research remain unknown. The collection of "archaeological

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18 In 1882, the "Kölcsey" Society was informed of the chance discovery in Păulișul Nou of certain archaeological finds, in the vineyards owned by Boros Beni and Karossy Ferenc; Archive of the Ancient History Department, Museum Complex Arad (AAHD), I, no. 1.
19 Medeleț, Toma 1997, 30, 31.
20 Medeleț, Toma 1997, 31, 33, 35.
21 Márki 1882; Márki 1884.
22 Márki 1882, 115–118.
23 Medeleț, Toma 1997, 34.
24 Barbu *et al.* 1999, 73, Pâncota, pt. 1.
25 Móré Heitel 2006, 44.
26 Móré Heitel 2006, 9.
27 Rusu, Hurezan 1999, 64–66; Rusu, Hurezan 2000, 185–194.
28 Barbu *et al.* 1999, 90, Sântana, pt. 4.
29 Dörner 1960, 471–479; Mozsolics 1973, 208, pl. 104–105.
30 AAHD, I, no. 4 and 8.
31 AAHD, I, no. 3 and 7.

objects" of the "Kölcsey" society continued to grow, with new items discovered during Dömötör's field research or acquired through donations and acquisitions[32].

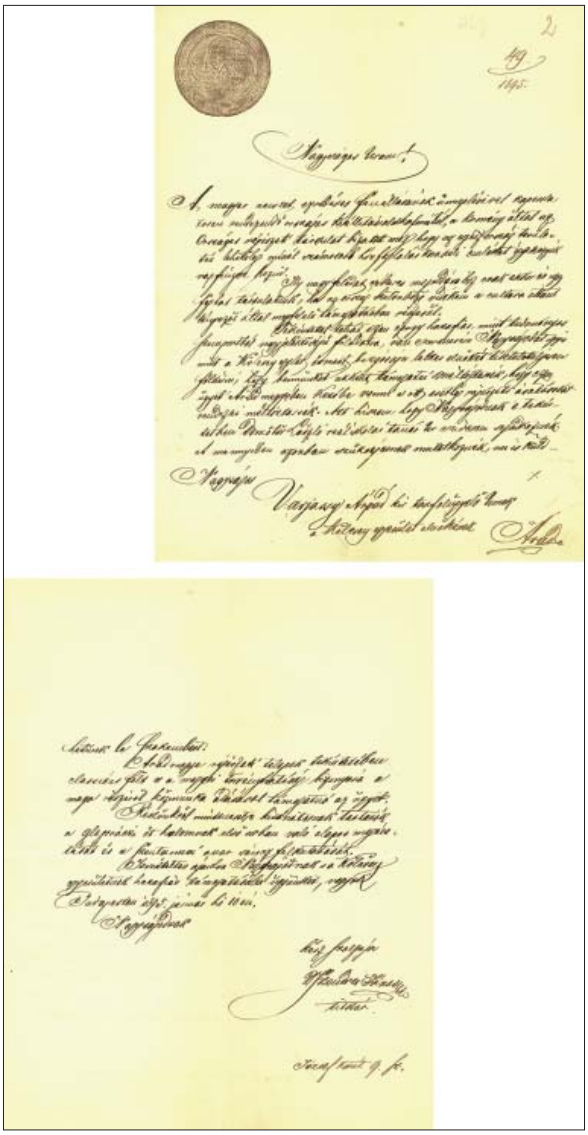

Fig. 1. Address of the Archaeological Society in Budapest to the Kölcsey Cultural Society, advising for the beginning of archaeological excavations in Sântana.

The official opening (27.11.1889) of the "Museum Palace" in Timişoara[33] determined the leadership of the "Kölcsey" society to intensify their efforts of organizing a museum in Arad. A board of directors was appointed in 1891 to take all necessary steps towards the opening of a city museum that was to include items illustrating the medieval and modern history of Arad, with special focus on the relics of the 1848/49 Revolution[34]. Dömötör tried to convince the society's members, the board of directors and local authorities that "archaeological objects" had to be included in the future museum. The suggestion was turned down under the pretext that there were too few objects in the archaeological collection to gain them a place in the future museum[35]. In these conditions, Dömötör increased his efforts of obtaining new items. Already in the spring of 1892, he appealed to the leaders of the fiscal domains in order that the five mounds inside the administrative borders of the village of

[32] 37 silver coins, discovered near Ineu, were bought in 1888 (AAHD, I, no. 5). In the same year, lawyer E. Heeger donated 59 antique silver and bronze coins (AAHD, I, no. 6) and I. Navay (Mako) transferred to the society items discovered during the channeling works of river Er, including some Gothic silver fibulae (AAHD, I, no. 7a).

[33] Medeleț, Toma 1997, 46.

[34] Lanevschi 1993, 3.

[35] AAHD, I, no. 9 and 9b.

Glogovăț (Vladimirescu) be leased to the "Kölcsey" society[36]. The initiative was also supported by the Archeological Society in Budapest[37]. Due to bureaucratic complications and the lack of funding, the archaeological excavations could not begin.

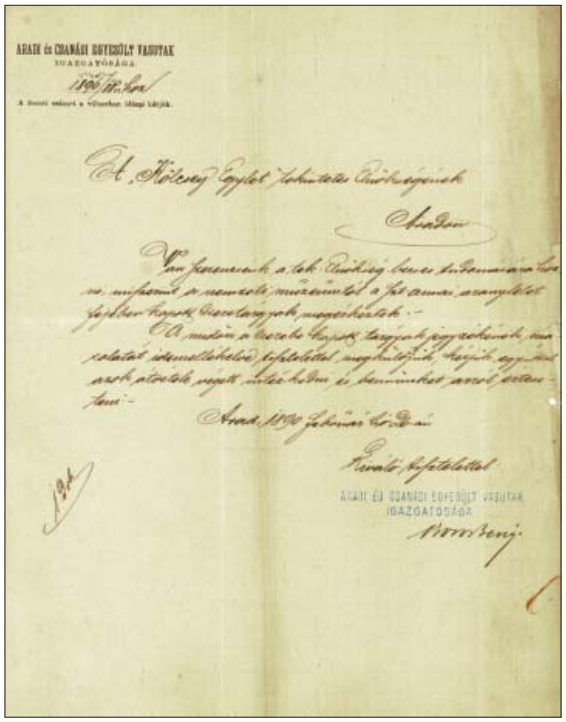

Fig. 2. Request of the Hungarian National Museum to the management of rail roads regarding the acquisition of the treasure discovered in 1888 in Sântana "Cetatea Veche".

Meanwhile, the "Museum of 1848–1849 Relics" was fully furbished. The exhibition extended over the entire second floor of the State Theater in Arad and was ready for the opening on October 6th 1892, but the official opening was organized only on March 15th 1893[38].

Disappointed by the exclusion of the archaeological collection from this exhibition, Dömötör turned to teaching, during subsequent years, and only went on field trips from time to time. S. Márki, who had become a professor at the University in Cluj, published his ample monograph on the county and city of Arad[39]. The section dedicated to ancient history is not very extended and betrays the split between the author's wide general historical culture and his limited understanding of archaeological field discoveries.

In 1896, professor B. Pósta[40], from the Magyar Nemzeti Múzeum Budapest, performed an archaeological test trench in Curtici, where he cut through a Copper Age settlement, part of the Bodrogkeresztúr culture, overlapping another settlement, dated to the Middle Bronze Age and the First Iron Age[41].

The General Inspectorate of Museums and Libraries was created in Budapest, in 1897, as a specialized organism inside the Ministry of Culture and Public Instruction[42]. The inspectorate was able to provide subventions to museums which, once accepted, were under the state's nominal control[43].

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36 AAHD, I, no. 9a.

37 AAHD, I, no. 8a.

38 Lanevschi 1993, 4.

39 Márki 1892; Márki 1895.

40 Pósta Béla (1862–1919) worked as a clerk at the MNMB and later became university professor in Cluj, director of the numismatics and archaeology collection of the Museum of Transylvania, founder and leader of the periodical entitled *Dolgozatok az Erdélyi Nemzeti Múzeum Érem– és Régiségtárából. Travaux de la section numismatique et archéologique du Museé National de Transylvanie, Cluj, I (1910) – X (1919)*. In 1913, he was appointed inspector for Transylvania, Banat, and the Plain of the General Inspectorate of Museum and Libraries, Budapest; see Petranu 1922, 178 no. 1.

41 Barbu *et al.* 1999, 49, Curtici, pt. 2.

42 Petranu 1922, 177, no. 1; Medeleț, Toma 1997, 61, no. 493; also according to Opriș 1994, 21–22.

43 Medeleț, Toma 1997, 61; Petranu 1922, 177, no. 1.

The new institution expressed an interest in the site of Pecica "Şanțul Mare", indicating its readiness to grant certain funds for research. The inspectorate's attitude was at least partly due to L. Dömötör's initiatives; already in 1895, he managed to attract the attention of the Archaeological Society in Budapest towards the need of archaeological excavations in Pecica, Glogovăț "Cinci Movile" and Sântana "Cetatea Veche"[44].

In the spring of 1898, Fl. Rómer and J. Hampel were again in Pecica, planning, together with L. Dömötör, how to organize future excavations[45]. With the financial aid of 300 Fl.[46], L. Dömötör initiated, already in September of the same year, the first archaeological campaign in "Şanțul Mare". The campaign lasted 11 days, during which the 6–11 workers excavated a ditch measuring 6 m in length and 4 m in depth. The results of this campaign remain largely unknown. L. Dömötör only wrote a brief report he then handed to the "Kölcsey" society, at the insistence of V. Fraknói[47]. The report indicates that inhumation tombs, devoid of inventory, were found in the upper layer, while the lower layers contained numerous clay pots, and items made of bone, bronze, and iron. 170 items were discovered in all[48].

L. Dömötör performed three other excavation campaigns at "Şanțul Mare": in 1900 (17 days), 1901 (18 days), and 1902 (12 days). During the last two, he was assisted by school master I. Haller from Pecica. In the absence of general ground plans and detailed reports, the four trenches excavated during these campaigns cannot be localized precisely. The list of discovered items also eludes clarity[49]. The old inventory books only mention the year of discovery, not the place. During the same period, L. Dömötör also performed test trenches in Peregul German (1898)[50], Arad "Gai" (1899)[51], Felnac, and Păuliş (1900)[52]. On the latter, only financial reports are available. A number of items can be certainly attributed to finds made in Pecica during the 1900–1902 campaigns: several Bronze Age jugs, 5 molds for casting bronze weapons, a few Dacian jug-shape pots and "fruit bowls", as well as three coins: one Republican Denarius from the 1st century A.D., one brass *scyphate* coin minted under John II Komnenos, and one Hungarian coin dated to the 12th–13th centuries[53]. The over 1000 items, discovered during these excavations, formed the nucleus of the archaeological exhibition of the museum in Arad that opened in 1903, shortly before L. Dömötör's death (August 1903)[54].

L. Dömötör's activity (1850–1903) must be evaluated with caution. His incontestable merits consisted in gathering materials for the exhibition of "archaeological artifacts", that he initiated and founded. He also managed to attract the attention of the scientific world towards the important site in Pecica "Şanțul Mare". In the context of Arad, his activity stands out through the fact that he succeeded in surpassing the "Revolution Complex", thus proving that the area's prehistoric and ancient history deserved full attention. From a technical and scientific perspective, his excavations never surpassed the dilettante stage. The easiness with which he treated the archaeological material attracted criticism during his lifetime from both, specialists and the administrative bodies, that objected to his not inventorying items and his only too brief (or completely absent) publication of excavation results.

After Dömötör's passing away, his former collaborator, school master I. Haller, continued excavating in "Şanțul Mare" on his own. During the 1904 campaign, he discovered "the remains of the very old cemetery", from where he recovered "pots and bronze objects". The location of Haller's excavation remains unclear, just like his understanding of the "very old cemetery".

Some of the items discovered by Dömötör and deposited inside the school in Pecica were transferred to Arad, while the objects found by Haller remained in his personal collection[55].

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44 AAHD, I, no. 8a.
45 Dörner 1978, 16.
46 AAHD, I, no. 10.
47 AAHD, I, no. 10, 10a and 11.
48 Dörner 1978, 17–19.
49 Dörner 1978, 19–22.
50 AAHD, I, no. 10a.
51 AAHD, I, no. 13.
52 AAHD, I, no. 13.
53 Dörner 1978, 20–21.
54 Dörner 1978, 22.
55 AAHD, I, no. 18 and no. 24a.

Fig. 3. The 1898 excavations in Pecica "Şanțul Mare".

In 1904, the "Kölcsey" society requested a subvention of 600 Fl in order to buy Dömötör's collection and for Haller to continue excavations in "Şanțul Mare". The inspectorate, represented by V. Fraknói, refused to grant the subvention and pointed out that Haller was not authorized to continue the excavations[56]. In such conditions, the archaeology collection acquired a single new item in 1905. During the same year S. Márki returned to Arad and Timişoara, visiting the museums there. On August 19th 1905, I. Berkeszi, the custodian of the museum in Timişoara, was in Firiteaz, attempting to obtain the gold treasure discovered there. But the destination of that treasure had already been established – The National Museum of Antiquities in Budapest – and the attempt to acquire at least duplicates for the museum in Timişoara remained unfruitful. Berkeszi went on to Satu Mare (village of Secusigiu), where he, together with F. Milleker, performed several test trenches in the fortified settlement located between Munar and Sânpetru German. The bronze and gold items deposit, discovered on that occasion, was sent to the museum in Vârșeț[57]. During subsequent summers (until 1909), Berkeszi visited the sites between Satu Mare and Sânpetru German, and school master Peter Philip from Satu Mare proved to be a trustworthy collaborator of the museum in Timişoara by recovering a number of stray finds and delivering them to the museum[58]. In 1906, after field walking around Lipova, Berkeszi reached Arad, where he asked questions about Dömötör's collection that the latter's widow was still trying to sell. Berkeszi bought several objects, dated to the Bronze Age and the Second Iron Age. The place of discovery of these items is uncertain even if the Museum of Banat inventory catalog indicates that they were found in Felnac[59].

Meanwhile, the museum in Arad bought the inventory of several 11th–12th century tombs discovered by chance in Felnac and Pecica (1907)[60] and in 1909 it finally managed to buy what was left of L. Dömötör and I. Haller's collections[61].

In 1910, M. Roska was appointed[62] to take up again the excavations in Pecica "Şanțul Mare". The professor from Cluj mainly followed two objectives: to clarify the site's stratigraphy and chronology

56 AAHD, I, no. 20 and 21.
57 Medeleț, Toma 1997, 79; Barbu *et al.* 1999, 55, Firiteaz, pt. 2; 68, Munar, pt. 2, 3.
58 Medeleț, Toma 1997, 85, 88.
59 Medeleț, Toma 1997, 84.
60 AAHD, I, no. 23.
61 AAHD, I, no. 26.
62 Roska Márton (1880–1961) had already excavated in Periam in 1909; Medeleț, Toma 1997, 91.

and to instruct a delegate of the museum in Arad in the technique of archaeological excavation[63]. Roska was only able to work for 9 days, due to very limited funding available, but during this interval he excavated a section measuring 7 m in length and over 4 m in depth[64]. He thus managed to define the intense Bronze Age habitation to which he attributed 16 layers. Among them, 8 contained elements identical to those discovered the previous year in Periam and the subsequent 8 layers illustrated a post-Periam development[65]. Surprisingly, he never mentioned Dacian materials, though three Dacian jar-pots entered the collection of the museum in Arad from his excavations in 1910[66].

F. Juhász[67] was the delegate of the museum in Arad and during the subsequent year he was the leader of the campaigns in "Șanțul Mare"[68] and Arad "Gai". He published a brief report (extending over no more than 10 lines) on the excavations in Pecica while only the list of expenses was preserved from his excavations in Gai[69]. It is obvious that Roska only reached the first of the two set objectives.

In the end of year 1911, the archaeological collection of the museum in Arad included 1,751 items of which 679 were recorded after excavations in 1910–1911[70].

The Palace of Culture in Arad was festively inaugurated on October 24th and 25th 1913. The impressive edifice, built according to the plans of an architect from Arad, L. Szántay, hosted the city's philharmonic orchestra, library and museum. The permanent exhibition included the following sections: archaeology, relics of the 1848/1849 Revolution, ethnography, natural sciences and fine arts[71].

A. Varjassy was appointed president of the new institution; he was president of the "Kölcsey" society, founder of the first museum in Arad (after lengthy efforts), and the man to whom the building of the Palace of Culture itself was largely due[72]. M. Roska was also interested in the job[73].

Also in 1913, J. Záray performed excavations somewhere between the train station in Bujac and the road to Pecica (in the archaeological area Gai I)[74]. The results of these excavations remained unknown.

The archaeological collection of the museum continued to grow, especially through acquisition;[75] thus, in 1917 it reached 2,795 items whose accounting value was of 3,951.5 K. The beginning of the first world war determined the transfer of the numismatic collection to the city hall treasury[76] and then to Budapest, together with the most valuable paintings of the European art collection[77].

In 1920, the Palace of Culture entered the patronage of the Museum Inspectorate in Transylvania, dr. L. Nichi being appointed as director[78]. During the first budget year, i.e.1921, the Romanian state allocated 10,000 lei to the palace and the sum was used in the refurbishing of the ethnographic and national art sections. At the request of the Romanian authorities, R. Xenopol, the widow of the reputed historian, donated 2,200 volumes to the city library, while other 1,567 volumes she donated to the Ministry of Labor[79]. It was only in 1923 that Al. Tzigara-Samurcaș, general inspector of museums, signed the documents assuming the archaeological collection, according to the last 1917 inventory.

After more than a decade, M. Roska took up again excavations in Pecica, in the summer of 1923. After that campaign, he was able to define the Aeneolithic layer that preceded the Bronze Age habitation on the site. Doctor J. Schweitzer, who accompanied Roska during the excavations and continued

63 Dörner 1978, 23.
64 Dörner 1978, 23.
65 Roska 1912; Barbu *et al.* 1999, 74–76, Pecica, pt. 2.
66 Dörner 1978, 24.
67 Ferenc Juhász was a numismatist. He donated his collection of coins to the museum in 1908 (AAHD, I, no. 24) and in gratitude the "Kölcsey" society delegated him to take part in the research in Pecica.
68 Dörner 1978, 24.
69 AAHD, I, no. 31.
70 Dörner 1978, 24.
71 Lanevschi 1993, 7.
72 Lanevschi 1993, 7.
73 AAHD, I, no. 33.
74 AAHD, II, no. 10.
75 The numismatics collection of the State Royal High School was bought in 1913 (AAHD, I, no. 34), though the "Kölcsey" society attempted to obtain it since 1900 (AAHD, I, no. 12). 300 coins from the medieval treasure discovered near Ineu were also acquired in 1913 (AAHD, I, no. 35).
76 AAHD, I, no. 39.
77 Petranu 1922, 122.
78 Dr. Lazăr Nichi was director of the Palace of Culture between 1921 and 1944; Kiss 1968, 152; Șerban 2010.
79 Petranu 1922, 122.

them after the first left, published a brief report of the 1923 excavations in local newspapers. We are thus informed of the excavation of a 14 × 3 m section in the South–Western area of the site[80].

During the subsequent year, Roska continued excavations inside the sections outlined in 1923 and 1911. The results of this campaign were published just briefly[81]. In 1953, M. Roska sent the entire documentation of the 1923/24 campaigns to the museum in Arad. It contains section plans and profiles, but not a general ground plan of the entire site[82].

Between 1925 and 1929, Roska performed research in Crișul Alb Valley, in the areas of Moneasa (1925)[83] and Gurahonț (1925–1929)[84]. These were rather field walks, accompanied by small test excavations that led to the discovery of the extremely controversial lithic material. During this research, performed with funds allocated from the budgets of the city and county of Arad, Roska was visited every year by L. Nichi, director of the Palace of Culture, and by librarian I. Langa.

Extending the area of his field walks to the plain region of the county, in 1929, Roska discovered the Bronze Age settlement from Socodor "Găvăjdia" where he performed test trenches during the following year. He was accompanied by N. Covaciu, the new librarian of the Palace of Culture[85]. The results of this research remained unpublished, except for the description of the site itself[86] and of several more important items[87]. The archaeological material is preserved in the collections of the Museum Arad and the Institute of Archaeology and Art History Cluj-Napoca. During the same period, Roska performed a few test trenches in Vărșand "Movila dintre vii"[88], that led to the discovery of archaeological materials typical to the Otomani culture and necropolises dated to the 4th century A.D. and the 11th–13th century A.D.

Among the significant events of the third decade, one can mention V. G. Childe's visit in Pecica (1927). The well–known archaeologist and historian of the European Neolithic and Bronze Age took this research trip in preparation of his ample synthesis work *The Danube in Prehistory* published in 1929[89].

During the following decade, archaeological research in the area of Arad did not progress due to lack of funding and of specialists in field working for the museum in Arad[90]. The archaeological collection, whose inventory catalogues were translated into Romanian in 1936[91], only grew during this period through donations and certain acquisitions. Thus, in 1930, the Institute of Classical Studies in Cluj donated to the Palace of Culture a significant pottery lot discovered in Otomani[92] and three years later, the city halls of Chereluș and Chișineu Criș sent to the museum medieval pottery and some mammoth bones discovered by chance in the area of these respective settlements[93]. Among the few acquisitions, one can mention the 130 Roman Republican coins from the treasure of Satu Nou, bought in 1932[94] and the treasure, consisting of 1,432 medieval coins, discovered in Pecica, bought in 1941[95]. The gold treasure, discovered by chance in 1938, in Pecica, was nevertheless bought by the National Museum of Antiquities in Bucharest[96].

Excavations planned for Sâmbăteni, Cladova (1933), Pecica (1935)[97], Sântana and Glogovăț (1942)[98] could not be performed due to the above mentioned reasons.

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80 J. Schweitzer, *Aradi Közlöny*, dated 2.10.1923. L. Berczi also took part in the excavations and the allocated funds were of 5000 Lei (AAHD, I, no. 43 and 44).
81 Roska 1924, 314–315.
82 Dörner 1978, 28, fig. 13.
83 Barbu *et al.* 1999, 67, Moneasa, pt. 2–3.
84 Barbu *et al.* 1999, 58, Gurahonț, pt. 1, 4–10; 102–103, Valea Mare, pt. 1–2; 112, Zimbru, pt. 1, 2.
85 Barbu *et al.* 1999, 93–94, Socodor, pt. 1, 2.
86 Roska 1941, 57; Roska 1941, 271, pt. 194.
87 Gogâltan 1999, Fig.1–8.
88 Barbu *et al.* 1999, 104, Vărșand, pt. 2.
89 Childe 1929.
90 During the inter-war period, the Palace of Culture had 4 permanent employees: one director, one librarian-museographer, one administrative secretary and one doorman; Kiss 1968, 152.
91 AAHD, I, no. 63.
92 AAHD, I, no. 54.
93 AAHD, I, no. 58.
94 AAHD, I, no. 55.
95 AAHD, I, no. 64.
96 Barbu *et al.* 1999, 76–77, Pecica, pt. 3.
97 O. Floca told N. Covaciu that D. Popescu wished to perform a test trench in Pecica (AAHD, I, no. 61).
98 C. Daicoviciu suggested that N. Covaciu should test the "Avar ring" in Sântana and the five mounds in Glogovăț. The excavations were planned to start on September 1st 1942, but the minimum funding of 30, 000 Lei were not obtained (AAHD, I, no. 65).

It was only in the summer of 1943 that D. Popescu obtained the necessary funds required by new excavations in Pecica "Şanțul Mare". The six sections opened on that occasion generally confirmed M. Roska's previous observations. D. Popescu nevertheless managed to define one settlement layer from the second Iron Age and another from "the time of barbarian invasions"[99]. During the same campaign, D. Popescu performed a test trench on the spot called "Livada lui Onea", in the administrative territory of the village of Semlac, ca. 2 km west of "Şanțul Mare". The resulted archaeological material was transported to the National Museum of Antiquities in Bucharest[100].

In 1944 N. Covaciu became director of the Palace of Culture and, despite the hardships of that period, he succeeded in publishing a monograph brochure focusing on the ancient history of the area of Arad[101]. The paper was in fact the abstract of chapters dedicated to ancient history in S. Márki's monograph (that Covaciu otherwise strongly criticized), to which the author added the description of Socodor's 1930 excavations in Vărșand.

In 1947, M. Moga performed a test trench in the site of Satu Mare "Die Weingärten", attributed to the Corneşti–Crvenka group. The materials discovered on that occasion are preserved in the collections of the Museum of Banat[102]. According to one of E. Dörner's sketches of the excavation in "Fântâna Vacilor", one can conclude that Moga also performed test excavations on this latter archaeological site, probably also around 1947, though no data is available on the discoveries made there.

After the total instauration of the communist regime, archaeological research in the area of the Lower Mureş was revived by the same D. Popescu who, in 1948–1949, excavated[103] in Socodor "Găvăjdia" Păuliş, Vărșand "Viezurişte" and "Movila dintre vii", and Frumuşeni "Dealul Caprei"[104]. In 1948, through two sections excavated in Socodor "Găvăjdia", D. Popescu identified five layers belonging to the Corneşti–Crvenka group[105], and four inhumation tombs dated to the 6th century A.D.[106] In Vărșand, in 1949, the same archaeologist tested the site "Viezurişte" through two sections. The results of these test sections materialized through the discovery of a tell dated to the Late Neolithic, that included four archaeological layers[107]. During the same year, D. Popescu also performed test excavations in "Movila dintre vii" and attributed the five archaeological layers to the Otomani culture, establishing the fact that this site was contemporaneous to the one in Socodor "Găvăjdia"[108].

Re-organizing the museum started in 1951. It was separated from the library and thus became an institution with its own budget. The exhibition area was extended and refurbished, but the most important change consisted in the employment of qualified personnel for each of the museum's sections[109]. E. Dörner was appointed assistant for the ancient history section.

During the sixth decade, archaeological research only consisted of rescue excavations coordinated by M. Rusu (from the Archaeological Institute in Cluj) and E. Dörner in Sântana "Gară" (1954)[110] and Şiclău "Gropoaie" (1959)[111]. In 1957 and 1958, E. Dörner and N. Kiss supervised town planning works in Zădăreni that disturbed a Sarmathian necropolis and a Late Bronze Age settlement. No effective archaeological excavations were performed.

Museum goods in private collections were inventoried and nationalized between 1953 and 1954. On that occasion, "Minerva from Bulci" entered the collection of the museum. The ancient history permanent exhibition was reopened to the public in 1955[112].

In 1955 teacher F. Kovács from Dorbanți and several amateurs from the same village performed test trenches in Macea "Topila". One could mention the fact that the local Common Agricultural Household

99 Dörner 1978, 28–29
100 Barbu *et al.* 1999, 92, Semlac, pt. 1.
101 Covaciu 1944.
102 We thank Dr. Florin Gogâltan for this piece of information.
103 For the 1948 excavations, the City Hall of Arad allocated the sum of 30, 000 Lei (AAHD, I, no. 69).
104 Barbu *et al.* 1999, 56, Frumuşeni, pt. 2, 5; 71, Păuliş, pt. 3; 94, Socodor, pt. 2; 103–104, Vărșand, pt. 1, 2.
105 Popescu 1956, fig. 3; Gogâltan 1999, 51–60.
106 Popescu 1956, 40–45.
107 Popescu 1956, 51–65.
108 Popescu 1956, 80.
109 Kiss 1968, 153.
110 Dörner 1974.
111 Rusu, Dörner 1962.
112 Kiss 1968, 153.

funded the test excavation on the basis of a written authorization issued by the museum in Sfântul Gheorghe, without noticing the County Museum Arad. The excavated material, together with a sketch of the excavation and a signed statement, were sent to the museum in Sfântul Gheorghe. On the basis of the archaeological material from this site, donated by various collectors including Gh. Miloi, one can note that the most significant settlement belonged to the Late Neolithic, while other fragments, dated to the Bronze Age and the 11th–12th centuries A.D. were collected from the surface of the tell[113].

Systematic research started in the seventh decade and the priority topics were Dacian and Dacian–Roman civilization. In Pecica "Șanțul Mare", a team coordinated by I. H. Crișan[114] worked during four campaigns (1960–1962, 1964) towards the stated objective of valorizing mainly the Dacian habitation there[115]. In the same time, I. H. Crișan and E. Dörner also performed a test trench in Arad "Ceala" (1962). The 1962 test excavations in Arad "Ceala" lead to the discovery of half–dugout dwellings and a pottery kiln dated to the 4th century A.D.[116], while E. Dörner's 1964 rescue excavations uncovered, among various artifacts dated to the 3rd century A.D., a 10th century tomb[117].

Fig. 4. Drawing a profile of the settlement in Arad "Ceala", 1962.

In 1963, when excavations in Pecica were interrupted, E. Dörner accompanied M. Rusu and I. Ordentlich during their campaign in Sântana "Cetatea Veche". The Late Bronze Age fortification was tested through two sections and two squares. On that occasion, the archaeologists noted a Late Bronze Age layer which included Tiszápolgár pottery fragments and a First Iron Age layer. The latter included the three fortified precincts[118].

During the excavations in Sântana "Cetatea Veche", S. Dumitrașcu performed test trenches in the tell of Sântana "Holumb". In the culture layer measuring 2.2 m in thickness he noted 5 habitation layers, all part of the Tiszápolgár culture, while the vegetal layer included Neolithic, Bodrogkeresztúr and Bronze Age pottery fragments[119].

Also during 1963, E. Dörner coordinated a rescue excavation in the city of Arad, the neighborhood of Grădiște, that led to the discovery of five pits that contained archaeological material dated to the 3rd–4th centuries A.D.[120] During the same year L. Mărghitan discovered four tombs dated to the 10th–11th centuries during a single archaeological campaign in Șeitin "Gropoaie"[121].

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113 Sava 2009.

114 The following took part in the excavations: E. Dörner (who worked on the medieval material), N. Kiss, Șt. Ferenczi, Fl. Medeleț, V. Lucian, Dr. I. Roth, Dr. M. Pop, Dr. E. Crișan; the Bronze Age material was given to T. Soroceanu for analysis; Crișan 1978, 7.

115 Crișan 1978, 7.

116 Crișan 1968, 241–245.

117 Dörner 1970, 447–449, fig. 4, 5, 6/2–5.

118 Rusu *et al.* 1996; Rusu *et al.* 1999.

119 Dumitrașcu 1975.

120 Dörner 1970, 445–446, fig. 2.

121 Mărghitan 1965.

During 1965, I. H. Crișan, together with E. Dörner, initiated researches in several points of the county. The first was the site in Temeșești "La patru gomile", researched between September 8th and 14th. The archaeological material recovered from the two sections and three squares, covering a total surface of 268 m^2, belongs to the Early Bronze Age, i.e. the Șoimuș Group[122].

The site in Cicir "Gropoaie" was tested during two campaigns, in 1965 and 1968 respectively. The settlement included three habitation layers (3rd–2nd centuries B.C., 2nd–3rd centuries A.D. and 16th–17th centuries A.D.). Sixteen partially dugout dwellings were discovered, among which three dated to the 2nd–3rd century A.D. and numerous pits with different functions[123].

Besides these four sites, researched in I. H. Crișan's company in 1965, E. Dörner performed other two small test trenches around the settlement of Pecica. Thus, during a week (October 9th–14th), he set one trench in "Sălașul Donat" and another in "Șanțul Mic". The profile of the section in "Sălașul Donat" confirmed previous surface finds. A ca. 1 meter thick layer belonging to the First Iron Age (Basarabi Culture) was discovered above the archaeological sterile and under another, thinner layer of ca. 0.25 m, dated to the 11th–13th centuries A.D. The section performed on the site of "Șanțul Mic" revealed the fact that the main archaeological layer could be dated to the 11th–13th centuries and included several fragments dated to the First Iron Age and the 2nd–4th centuries A.D.

Between 1966 and 1967, K. Horedt coordinated a project aimed at clarifying the situation of earthen ramparts in the area of Arad. The excavations performed by V. Boroneanț and E. Dörner in Covăsânț "Desanu" and "Fânațe" did not lead to the envisaged clarifications. The archaeologists sectioned a system consisting of four consecutive ramparts and five ditches, with a total width of 56 m; the filling of the ditches contained pottery fragments dated to the 3rd–4th centuries A.D. but the dating of the entire system remained uncertain[124].

The most significant research in Sânpetru German took place in 1963 and 1965 on the site called "Fântâna Vacilor". Besides the two Sarmathian tombs and another, whose cultural traits could not be identified, due to the lack of inventory, the excavations also led to the identification of two habitation layers, one typical to the Bodrogkeresztúr culture and another characteristic to the Baden culture[125].

Fig. 5. The excavation in Sânpetru German "Fântâna Vacilor", 1963.

Research in Pecica "Cărămidăria C.A.P. Ogorul" developed over two consecutive years, in 1967–1968. The stratigraphy of the site included the following: a layer of modern humus between 0–0.25 m, a layer of black–grey soil from the 2nd–3rd centuries A.D. between –0.25–0.50 m, a layer of black, strongly pigmented soil, dated to the Middle Bronze Age, Mureș culture, between –0.50–1.45 m, while the final layer consisted of yellow–clayish soil that represents the archaeological sterile. Besides

122 Gogâltan, Apai 2005.
123 Crișan 1968, 246–249.
124 Dörner, Boroneanț 1968, 7–18.
125 Dörner 1970, 451–455, fig. 9, 10, 11/1–5.

artifacts dated to the above mentioned eras, several pottery fragments were also identified, part of the Hunyadihalom/*Scheibenhenkel* horizon (Middle Copper Age)[126].

Fig. 6. The excavation in Sânpetru German "Fântâna Vacilor", 1963.

Fig. 7. The excavation in Sânpetru German "Fântâna Vacilor", 1963.

Besides these excavations, E. Dörner continued to go on field walks and to perform restricted test trenches, focusing on the issue of "Dacian–Sarmathian cohabitation". He thus researched the sites in Dorobanți (1961, 1970) and Arad Ceala (in fact Gai I, 1964). The results were partially published, mainly in synthesis works.

Between 1961 and 1968, the river Crișul Alb separated the "areas of competence" of the museums in Oradea and Arad. The first financed the excavations in Șimand "Grozdoaie" (M. Rusu, N. Chidioșan), in 1961/62, those in Berindia (I. Ordentlich, S. Dumitrașcu, 1966/67), Groșeni (N. Chidioșan) and Moroda (S. Dumitrașcu), the latter two in 1967, and the test trench through the earthen rampart in Archiș (S. Dumitrașcu), in 1967.

The seventh decade of the twentieth century saw the beginning of restoration works on the fortification of Șoimoș, one of the best preserved such monuments in the Mureș Valley. On that occasion R. Heitel, N. Pușcașu, and Fl. Medeleț performed several archaeological test excavations, but the results remained unpublished. Later on, both restoration works and archaeological excavations were abandoned.

[126] Sava 2010.

Fig. 8. The excavation in Pecica "Cărămidăria C.A.P. Ogorul", 1967.

Fig. 9. The excavation in Pecica "Cărămidăria C.A.P. Ogorul", 1967.

Researches performed during the 70s were different from those of the previous decades through both in size and diversity of historical eras envisaged. Excavations in Conop "Hotărel" (1972)[127] and Zăbrani (1973–1975)[128], coordinated by V. Boroneanț, accompanied by E. Dörner, valorized elements of the Paleolithic and 2nd–4th A.D. centuries habitats in the Lower Mureș. Two habitation layers, dated to the Upper Paleolithic, were noted inside the two sections excavated in "Hotărel" that measured 4 × 1 m each[129].

Remains of the Middle Paleolithic, Upper Paleolithic, and Epipaleolithic were thus identified and research on the spots of "Dealul Pietrii"[130] and "Peste Hotar" (Pârneavă), which included layers of the Aurignacian culture, the First Iron Age, the 2nd–4th centuries A.D., and the 12th–13th centuries[131].

One test excavation was also performed during this period, in 1975, in Chesinț "Cetate". There were two squares, measuring 5 × 1 m and 2 × 2 m. Traces of a Neolithic settlement part of the Vinča culture were found under the medieval layer of the 14th–15th centuries A.D. that confirmed the existence of a fortification there.

127 Boroneanț 1979.
128 Boroneanț 1979.
129 Boroneanț 1979, 110.
130 Stoia 1975, 305; Boroneanț 1979, 111–114.
131 Stoia 1975, 305; Boroneanț 1979, 114.

In 1970/71, O. Greffner performed several archaeological test trenches inside the fortification of Şiria. The results were just partially published in a monograph written for the general public[132].

Fig. 10. The excavation in Felnac "Complexul Zootehnic", 1975.

M. Zdroba and M. Barbu's campaigns in Vărădia de Mureş (1971–1974)[133] and Felnac "Complexul Zootehnic" (1975–1977) revealed new data on the Dacian civilization[134]. An interest in the systematic research of the vestiges in Bulci was only expressed during the second half of the 20th century. In 1976, Şt. Ferenczi and M. Barbu initiated research in Bulci "Cetate", later continued until 1989[135]. The partially published results of their discoveries are insufficient for a correct interpretation of on–site situations[136]. In 1979, E. Dörner and M. Barbu performed one test excavation inside the settlement of the Free Dacians in Sântana "Livezi"[137]. Medieval archaeology was granted special interest. Already in 1969, M. Zdroba and M. Barbu started researching the church in Vladimirescu. Work continued there until 1971 and was taken up again, though during a single campaign, in 1983[138]. The voievodal church in Hălmagiu "Vârfuri" was researched in 1973/74 by a collective led by R. Popa[139], while, between 1975 and 1980, M. Zdroba and M. Barbu excavated the earth fortification in Vladimirescu "La Cetate"[140]. In 1976, V. Boroneanț started systematic research in Cladova "Dealul Carierei"[141]. The last archaeological campaign in Cladova was organized in 2003, and the entire material is currently prepared for publication in a monograph of the entire site.

Research of the eighth decade revealed a number of complex sites with successive habitation layers from the Paleolithic or the Neolithic until the Middle Ages. In order for such research to be continued, larger research collectives had to be formed, with members covering all the above mentioned historical eras.

Systematic researches in Cladova "Dealul Carierei", Bulci "Cetate", and those in Săvârşin "Cetăţeaua", started in 1980, were continued and granted priority during the 80s and 90s of the 20th century[142]. Test trenches were also performed in Chişineu–Criş (M. Barbu, E. Ivanoff–1977), Frumuşeni (M. Rusu, P. Hurezan, M. Barbu–1981), Arad "Bujac" (M. Zdroba–1981)[143], Zărand (P. Hurezan, M. Barbu–1982),

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132 Greffner 1976, 23–29.
133 Barbu 1978.
134 Zdroba, Barbu 1976.
135 Between 1981 and 1984, P. Hurezan was member of the team working there.
136 Ferenczi, Barbu 1978; Ferenczi, Barbu 1979.
137 Barbu, Dörner 1980.
138 P. Hurezan was part of the collective in 1983.
139 The team consisted of D. Căpăţână, V. Eskenassy, and M. Barbu.
140 Zdroba, Barbu 1976; Barbu, Zdroba 1977; Barbu, Zdroba 1978; Barbu, Zdroba 1979; Barbu, Zdroba 1980.
141 Boroneanț 1978, 141, pl. 6/2; Boroneanț 1980; Boroneanț 1982; Boroneanț, Hurezan 1987; Boroneanț, Hurezan 1987a; Iliescu 1987; Boroneanț, Hurezan 1993; Hurezan 1996; Hügel 1996; Barbu *et al.* 1999, 55, Cladova, pt. 1/b; Hügel *et al.* 2004, 97, 99. P. Hurezan (since 1980), P. Hügel (since 1991), and Florin Mărginean (2003) were also part of the scientific team.
142 Barbu, Hurezan 1982, 51, pl. I; Pădureanu 1982, 37–38; Barbu *et al.* 1999, 107, Săvârşin, pt. 1. P. Hurezan (1980–1986, 2006), P. Hügel (1990–1997, 2006), Valeriu Sârbu (since 2006), Cristina Bodo (since 2006), and Victor Sava (since 2007) were also part of the collective.
143 Zdroba 1982.

Feniş "Iovuţeşti" (M. Babru, P. Hurezan–1981)[144], Pecica–Forgaci (S. A. Luca–1989), Pecica "Hăblău" (R. Heitel şi colab.–1994), and Semlac "Livada lui Onea" (Fl. Gogâltan–1994).

Fig. 11. The excavation in Felnac "Complexul Zootehnic", 1975, medieval kiln (11th–12th centuries A.D.).

Fig. 12. The excavation in Felnac "Complexul Zootehnic", 1975.

The rescue excavation in Chişineu–Criş "Staţia de pompare" confirmed the previous discoveries, the fact that the most ancient archaeological layer can be dated to the First Iron Age, the second between the 1st century B.C. and the 1st century A.D., while traces of dwellings from the 3rd–4th and 9th–11th centuries A.D. were also discovered sporadically.

In 1989, S. A. Luca, accompanied by M. Barbu, researched the settlement in Feniş "Anele". The site, almost completely researched through 9 sections, lead to the identification of one of the earliest Neolithic sites on the territory of the county of Arad. The three ground–level dwellings were attributed to the Starcevo–Criş Culture, phase II[145].

Also in 1989, S. A. Luca was on site in Pecica "Forgaci". The test trench led to the identification of an interesting site of the Bodrogkeresztúr culture. Its significance consists of the identification of two successive habitation layers of the same culture and the fact that archaeological materials connecting the above mentioned cultural horizon and the Tiszápolgár culture were found[146].

144 Chirilă *et al.* 1987.
145 Luca, Barbu 1994.
146 Luca 1990; Luca 1993.

Fig. 13. The excavation in Vladimirescu "La Cetate", 1975.

Fig. 14. The excavation in Săvârșin "Cetățeaua", 1990s.

Fig. 15. The excavation in Săvârșin "Cetățeaua", 1990s.

Fl. Gogâltan's test excavation in Semlac "Livada lui Onea" aimed at verifying the site's stratigraphy. The first layer under the vegetal stratum belonged to a 12th–13th century habitation, while the rest of the layers belonged to the Early Bronze Age; the site can be easily compared to the one in Periam[147].

The site in Pâncota "Cetatea Turcească" was forgotten during the 20th century and all intention of systematic research was abandoned. Starting with 1999, the archaeological research of medieval habitation in the area of the former counties of Arad and Zarand entered a new phase. At A. A. Rusu's initiative (Institute for Arhaeology and Art History Cluj-Napoca), supported by G. P. Hurezan, at that time director of the County Museum, an ample project of topographic mapping of medieval fortifications and ecclesiastic buildings in the county of Arad was initiated. The results of this research were printed in two volumes (in 1999 and 2000)[148]. On that occasion, the site in Pâncota received an exact topographical survey. Starting with 2000, research in Pâncota was reinitiated under the coordination of D. Marcu–Istrate (archaeologist) and S. Móré Heitel (art historian). During the five campaigns performed, with interruptions, until 2006 (2000, 2002, 2004–2006), the team uncovered the foundations of the former monastic and later on arch-diaconal church in Pâncota. The results of each campaign were published in the *Cronica Cercetărilor Arheologice* (Chronicle of Archaeological Research) and presented during several conferences. The entire material discovered on these occasions is preserved in the storage rooms of the Museum Arad. A volume, focusing on the vestiges of the abbey in Pâncota, was also published in 2006[149], recording the situation prior to the archaeological investigations started in 2000.

Fig. 16. The excavation in Pâncota "Cetatea Turcească", 2006.

Two decades later, in 2001, systematic archaeological research was reinitiated on the site of "Fântâna Turcului" in Frumușeni, by a collective consisting of: A. A. Rusu, G. P. Hurezan, P. Hügel, F. Mărginean (archaeologists) and I. Burnichioiu (art historian). During nine campaigns, they discovered the vestiges of the ancient Benedictine monastery of Bizere[150]. The mosaic discovered there in 2003 and the architectural elements opened a new page in the (art) history of the Lower Mureș Valley during the Middle Ages[151]. The first archaeological reserve in the county of Arad was opened there in 2008.

The same collective, including A. A. Rusu, G. P. Hurezan, P. Hügel and F. Mărginean, started research on another significant site to the history of the county of Zarand, in Tauț "Cetatea Turcească" or "La Cetate". The printed volume entitled *Biserici medievale în județul Arad* (Medieval Churches in the County of Arad) was the preamble of the first systematic archaeological researched in Tauț. The first on-site investigations and an initial topographical survey of the site were performed in 1999[152].

147 Soroceanu 1991, 99.
148 Rusu, Hurezan 1999; Rusu, Hurezan 2000.
149 Móré Heitel 2006.
150 Rusu, Burnichioiu 2011.
151 Burnichioiu, Rusu 2006.
152 Rusu, Hurezan 2000, 142, fig. 22.

Thus, the team observed a system of ramparts, doubled and even tripled on certain sectors (on the Eastern side), surrounding a central area. On the same occasion, the above mentioned noted the traces of pits dug by treasure hunters. The subsequent seven archaeological campaigns led to the uncovering of a complicated building complex, oriented E–W, that once belonged to a medieval church, built during successive stages throughout the Middle Ages. The ecclesiastical building overlapped an older medieval cemetery. The interventions following the initial building stage of the first church in Tauț, archaeologically identified, led to the conclusion that during a period of almost four centuries the edifice underwent modifications at relatively short intervals. The planimetric development – turning a Romanic brick church into an ample Gothic edifice – attested archaeologically, is the first gain of archaeological research in Tauț. Through similar archaeological observations, one could note that the church was abandoned after the middle of the 16th century; the Turkish presence in the area was one of the main causes for this. A community settled on the site shortly after the church was abandoned and built an actual settlement inside and around the church[153].

Fig. 17. The conserved Medieval mosaic from Frumușeni "The Monastery of Bizere"(2009).

Fig. 18. Medieval mosaic discovered in Frumușeni "The Monastery of Bizere" (2003).

The accidental discovery of several tombs with rich inventory on the site "Lutărie" in Nădlac attracted the interest of specialists and made them start preventive research on the site. The objects discovered accidentally were taken to the museum in Arad where they were recorded, preserved and stored. During three years, starting with 2004, the Mayoralty of Nădlac financed preventive research of the site, in order to clarify the characteristics and chronology of these tombs. Thus, a collective

[153] Mărginean, Rusu 2010; Sarkadi 2010, 915–934.

consisting of P. Hügel (scientific coordinator), F. Mărginean (CMA), and P. Huszarik (history teacher at the "J. G. Tajovsky" High School in Nădlac) discovered 12 more tombs, besides the initial three. Following methodic–contextual analysis, the chronological spread of artifacts discovered inside the tombs does not exceed one century, i.e. can be dated between the second half of the 10th century and the beginning of the subsequent one[154].

Archaeological research was performed, in the autumn of 2004, in Chelmac "La Cetate" or "În Prund la Cetate". Research was possible through the collaboration between the Museum of Mountain Banat and the Museum Arad, part of the research project entitled "Medieval Churches and Monasteries from Banat", coordinated by D. Țeicu[155]. Even if the research consisted of test excavations, only two trenches being performed, the results proved to be rather interesting as for the identified archaeological contexts and recovered archaeological material. The results of this research somehow compensate the lack of written sources on the existence of a monastery and then a fortification, probably of the bastionary type, during the Middle Ages. There is little data on the fortification during the Ottoman period as well, but through archaeology the team identified traces of houses made of timber beams connected with soil, both inside and outside the fortification[156]. To the present state of research, one can presume that once the Ottomans occupied this area, located on the border of the Principality of Transylvania, a garrison or a group of people from other provinces of the Empire was settled there[157].

In 2005, the site in Bulci entered again the archaeologists' area of interest and was given a new topographical survey, through the project "Medieval Churches and Monasteries from Banat"[158].

The need to publish an archaeological monograph work of the site Săvârşin "Cetățuie" determined specialists to take up again systematic excavations in 2006. The main objective was to control the plateau and the various terraces surrounding it. The research led to the discovery of the Dacian habitation and, on the plateau, of a significant Coțofeni habitation layer[159].

Fig. 19. The excavation in Săvârşin "Cetățeaua", 2008.

During recent years, various preventive excavations were determined by city extension and town planning works. Such a research took place West of the village of Vladimirescu, near the site of a

[154] Mărginean, Huszarik 2007.
[155] Țeicu 2007.
[156] The case is somewhat similar to that of Tauț (Arad County), a settlement located on the Northern slope of Zarand Mountains, with the exception that the latter was established both inside and outside the ruins of a Medieval parish church, archaeologically researched in 2002.
[157] Țeicu, Mărginean 2008.
[158] Țeicu 2007, 72–73.
[159] Hügel *et al.* 2007; Hügel *et al.* 2008, 273; Hügel *et al.* 2009, 192; Hügel *et al.* 2010, 169–170.

former farm, when, in autumn of 2006, two Celtic tombs with rich inventories were discovered during works for house foundations[160].

Two preventive researches were performed in 2008 under the coordination of specialists from the museum in Arad, one in Căprioara "Peştera lui Sinesie" and another in "Parcul copiilor" in Arad.

Fig. 20. The rescue excavation in Sântana "Cetatea Veche", part of the rampart of the third fortification, 2009.

The ample excavation works, determined by road and energy infrastructure projects, led to the discovery of dozens of new sites and the taking up of research on the site of Sântana – "Cetatea Veche"[161]. The archaeological research in Sântana "Cetatea Veche"[162], undertaken in 2009, aimed at establishing the stratigraphy of the site, researching the fortification system, recovering all data and archaeological contexts identified in the area about to be affected by the introduction of the magistral gas pipeline. Three sections were established and excavated. Section S01 initially measured 80 × 4 m, but was extending during research to 6.50 m. S02 was initially the same size as S03: 10 × 1.5 m. Through this excavation the third fortification system was dated to the end of the Bronze Age (HA1), while 2011 excavations confirmed the existence of a Baden–type settlement inside the fortification[163].

Preventive excavations performed in 2010, along the future section of the Arad–Timişoara highway, led to the research of an important settlement, dated to the end of the Bronze Age. The site Şagu "A1_1" is located 200 m South from the mid distance between Şagu and Cruceni. The settlement measures 530 m in length and ca. 450 m in width, thus one can state that the prehistoric settlement covers an area of ca. 238.500 m^2 (23.85 ha). 321 archaeological complexes were discovered, among which the team researched 306 Bronze Age complexes (B2–C, BD, and HA1), 14 complexes dated to the 3rd–5th centuries A.D. and one from the contemporary period. On the basis of discoveries made there, one can note that the settlement started during stage B2–C and developed throughout the Late Bronze Age, reaching its peak during stage HA1[164].

One year later, in 2011, a significant necropolis, contemporary to the settlement in Şagu, was discovered along the future Arad–Nădlac highway. This new discovery is situated 3.5 km NNE from the center of Pecica. 41 tombs were identified inside the perimeter of the future highway, out of which, 27 were inhumation burials and 14 cremation burials. Almost all bodies were crouched and the tombs displayed very rich funerary inventories. Small cups and large pots were usually identified in the areas near to the feet and hips of the bodies. Cases in which animal parts are found close to the feet of the bodies are quite frequent. Apart from these, a great number of tombs included quite rich funerary inventories consisting of hair pins, bracelets, appliqués, bronze daggers or axes, while amber beads were found in one tomb. Based on the funerary inventory of these graves one can assess the fact that

[160] The research team included Peter Hügel, George P. Hurezan, Florin Mărginean and Zsuzsanna Kopeczny.
[161] Gogâltan, Sava 2010.
[162] Hügel *et al.* 2010a; Gogâltan, Sava 2010.
[163] Gogâltan *et al.* 2012.
[164] Sava *et al.* 2011.

the inhumation tombs belong to the Late Bronze Age, chronological stage I (Bronze B2–C). The urns of the cremation burials contained artifacts deposited as funerary inventory. This enabled archaeologists to find a large quantity of small bronze artifacts such as rings or bracelets, simple or in the shape of multiple spirals. Small cups were also documented in some of the urns. The fact that some of the urns were actually big pots is worth mentioning, but there are cases in which the urns were small bowls. Based on the funerary inventory and the types of vessels used as cinerary urns one can date the cremation graves to the Late Bronze Age, stages II–III (Bronze D – Ha A_1).

Fig. 21. The rescue excavation in Şagu "Site A1_1", complex 81, 2010.

Fig. 22. The rescue excavation in Şagu "Site A1_1", complex 198, 2010.

One knows from older excavations that pottery kilns were identified on the territory of the present town of Pecica[165]. Corroborated with the latest discoveries on the Nădlac – Arad highway section, Lot 2, one can presume that this was a pottery production center consisting of a network of small workshops spread on the high plain, North of the river Mureş. Nine such pottery kilns were identified and documented (site 16/Lot 2 with one kiln, site 15/Lot 2 with two kilns, site 13/Lot 2 with two kilns, site

[165] Blăjan, Dörner 1978.

12/Lot 2 with three kilns, and site 4R/Lot 1 with one kiln). Data thus obtained offers new information on the pottery production technology, i.e. on pottery firing. Though one knows little on how this craft was organized, it seems that it was rather specialized even since the 11th–12th centuries, a fact attested by clusters of kilns discovered over a restricted area around the present–day city of Pecica. For the area under discussion, specialists have estimated a period of demographic growth, due to good climate conditions and the lack of major conflicts. The most populated areas were those located near water flows, such as the area under discussion[166]. Apparently isolated, the discoveries around the city of Pecica, that can be dated to the 11th–12th centuries, provide a new perspective on firing techniques of early medieval pottery. It is possible that these workshops produced pottery for the micro–region of the Lower Mureş Valley[167]. Archaeological test trenches have revealed a culture layer containing several ceramic fragments (rims, mainly from small cauldrons, but also from pot or cup–type vessels), typical to the Early Medieval or Arpadian Era, that can be dated to the 11th–12th centuries[168].

Overall, the development of archaeological research in the area of Arad underwent several important stages. The early stage is marked by L. Dömötör's activity who aimed at collecting the material necessary to organizing an archaeological exhibition; his goal was fulfilled in 1903 and Dömötör can be considered the founder of this exhibition. From the point of view of his working methods, Dömötör can nevertheless be considered a precursor of scientific field research. The second stage, that of archaeological excavations *per se*, was inaugurated by M. Roska through his 1910 campaign in Pecica. During the subsequent half a century, all excavations in the area were coordinated by specialists from the university centers of Cluj (M. Roska, M. Rusu, I. H. Crişan) and Bucharest (D. Popescu).

Fig. 23. The rescue excavation in Pecica "Site S 12", 2011.

Fig. 24. Pottery kiln, Pecica "Site 12", 2011.

166 Blazovich 1996.
167 Takács 1986; Blăjan, Dörner 1978; Crişan 2002.
168 Vágner 2002.

The third stage saw archaeologists from Arad playing a part in archaeological research. The first to break with the dilettantism of his predecessors from before the First World War and the inter–war period was E. Dörner (1925–1993), followed by N. Kiss (1928–1997). Dörner established the ancient history department of the museum and reorganized both the exhibition and the storage rooms. His field research, involving several faithful collaborators[169], allowed for the mapping of a large number of new sites.

The period of systematic excavations performed by specialists working for the museum only started in the eighth decade of the 20th century. One must note the activity of M. Zdroba (1941–1989) and M. Barbu (1944–2004), accompanied by G. P. Hurezan (since 1981) and P. Hügel (since 1990). The new generation of museum specialists, F. Mărginean (starting with 2004) and V. Sava (since 2007), redefines the mechanisms of archaeological research in Arad and coordinate in the same time preventive excavations required by the large infrastructure works of their time.

Peter Hügel
Museum Arad
Arad, RO
arheologie@museumarad.ro

George Pascu Hurezan
Museum Arad
Arad, RO
gphurezan@yahoo.com

Florin Mărginean
Museum Arad
Arad, RO
finnlands@yahoo.com

Victor Sava
Museum Arad
Arad, RO
sava_vic@yahoo.com

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[169] Among them one needs to mention school master A. Hamerák (Sânpetru German), Dr. Z. Kasa (Dorobanţi), Eng. Gh. Miloi (Arad) and Prof. E. D. Pădureanu (Arad).

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Environmental Changes in the Upper and Middle Tisza/ Tisa Lowland during the Holocene

Tibor-Tamás Daróczi

Abstract: The present study focuses on an aspect of archaeology, which to a large extent has been neglected in the archaeological research in Romania, namely that of the environmental changes with special reference to archaeology. The geographical area of analysis is the Tisza/Tisa Lowland and the period is the Holocene. Changes in geomorphology, flora and fauna, climate and humidity will be presented and discussed. As a final step, *archeco-zones* will be defined in order to delimit regions in space and time with similar environmental traits, in the hope that discussion on mid-scale changes of the environment and their relation to archaeology will be stimulated in Romania as well.

Keywords: Upper and Middle Tisza Lowland, Holocene, environmental changes.

The research of the Holocene in the Eastern Carpathian Basin has a history that reaches back almost a century, through field-work carried out in various marshes and bogs of Transylvania[1]. It should be noted that, because the border between Hungary and Romania runs through the middle of the Tisza/ Tisa Lowland (also known as Tiszántúl), there are discrepancies in research methods and interests, chronology and "geographic unity"; this division only started to fade over the past couple of decades. The solution to this problem came with the work of Sándor Marosi and János Szilárd[2], who disregarded present-day political borders and focused on the geographic unit of the Tisza/Tisa Lowland. Research performed over the last decade concerning the Holocene geographic landscape of the region presents new data, but has been concerned with local areas, with little interest in addressing the issue at a macro-regional level.

The Holocene has the following major phases: Preboreal, Boreal, Atlantic, Subboreal and Subatlantic (Fig. 1). Furthermore, one might stated that, from a geographic perspective, these phases do not represent a period in the Lowland's life that had major influence on the geographic landscape. Due to this fact, the research of this period requires a multidisciplinary approach – as it was expressed by Gyula Gábris: "The research of the [Holocene] requires a more eclectic approach, than any other period in Earth's history (...). Thus the reconstruction of Holocene history and phenomena should be based on the cooperation of geologists, geomorphologists, botanists, zoologists, pedologists, archaeologists and historians"[3]. This also means that the large scale processes which now constitute the major traits of the Lowland took place at the closing of the previous period, Pleistocene, i.e. at the end of the last Ice Age. In contrast, the geomorphological features of Transylvania are mostly of Neogene origin and, as such, no major alteration to the geographic landscape occurred during the Holocene[4].

In terms of flora, it should be mentioned that most of the data presented, in what follows, comes from palynology and macro fossil analysis (Appendix 2 and Pl. 4) and as such it is largely dependent on environmental factors of pollen deposition. The pollen that reaches the deposition sites, used for later soundings to obtain pollen schemes, is dependent on several variables: pollen productivity of the plants in each area, dispersal mechanisms and the size of the basin. Some sites may contain pollen coming from an area of a few kilometres around the sites (e.g. Avrig, Steregoiu, Iezerul Călimani, Tăul Zănoguții) to zones well over 20 km (e.g. Molhaşul Mare, Mohoş). Hence, the pollen spectrum of data may represent local or broad-regional trends of palaeoflora[5].

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[1] The present study was part of my PhD research at the universities of Sibiu and Heidelberg. I am grateful for the help provided by Attila Csernátoni, Katalin-Emilia Daróczi and Kinga Fetykó. I would further like to thank Joseph Maran and Lærke Recht for their comments on earlier drafts.

[2] Marosi, Szilárd 1969.

[3] Gábris 2006, CD.

[4] Linzer *et al*. 1998, 146–148, 156.

[5] Feurdean *et al.* 2010, 2199.

Firbas zones	Blytt-Sernander zones	Pollen stratigraphic scheme			BCE	BP
Central Europe	Southern Scandinavia	Tiszántúl		Transylvania		
X	Subatlantic	II. Beech phase		Spruce-Beech-Fir phase	500–present	2500–present
IX						
VIII	Subboreal	Beech phase (~hornbeam, fir)		Spruce-Hornbeam phase	3700–500	5700–2500
VIIb						
VIIa	Atlantic	Oak phase		Spruce-Oak/Hazel phase	6500–3700	8500–5700
VI						
Vb	Late Boreal	Hazel phase	(~>pine)		8300–6500	1030–-8500
Va	Early Boreal		(~<pine)	Pine-Spruce phase		
IV	Preboreal	Fir-Birch phase		Pine phase (~spruce, birch, alder)	9500–8300	11500–10300

Fig. 1. Correlation of Holocene forest phases and pollen stratigraphic schemes – the BCE and BP entries are rough dates for orientation (Feurdean 2004, fig. 1; Járainé Komlódi 2000, 41-47; Tanțău *et al*. 2010, 79)

Palynological studies are used as indirect evidence in establishing variables of temperature and humidity during the Holocene. In the higher-lying regions of Transylvania, lakes provide useful information for the Late Glacial and Holocene changes in water plants populations and climate[6]. The oscillation of green algae (*Pediastrum spp.* and *Botryococcus sp.*) in particular is a good indicator of temperature, acidity and humidity[7]. Speleological research concerning speleothem[8] is also an important means of reconstructing Holocene temperature shifts. These studies will serve as basis for the reconstruction of the Holocene climate changes in the area under discussion.

The presentation, maps and analysis of the soil composition of the region under study is based on the SOTER programme for Central and Eastern Europe (version 1.0)[9]. Appendix 1 provides a comprehensive account (etymology, characteristics and occurrence) of all soils found in the area of the Maros/Mureş alluvial fan. This also serves as a detailed legend for the soil maps and soil codes used in the maps. In order to process and analyse this vast amount of data, a global information system was used,[10] in order to group and present the results of the research.

Geomorphology

The geographical research distinguishes large, mid and small scale analysis methods; as such the present work deals with the mid and small scale perspectives. The western part of the eastern Carpathian Basin comprises most of the Tisza/Tisa Lowland, commonly referred to as the Tiszántúl (Pl. 1). According to the established literature[11], the western part has the following mid and small scale regions: 1. Tisza/Tisa Lowland – Upper, Middle and Lower Tisza/Tisa region, 2. Northern Lowland alluvial fan plain – Nyírség, Hajdúság, 3. Körös/Criş region, 4. Körös/Criş-Maros/Mureş plain region.

The Upper Tisza/Tisa region corresponds to the north-eastern part of the Lowland (Pl. 2), which has an average elevation of 115 m above sea level (a. s. l.). The region is dominated by Holocene sediments that in the wetland consist of muddy and clayish alluvial soils, with occasional outcropping of older, late-Pleistocene sandy "islands". Its development is closely tied to the alluvial depositions of the rivers coming from neighbouring Carpathian mountains and Transylvania, as after the exit from these higher elevations, the rivers deposited a large amount of alluvial debris in this region (Pl. 3), thus

6 Buczkó *et al.* 2009a.

7 Buczkó *et al.* 2009b, 265.

8 Cave formations: dripstones, flowstones, cave crystals, speleogens and others – personal communication with Attila Csernátoni.

9 Developed at the University of Wageningen (2nd edition 2005), implemented by FAO, ISRIC and UNEP under the auspices of IUSS.

10 I would like to thank ESRI Deutschland GmbH for accepting my project and supporting it with the *ESRI Absolventenprogramm,* through which a full license of ArcGIS 10 was awarded for the duration of my doctoral research.

11 Marosi, Szilárd 1969.

building a massive alluvial fan[12]. This later feature is important because, by this deposition, the region has reached an elevation more or less equivalent to the areas to the south (Nyírség), thus enabling other rivers, coming from the north-eastern area, to flow directly into the Körös/Criş river. Another important phenomenon is a result of the same depositional process: the branches of the Tisza/Tisa-Szamos/Someş river-system gradually migrated northwards, thus eventually making the rivers that were headed south their tributaries[13]. The result of this retreating erosion is that the eastern part of the Upper Tisza/Tisa region ended up having a lower a. s. l. elevation than the neighbouring areas. Hence, it can be acknowledged that in this phase, the rivers were the most important factor in landscape shaping[14].

During the entire Holocene, the Tisza/Tisa and its tributaries constantly eroded the features that were created at the end of the Pleistocene, replacing them with alluvial deposits. This process would imply that the region holds many dead branches of the river systems. The Tisza/Tisa river occupied its present river course roughly ~7500 years ago (Fig. 3), creating a monotone landscape in its upper region in the Lowland, with only occasional outcrops of older volcanic features like the Tapai (164 m a. s. l.) and Tipet (179 m a. s. l.) "mountains"[15]. The major tributary of the Tisza/Tisa in this region, i.e. the Szamos/Someş river, occupied its present river course about the same time, namely in the Oak phase of the Holocene[16]. This would mean that up until this time it had an active role in shaping the geographical landscape, thus having a major influence on human activity in this the area. Some of the dead branches of the river are still visible today and still hold significant quantities of water. The Someş/Szamos plain (Pl. 1) developed further from a system of dead river branches to huge swamps due to the climate becoming wetter, thus contributing to an all-round increase of marshy areas in the region[17]. A good example of this process is the case of the Ecsedi/Ecedea Marshland; this area started to form during the Oak phase and reached its maximum size during the Beech phase of the Holocene[18]. Furthermore, it can be noted that low-lying areas were flooded regularly in spring. In most instances, the only areas that were safe from these floods were the persisting sandy outcrops of the Pleistocene. It becomes obvious that enduring human settlement and other human activities which were seasonal and based on yearly rotation (e.g. agriculture) could only take place on these features.

The lithology of the Middle Tisza/Tisa region (Pl. 2) is also varied, consisting of Pleistocene and Holocene deposits (loess mud, alluvial soils, clay and sand – Pl. 3). Due to the tectonic structural trenches, the geothermic gradient shows different values throughout the region, in some cases even reaching very high values, which resulted in the appearance of geothermal springs[19].

During the Hazel phase, the region witnessed the last major sand movements and landscape reshaping phenomenon. The most significant change in this region occurred during the transition from the Pleistocene to the Holocene when the Tisza/Tisa River turned southwards and, as a result, totally reorganised the hydrographical system and the landscape features. This reshaping consisted of alluvial depositions in the lower-lying regions and the gradual erosion of extended higher-lying regions (Pl. 2). These processes increased the number of horseshoe lakes[20] in the area and are also useful in the relative dating of these lakes, since younger river courses destroy older ones[21].

Specific features of the region appeared during the Beech phase, i.e. mounds commonly referred to as *kunhalom*[22]. Their origin can be explained by reference to either cultural or environmental factors: guard mounds and burial places (i.e. tumuli) or alluvial accumulations due to river activities[23].

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12 Borsy 1968, 223–233; Nagy, Félegyházi 2001.
13 Félegyházi 1998, 217–218.
14 Somogyi 1987, 26–27.
15 Cholnoky 1907; Gábris 1985; Gábris *et al.* 2001, 5–7.
16 Borsy, Félegyházi 1983, 123–124; Félegyházi 1998, 210–215.
17 Horváth 2002, 8.
18 Drăgulescu 2005, 44; Járainé Komlódi 1987, 44.
19 Gábris *et al.* 2001, 8–9.
20 Lakes that formed by river meanders cut off from the main river course, i.e. a dead branch. *Hung*. morotva.
21 Gábris 1970; Gábris *et al.* 2001, 8.
22 Cuman mound.
23 Borsy 1968, 148–150; Tóth 2003, 144–160.

The particular micro-region of the area is the Hortobágy (Pl. 1), which is a flat marshland consisting of loess mud and clay that to a large extent have become saline[24]. This process started in the drier Hazel phase of the Holocene and still continues today. Next to this large marshland in the floodplains of the Tisza/Tisa River, the massive amounts of spring water created wetlands that were no deeper than 1–2 m[25].

Another geographic factor shaping the landscape in this region was the wind in the dry Hazel phase that eroded the upper and thinner loess soil and rearranged the sand dunes[26].

The Lower Tisza/Tisa region starts from the mouth of the Körös/Criş River and runs along the western border of Bánság/Banat to the south (Pl. 1). It follows the course of the river, slightly widening in the south. The highest elevation of the region does not exceed 85 m a. s. l. During most of the Holocene, this region was a wetland and it is made up exclusively by deposits of this period, as this region was the lowest in the entire Tisza/Tisa Lowland and as such the alluvial deposits thicken from north to south (Pl. 3). As a result, most of the features are the creation of rivers and still waters, with only occasional evidence of features of aeolian origin. The region mainly consists of alluvial mud, meadow clay and loess, all alluvial deposits of the Tisza/Tisa and Maros/Mureş rivers[27].

A unique area of the Lowland is Nyírség (Pl. 1). Its characteristic high elevation (20–50 m higher than the surrounding regions) includes the highest elevation of the entire Tisza/Tisa Lowland (Hoportyó peak–183 m a. s. l.). The most common pedological feature of the area are dunes created by sand drifts[28], which cover vast areas, their average thickness ranging from a few centimetres up to half a metre. Beside the loess sand, the area has brown podzol soil (Pl. 3), the latter formed during the wetter phases of the Holocene, during its Oak and Beech phases[29].

The Nyírség is also the result of river depositions; it is basically an alluvial fan, created by the sinking of the surrounding areas and the change in direction of the river courses. This is partially the result of tectonic processes sinking parts of the adjacent areas[30]. The process ended about 10,000 years ago and due to the apparent lack of rivers, this area did not suffer major changes during the Fir-Birch phase of the Holocene, but in the following dry and warm Hazel phase, changes to the geographic landscape were more substantial. These changes were mostly due to aeolian factors and sandy areas that were not protected by vegetation or upper loess layers were rearranged by the climatic forces of the winds[31]. The wind dislocated huge amounts of sand, creating different types of sand dunes like parabola or fringe mounds (2–18 m high). These larger sandy features were segmented by smaller valleys with broad bases, where riverbeds flowed in the early Holocene[32].

Humidity	Holocene phases	BC	BP
dry	Subatlantic	500–present	2500–present
wet			
dry	Subboreal	3700–500	5700–2500
wet	Atlantic	6500–3700	8500–5700

Fig. 2. Alternation of wet and dry periods in the later Holocene in the Tisza/Tisa Lowland – the BC and BP entries are rough dates for orientation only (after Horváth 2002, fig. 1)

The vegetation changed massively during the wet and warm Oak phase, when woodland steppes took over, thus reducing the aeolian erosion of sandy features. It should be noted that the Oak and

[24] The process consists of the evaporation of higher ground water, which in turn facilitates the aggregation of natrium-salts in the ground, thus favouring salt resistant vegetation.
[25] Tóth 2003, 4–9.
[26] Gábris *et al.* 2001, 4–5.
[27] Gábris 1985, 395–400.
[28] Wind-blown sand dunes.
[29] Borsy 1961, 48–50; Somogyi 1987, 29.
[30] Lóki 2006, CD.
[31] Nyári*et al.* 2009, 452–453.
[32] Lóki 2006, CD.

Beech phases cannot be viewed as a continuous moist phase, but rather as alternations of wet and dry intervals (Fig. 2)[33]. The closing in of the forests in the region was only accentuated in the Beech phase; this expansion was only disturbed by human factors through deforestations and agriculture. From this time onwards, the impact of the anthropogenic factor on the environment and especially on the biosphere of the given habitat, is clearly recognisable[34]. One good example of aeolian and human induced erosion is the Bronze Age site of Hosszúpály which was covered by layers of windblown sand[35]. The dominant form of vegetation in the entire Tisza/Tisa Lowland is the woodland steppe, as a direct result of the intensification of grazing and agriculture in the beginning of the second Beech or Subatlantic phase[36].

Hajdúság (Pl. 1) is located to the southwest of Nyírség. This area of the Lowland is characterised by a thick 3–15 m loess table that has its highest point just above 160 m a. s. l. It might be said that, from a geomorphological perspective, it is the most stable region of the entire Lowland since it did not undergo major changes of any kind throughout the entire Holocene. The only processes that had a minor effect on the landscape of the region were those caused by erosion-derasion, such as the continuous sinking of some smaller valleys. Some of these valleys developed to lengths of up to 20 km (Vér valley, Brassó brook, Vidi brook). The relief of the Hajdúság is divided into two parts: the north-eastern region that is slightly higher and was described above and a lower-laying region that is almost perfectly flat. The latter also has kunhalmok features, which are usually 5–10 m high and measure 50–80 m in diameter[37].

The Körös/Criş region (Pl. 1), like Hajdúság, is an almost perfectly flat region with an average elevation of 90 m a. s. l. Its most peculiar feature is that in the late Pleistocene and early Holocene it was a major hydrographical knot, as rivers and streams (Tisza/Tisa, Szamos/Someş, Maros/Mureş and the three Körös/Criş rivers and also other smaller tributaries) from the north, northeast, south and east were mouthing in each other here[38]. A significant change of this landscape occurred at the end of the Fir-Birch phase, when the Tisza/Tisa and Szamos/Someş rivers changed their original south-flowing course to northwards and the Maros/Mureş was displaced towards the south (Fig. 3). As such, the alluvial fills of this region in its western and southern part are fairly young, dating to the second part of the Holocene[39].

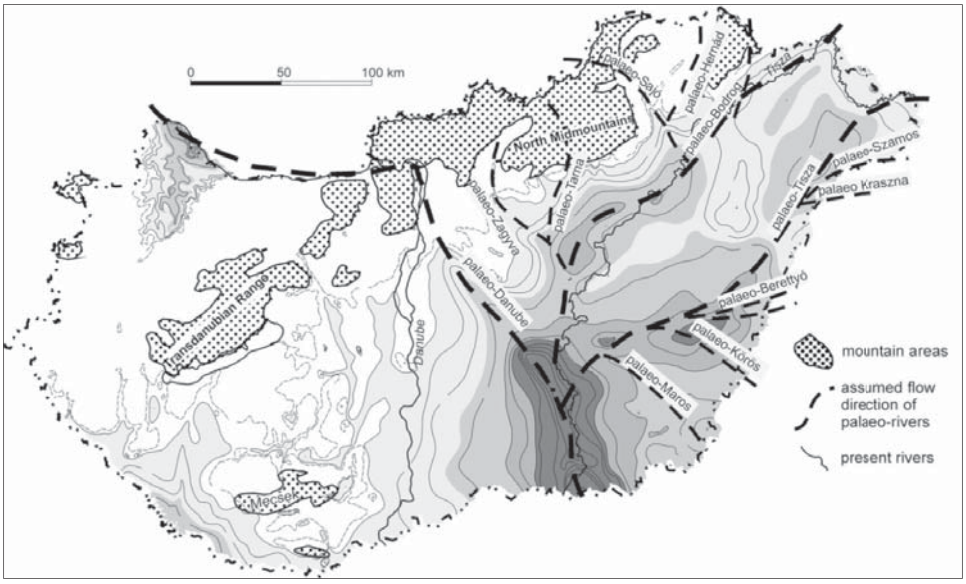

Fig. 3. Hypothetical river network in Tiszántúl before the Late Pleistocene and Early Holocene (after Nádor *et al.* 2007, fig. 4/b)

[33] Horváth 2002, 1–2, fig. 1.
[34] Gábris 2006, CD.
[35] Lóki 2006, CD.
[36] Nádor *et al.* 2011, 9, 13.
[37] Tóth 2003, 150–151.
[38] Gábris, Nádor 2007, 2774–2780.
[39] Nádor *et al.* 2011, 12.

Ever since this major change, the geographic landscape has not changed much: marshes, swamps and wetlands increased in size and dominated the area for millennia. As the wetlands were a constant presence, the slightly higher features (e.g. levče[40]) were the only available spots for human habitation, being the only areas that were not flooded. This view is further strengthened by the exclusive presence of the kunhalmok on these elevations[41].

The Körös/Criş-Maros/Mureş plain (Pl. 1) is also an alluvial fan created by the processes previously described. Due to this, the geomorphology of the region consists of sand, clay and loess mud and rivers and winds were the factors that shaped this landscape[42]. In these instances, it should be mentioned that the Maros/Mureş River influenced the face of this geographic landscape to a larger extent, whereas the Körös/Criş River contributed only on a smaller degree. The highest-lying areas are found in the south-central part and the surrounding is slightly lower and forming almost perfect plains. Cut off meanders (dead branches) are not as common as in other areas, but the presence of kunhalmok is noted here as well[43].

Flora

At the end of the Pleistocene and the beginning of the Holocene (especially in the Preboreal phase), oak (*Quercus gen.*) and hornbeam (*Carpinus gen.*) woods were characteristic for the higher lying regions of the Apuseni mountains, west of the Great Hungarian plain, whereas the Lowland itself had vegetation specific to gallery forest steppes[44]. This means that trees were usually found in areas adjacent to rivers. The most common species were ash (*Fraxinus gen.*), fir (*Abies gen.)* and birch (*Betula gen.*) (Fig. 4), whereas the rest of the area would have had high shrubs like the somlatha (*Ephedra distachya* or *E. vulgaris*)[45]. This phase was characterised by a somewhat colder climate and also by the presence of remnant spots of large forests of pine (*Pinus gen.*) and birch (*Betula gen.*) with only the occasional occurrence of deciduous species[46]. The appearance of birch (*Betula gen.*) and in some cases of poplar (*Populus gen.*) is the starting point of a process called the *primary secular succession*,[47] where in the barren landscape and windy environment, the flora gradually gains ground by plants tolerant of the harsh climate. Furthermore, it is in this early phase that the process of *natural eutrophication*[48] begins, through the gradual increase of tangles (*Laminaria gen.*), green algae (*Charophyta gen.*), hornworts (*Ceratophyllales gen.*), members of the pondweed family (*Potamogetonaceae fam.*) and buttercups/spearworts/water crowfoots (*Ranunculus gen.*) populations. This expansion culminates in the late Holocene, as seen below in Fig. 4[49].

In the Boreal phase, the climate is somewhat warmer and drier and as a direct result, there is a massive increase in hazel (*Corylus gen.*) population in the Apuseni Mountains (Fig. 4)[50]. In contrast, this species is almost completely absent in the Tisza/Tisa Lowland and only smaller patches of oak (*Quercus gen.*), ash (*Fraxinus gen.*), lime (*Tilia gen.*), maple (*Acer gen.*) and sweet chestnut (*Castanea sativa*), with occasional pine (*Pinus gen.*) associations are present, due to the low precipitation levels and dry climate. This vegetation is preserved today in clusters of remnant plants of flowery pampas, small pasque flower (*Pulsatilla pratensis subsp. hungarica*), *Adonis X hybrida Wolf syn. A. transsylvanica*, bowing sage (*Salvia nutans*), *Sternbergia gen.* and rare steppe trees e.g. *Aceri tatarico – Quercetum*[51]. The vegetation of the area is best described as meadow steppes[52].

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40 Higher-lying regions between remnant river courses.
41 Tóth 2003, 150–151.
42 Somogyi 1987, 31.
43 Nádor *et al.* 2007, 186.
44 Járainé Komlódi 1968, 200–201; Sümegi *et al.* 2008, 29–30.
45 Bajzáth 1996, 10–11.
46 Zólyomi 1952, 493–495.
47 The process by which a barren and harsh landscape is first "settled" by plants that are resistant to these elements and as such facilitate the spread of other less resistant ones, which then eventually come to dominate the flora and start a *secondary secular succession* for other species and so on – personal communication with Katalin-Emilia Daróczi.
48 The process by which mostly still waters are overwhelmed by plants, directly resulting in the disappearance from these environments of most non-unicellular animal life – personal communication with Katalin-Emilia Daróczi.
49 Bajzáth 1996, 11–12; Járainé Komlódi 1987, 38.
50 Zólyomi 1936, 515–516.
51 Bajzáth 1996, 13; Endangered, remnant oak species from the Boreal steppes specially adapted for loess areas.
52 Magyari *et al.* 2010, 925–926.

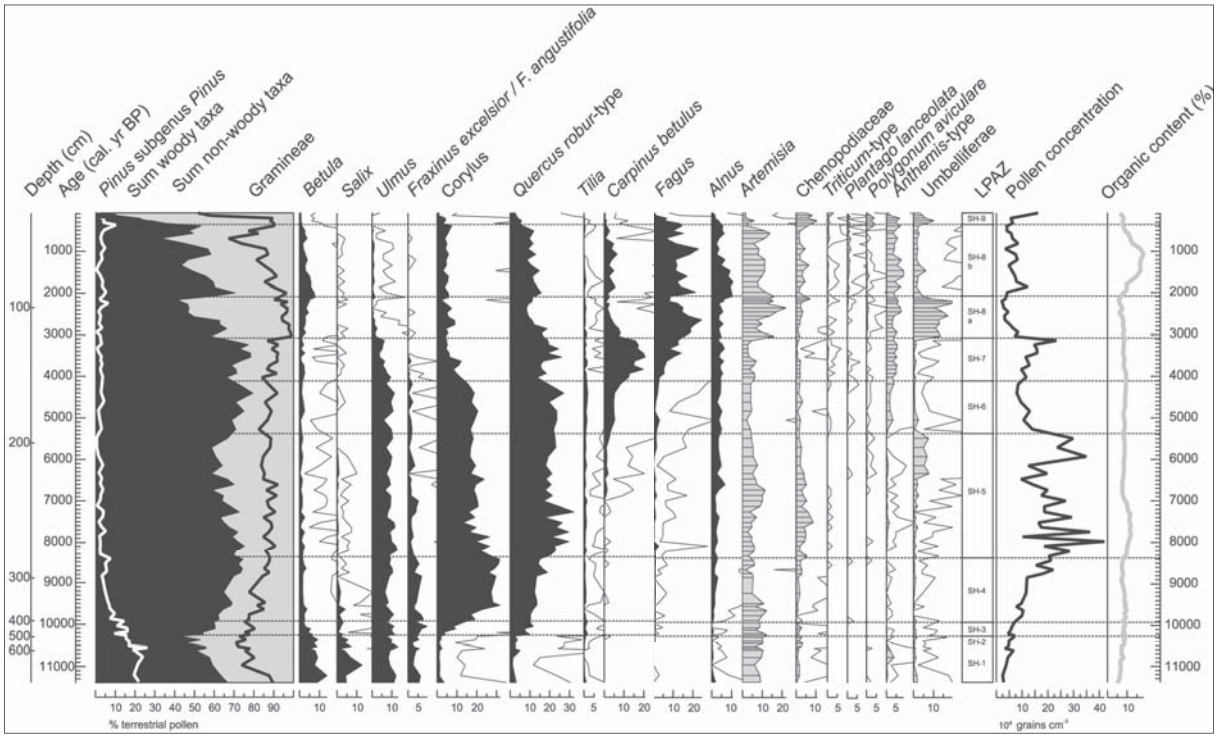

Fig. 4. Pollen diagram showing the Holocene flora development in the northern Tisza/Tisa Lowland (after Magyari *et al.* 2010, fig. 5a)

At the start of the Atlantic, the Tisa/Tisza Lowland was mostly covered with woodlands with a predominant population of oak (*Convallaria-Quercetem roboris*, *Festico-Quercetem roboris*) and in some places different species of hazel (*Corylus gen.*) (Fig. 4). In the beginning of the phase, the climate was warm and had plenty of precipitations, much like today's oceanic climate[53]. The gallery forests along rivers and marshlands gained much ground; along rivers they mostly consisted of different species of sallow (*Salix gen.*), poplar (*Populus gen.*) and alder (*Alnus gen.*), whereas ferns grew in marshlands (e.g. *Polypodiopsida cls.*)[54]. The somewhat higher-lying areas, like the alluvial fans and some outcropping Pleistocene remnants, had gallery forests of oak (*Quercus gen.*), ash (*Fraxinus gen.*), elm (*Ulmus gen.*) with brush and twining plants like southern adderstongue (*Ophioglossum vulgatum*) and wild grape (*Vitis vinifera subsp. sylvestris*). Still waters had flora specific to this habitat and especially in slightly warmer phases they consisted of water-plantains (*Alisma gen.*) and different species of the *Sagittaria* and *Nymphoides* geni[55]. In certain warmer periods of this Holocene phase, species of holly (*Ilex gen.)* and ivy (*Hedera gen.*) were more common in the associations of the flora[56]. It is at the beginning of this phase that the first and rarely occurring instance of *Triticum monococcum* is documented[57]. Moreover, it was at this point that the process of deforestation of the woodland steppes started and in a later phase directly resulted in the creation of barren steppes – the so-called *kultúrpuszta*[58].

In the following Subboreal phase, the oak woodlands lost ground to hornbeam species (*Carpinus gen.*) with different species of beech (*Fagus gen.*) occurring more often than before (Fig. 4). The climate at the beginning of this phase was somewhat drier and became wetter later on[59]. The gallery forests of oak (*Quercus gen.*), ash (*Fraxinus gen.*) and elm (*Ulmus gen.*) along the rivers, mentioned above, reached their maximum extent in this phase. These associations of sand-loving oak species (*Convallaria-Quercetem roboris* and *Querco-Carpinetum hungaricum*) with occasional appearances of beech (*Fagus*

53 Bajzáth 1996, 14; Willis *et al.* 1995, 37.
54 Járainé Komlódi 1987, 41.
55 Járainé Komlódi 1966, 198.
56 Járainé Komlódi 1968, 202; Soó 1959, 4–6.
57 Járainé Komlódi 1987, 45.
58 Járainé Komlódi 2000, 44; Steppes created not by natural processes but by human intervention, especially by deforestation of woodland steppes.
59 Bajzáth 1996, 15.

gen.) are very similar to the ones found today[60]. Some elements of human intervention are already visible from this phase onward, although not on the scale seen in the coming phase. These activities favour plants used to disturbances[61] such as weeds of the smartweed family (*Polygonaceae fam.*), docks and sorrels (*Rumex gen.*)[62]. In the pollen diagrams, the amount of *Triticum monococcum* only became significant after the turn of the 1st millennium B.C., whereas rye (*secale cereale*) is documented almost a millennium earlier[63].

In the final phase of the Holocene, the oak (*Quercus gen.*) retreated mostly to the northern part of the Tisza/Tisa Lowland. Moreover, the hornbeam (*Carpinus gen.*) population was affected by human exploitation (Fig. 4) and their place was taken by different graminoids and weed, most likely due to the same factors[64]. Water plants further increased in variety and population with the propagation of species like some carnivorous plants (*Utricularia batrachium*), yellow iris (*Iris pseudacorus*), or flowering rush (*Butomus umbellatus*)[65].

Fauna

At the beginning of the Holocene, large mammals like the aurochs (*Bos primigenius primigenius*), red deer (*Cervus elaphus*), beaver (*Castoridae fam.*) and grey wolf (*Canis lupus*) are documented in the Lowland. Different species of bats (*Myotis nattereri* or *Myotis bechsteinii*) and voles (*Chionomys gen.* to lesser extent and more often *Myodes gen.*) were also present as the steppes gradually took over. The same can be said about certain types of snails (*Vallonia costata*, *Granaria frumentum*, *Isognomostoma isognomostoma*) that were accustomed to this environment[66]. Areas that slowly started turning into swamps and marshes attracted amphibious species like toads (*Anura gen.*), European spadefoot toads (*Pelobates gen.*) and true frogs (*Ranidae fam.*). Very few animal species of the previous phase still lingered in low numbers at this time: reindeer (*Rangifer tarandus*), the ancestor of today's European ground squirrel (*Citellus citelloides*), steppe pika (*Ochotona pusilla*) and southern birch mouse (*Sicista subtilis*)[67]; at the end of the Pleistocene, 14 of the 43 known mammal species disappeared from the area (Fig. 5) due to the increase of 5–6 °C in the annual temperature at the start of the Preboreal[68].

The populations of some big mammals, aurochs (*Bos primigenius primigenius*), wild boar (*Sus scrofa*), European roe deer (*Capreolus capreolus*), wild horse (*Equus ferus*) and Onager (*Equus hemonius*) reached their highest numbers in the Atlantic phase. Cover-loving rodents, lesser white-toothed shrew (*Crocidura suaveolens*), bicoloured white-toothed shrew (*Crocidura leucodon*) and wood mouse (*Apodemus sylvaticus*) replaced the previous species that were specific to the gradually retreating steppes[69]. Especially the small vertebrates were affected later on in this phase by human exploitation of the environment. A very good example of this is a 70% replacement of woodland voles (*Microtus pinetorum*) with common voles (*Microtus arvalis*)[70]. Another instance of human impact on the fauna in the Lowland is the appearance and sudden spread of certain "anthropophil" species, e.g. striped field mouse (*Apodemus agrarius*)[71].

This process, called the *anthropisation of the fauna*[72], intensified in the coming Subboreal phase, only to culminate in the last phase of the Holocene[73]. Some species, like the aurochs (*Bos primigenius primigenius*), wisent (*Bison bonasus*), beaver (*Castoridae fam.*), brown bear (*Ursus arctos*), Eurasian

60 Járainé Komlódi 1966, 198.
61 Bajzáth 1996, 15.
62 Járainé Komlódi 1969, 49–51.
63 Járainé Komlódi 1987, 45.
64 Somogyi 1987, 30–31.
65 Járainé Komlódi 1966, 199–200.
66 Fűköh 1987, 49–50.
67 Gasparik 1997, 17.
68 Kordos 1987, 17.
69 Gasparik 1997, 17–18.
70 Kordos 1977.
71 Gasparik 1997, 19.
72 Part of a larger process of *secular succession*, through which humans had an impact on the environment; human intervention thus became another force that shaped the environment.
73 Fűköh 1987, 53.

lynx (*Lynx lynx*), grey wolf (*Canis lupus*) and golden jackal (*Canis aureus*) disappeared entirely from the Lowland. The last three species would reappear later on[74].

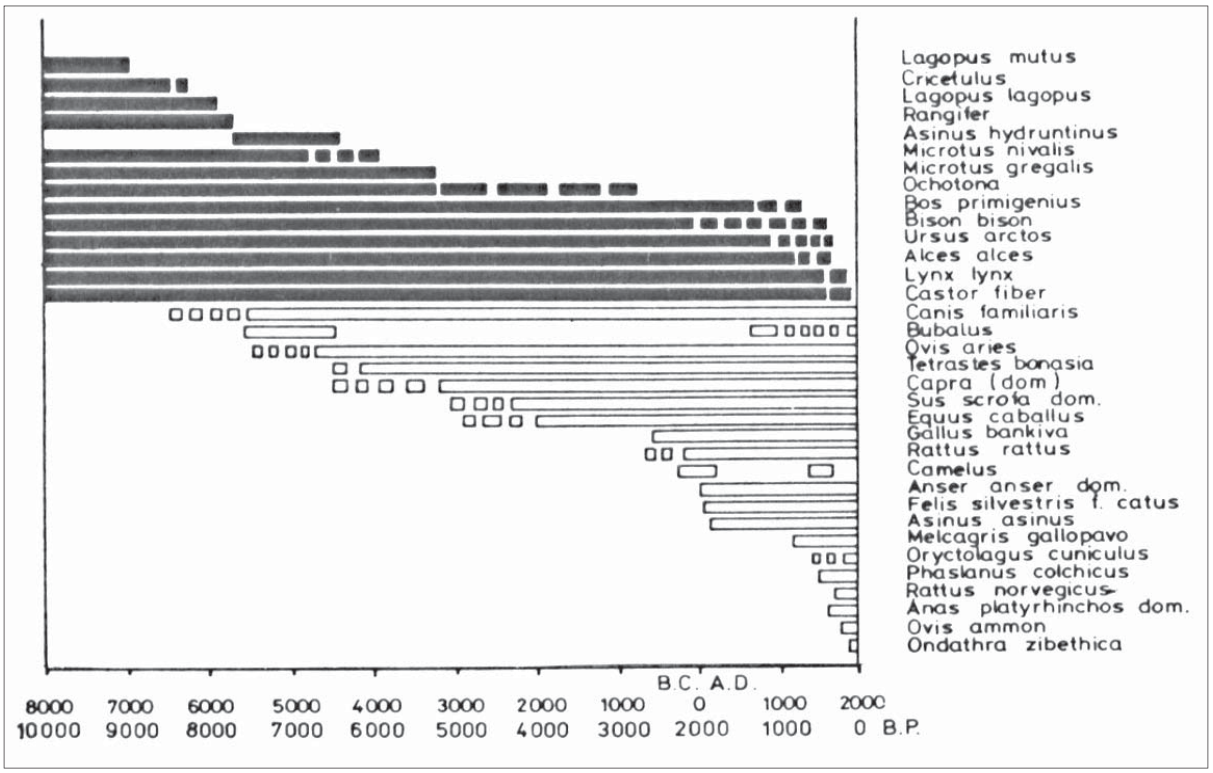

Fig. 5. Vertebrate animals that went extinct and disappeared (dark) and appeared (light) – the BC and BP entries are rough dates for orientation only (after Kordos 1987, fig. 5)

Climate

At the start of the Holocene, a steady growth in the temperature of the warmest month (MTW) of ~2–3 °C degrees is clearly recognisable; in terms of precipitation, it was characterised as a humid period. At the turn of the Boreal, there was a marked increase in the MTW of ~4–6 °C, which lasted throughout the next phase. At the beginning of the Atlantic, the climate was humid again but in its second half and in the first of the next one it was dry. At the beginning of the Subboreal, the MTW decreased by ~ 3–5 °C and from this time onwards and throughout the Subatlantic, temperatures were more or less stable. The second half of the Subboreal had a humid climate (Fig. 6)[75].

As a final note, we may state that further multidisciplinary research is needed for the entire eastern part of the Carpathian Basin, correlating data from different branches of geography, biology and history. Such research would be beneficial to all participating parties and would lead to a better understanding not only of past human-environment relations but would also help explore the impact of such environmental changes on human communities with obvious implications of such relations for present day societies[76]. A good example of how geography can interact with archaeology is the case of river and still water banks. Archaeology through its research of human habitation could infer more or less precisely the exact location of the banks, as human housing would be placed either on the shores or it would be of a lacustrine type[77].

[74] Gasparik 1997, 19.

[75] Gábris, Nádor 2007, fig. 11.

[76] Rowland 2008; A remarkable multidisciplinary project and a good example for such an approach was finalised just recently in the Lowland at the site of Bátorliget (Deli, Sümegi 2004; Juhász, Willis 2004a; Juhász, Willis 2004b; Kordos 2004a; Kordos 2004b; Rudner 2004; Rudner *et al* 2004; Sümegi 2004; Sümegi, Deli 2004; Sümegi, Gulyás 2004).

[77] Horváth 2002, 10–11.

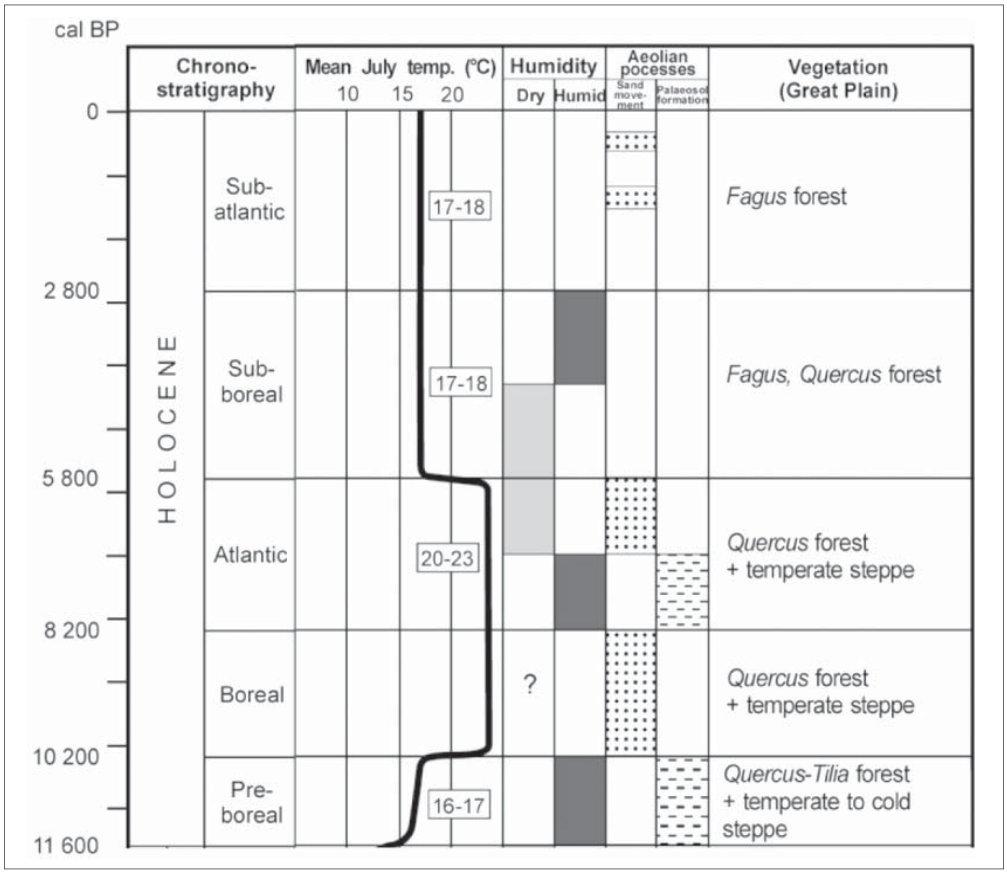

Fig. 6. Environmental changes in the Tiszántúl during the Holocene (after Nádor *et al.* 2007, fig. 9)

The term *ecozone* (Pl. 5) from biology needs to be slightly adapted for use in archaeology and for the aims of the present study. In the natural sciences, this term refers to one of the eight largest biogeographic regions of the planet. The principle of defining these regions is based on a specific association of flora, fauna, climate and geomorphology. These principles of definition can be adapted to suit the needs of archaeology and the present study. An eco-zone is defined as a specific combination of environmental variables (vegetation, animals, geographic landscape and climate). Since it has a somewhat modified meaning, as of that used in ecology, a renaming of the concept within archaeology seems necessary in order to avoid confusion: instead, the term *archeco-zone* is used. Applying the ecozone principles to the above data and information, several eco-zones can be distinguished within the area under study. The unique associations of variables have been determined with the help of ArcGIS 10. The superposition of several layers of fauna, geomorphology and climate during the Holocene has lead to the identification of five major and fifteen mid-sized archeco-zones. The naming of the archecozones was preserved from the wider study conducted in the Eastern Carpathian Basin[78].

Archeco-zone D (Pl. 5) is a narrow strip alongside the course of the Tisza/Tisa River, literary defined by its floodplain in various periods. Due to its relation to neighbouring archeco-zones this will not be considered a separate archeco entity and as such will be integrated in the adjoining other eco-zones.

Archeco-zone E (Pl. 5) is situated in the Tisza/Tisa Lowland in the regions located at slightly higher elevations, namely on the alluvial fans of Nyírség (*archeco-zone E1*) and that of the Maros/Mureş-Körös/Criş plain (*archeco-zone E2*). It is different from archeco-zone F (below) mainly in its hydrology, since these areas have a lower ground water table due to their elevations and are less well irrigated; swamps and floods are less frequent. Aquatic vegetation is still high, but lower than in archeco-zone F, while meadow steppes are the most common feature of the zone throughout most of the Holocene.

Archeco-zone F (Pl. 5) is in the Tisza/Tisa Lowland as well and consists of the well-watered, lower regions. Swamps, floods and hoof-shaped lakes are common in this zone. The northernmost zone (*archeco-zone F1*) is mostly located in the Someş/Szamos plain. It is one of the lowest regions in the

[78] Daróczi 2011.

area; it had a cooler climate in certain periods of the Holocene and a mixture of meadow steppes and woodlands and humidity was higher than in most regions of study area. The second zone (*archeco-zone F2*) is located in between archeco-zones E1 and E2, mainly in the Körös/Criş plain. As in the case of the previous archeco-zone, it is a well-watered region with plenty of swamps, dead river branches and seasonal floods. Gallery forests and steppes are the dominant vegetation feature during most of the Holocene. The southernmost region (*archeco-zone F3*) is located in the Banat Lowland and the low, eastern areas adjacent to it. It is somewhat drier and slightly warmer than other regions in any given period. Its hydrology and vegetation is similar to the other areas of this archeco-zone.

Tibor-Tamás Daróczi
Institut für Ur- und Frühgeschichte und Vorderasiatische Archäologie
Ruprecht-Karls-Universität Heidelberg
Heidelberg, DE
csibike3@yahoo.com

APPENDIX 1

REFERENCE SOIL GROUPS

AN

ANDOSOL

"Andosols accommodate the soils that develop in volcanic ejecta or glasses under almost any climate (except under hyperarid climate conditions). However andosols may also develop in other silicate-rich materials under acid weathering in humid and perhumid climates. Many Andosols belong to: Kuroboku (Japan); Andisols (United States of America); Andosols and Vitrisols (France); and volcanic ash soils.

Connotation: Typically black soils of volcanic landscapes; from Japanese *an*, black and *do*, soil.

Parent material: Volcanic glasses and ejecta (mainly ash, but also tuff, pumice, cinders and others) or other silicate-rich material.

Environment: Undulating from mountainous, humid and arctic to tropical regions with a wide range of vegetation.

Profile development: Rapid weathering of porous volcanic ejecta or glasses results in accumulation of stable organo-mineral complexes or short-range-order minerals such as allophane, imogolite and ferrihydrite. Acid weathering of other silicate-rich material in humid and perhumid climates also leads to the formation of stable organo-mineral complexes"[79].

AR

Arensol

"Arenosols consist of sandy soils, including both soils developed in residual sands after in situ weathering of quartz-rich sediments or rock and soils developed in recently deposited sands such as dunes in deserts and beach lands. Corresponding soils in other classification systems include Psamments of the US Soil Taxonomy and the sols minéraux bruts and sols peu évolués in the French classification system of the CPCS (1967). Many Arenosols belong to Arenic Rudosols (Australia), Psammozems (Russian Federation) and Neossolos (Brazil).

Connotation: Sandy soils; from Latin arena, sand.

Parent material: Unconsolidated, in places calcareous, translocated materials of sandy texture; relatively small areas of Arenosols occur in extremely weathered siliceous rock.

Environment: From arid to humid and perhumid and from extremely cold to extremely hot; landforms vary from recent dunes, beach ridges and sandy plains to very old plateaus; the vegetation ranges from desert over scattered vegetation (mostly grassy) to light forest.

Profile development: In the dry zone, there is little or no soil development.

[79] Fao 2006, 70.

Arenosols in the perhumid tropics tend to develop thick albic eluviation horizons (with a spodic horizon below 200 m from soil surface) whereas most Arenosols of the humid temperate zone show signs of alteration or transport of humus, Fe or clay, but too weak to be diagnostic"[80].

CH

Chernozem

"Chernozems accommodate soils with a thick black surface layer that is rich in organic matter. The Russian soil scientist Dokuchaev coined the name Chernozem in 1883 to denote the typical zonal soil of the tall grass steppes in continental Russia. Many Chernozems correspond to: Calcareous Black Soils and Kalktschernoseme (Germany), Chernosols (France), Eluviated Black Soils (Canada), several suborders (especially Udolls) of the Mollisols (United States of America) and Chernossolos (Brazil).

Connotation: Black soils rich in organic matter; from Russian chernij, black and zemlja, earth or land.

Parent material: Mostly aaeolian and re-washed aaeolian sediments (loess).

Environment: Regions with a continental climate with cold winters and hot summers, which are dry at least in the late summer; in flat to undulating plains with tall-grass vegetation (forest in the northern transitional zone).

Profile development: Dark brown to black mollic surface horizon, in many cases over a cambic or argic subsurface horizon; with secondary carbonates or a calcic horizon in the subsoil"[81].

CM

Cambisol

"Cambisols combine soils with at least an incipient subsurface soil formation. Transformation of parent material is evident from structure formation and mostly brownish discoloration, increasing clay percentage and/or carbonate removal. Other soil classification systems refer to many Cambisols as: Braunerden (Germany), Sols bruns (France), Brown soils/Brown Forest soils (older US systems), or Burozems (Russian Federation). FAO coined the name Cambisols, adopted by Brazil (Cambissolos); US Soil Taxonomy classifies most of these soils as Inceptisols.

Connotation: Soils with at least the beginnings of horizon differentiation in the subsoil evident from changes in structure, colour, clay content or carbonate content; from Italian cambiare, to change.

Parent material: Medium and fine-textured materials derived from a wide range of rocks.

Profile development: Cambisols are characterized by slight or moderate weathering of parent material and by absence of appreciable quantities of illuviated clay, organic matter, Al and/or Fe compounds.

Environment: Level to mountainous terrain in all climates; wide range of vegetation types"[82].

FL

Fluvisol

"Fluvisols accommodate genetically young, azonal soils in alluvial deposits. The name Fluvisols may be misleading in the sense that these soils are not confined only to river sediments (Latin fluvius, river); they also occur in lacustrine and marine deposits. Many Fluvisols correlate with: Alluvial soils (Russian Federation), Hydrosols (Australia), Fluvents and Fluvaquents (United States of America), Auenböden, Marschen, Strandböden, Watten and Unterwasserböden (Germany), Neossolos (Brazil) and Sols minéraux bruts d'apport alluvial ou colluvial or Sols peuévolués non climatiques d'apport alluvial ou colluvial (France).

Connotation: Soils developed in alluvial deposits; from Latin fluvius, river.

Parent material: Predominantly recent, fluvial, lacustrine and marine deposits.

Environment: Alluvial plains, river fans, valleys and tidal marshes on all continents and in all climate zones; many Fluvisols under natural conditions are flooded periodically.

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80 Fao 2006, 72.
81 Fao 2006, 76.
82 Fao 2006, 75.

Profile development: Profiles with evidence of stratification; weak horizon differentiation but a distinct topsoil horizon may be present. Redoximorphic features are common, in particular in the lower part of the profile"[83].

HS

Histosol

"Histosols are comprised of soils formed in organic material. These vary from soils developed in predominantly moss peat in boreal, arctic and subarctic regions, via moss peat, reeds/sedge peat (fen) and forest peat in temperate regions to mangrove peat and swamp forest peat in the humid tropics. Histosols are found at all altitudes, but the vast majority occurs in lowlands. Common names are peat soils, muck soils, bog soils and organic soils. Many Histosols belong to: Moore, Felshumusböden and Skeletthumusböden (Germany); Organosols (Australia); Organossolos (Brazil); Organic order (Canada); and Histosols and Histels (United States of America).

Connotation: Peat and muck soils; from Greek histos, tissue.

Parent material: Incompletely decomposed plant remains, with or without admixtures of sand, silt or clay.

Environment: Histosols occur extensively in boreal, arctic and subarctic regions. Elsewhere, they are confined to poorly drained basins and depressions, swamp and marshlands with shallow groundwater and highland areas with a high precipitation–evapotranspiration ratio.

Profile development: Mineralization is slow and transformation of plant remains through biochemical disintegration and formation of humic substances create a surface layer of mould with or without prolonged water saturation. Translocated organic material may accumulate in deeper tiers but is more often leached from the soil"[84].

LV

Luvisol

"Luvisols are soils that have a higher clay content in the subsoil than in the topsoil as a result of pedogenetic processes (especially clay migration) leading to an argic subsoil horizon. Luvisols have high-activity clays throughout the argic horizon and a high base saturation at certain depths. Many Luvisols are or were known as: Texturalmetamorphic soils (Russian Federation), sols lessivés (France), Parabraunerden (Germany), Chromosols (Australia), Luvissolos (Brazil), Grey-Brown Podzolic soils (earlier terminology of the United States of America) and Alfisols with high-activity clays (US Soil Taxonomy).

Connotation: Soils with a pedogenetic clay differentiation (especially clay migration) between a topsoil with a lower and a subsoil with a higher clay content, high-activity clays and a high base saturation at some depth; from Latin luere, to wash.

Parent material: A wide variety of unconsolidated materials including glacial till and aaeolian, alluvial and colluvial deposits.

Environment: Most common in flat or gently sloping land in cool temperate regions and in warm regions (e.g. Mediterranean) with distinct dry and wet seasons.

Profile development: Pedogenetic differentiation of clay content with a lower content in the topsoil and a higher content in the subsoil without marked leaching of base cations or advanced weathering of high-activity clays; highly leached Luvisols might have an albic eluviation horizon between the surface horizon and an argic subsurface horizon, but lack the albeluvic tonguing of Albeluvisols."[85].

PD

Podzoluvisol

"From Podzols and Luvisols"[86].

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83 Fao 2006, 79–80.
84 Fao 2006, 82.
85 Fao 2006, 86.
86 Fao 1988, 17.

PH

Phaeozem

"Phaeozems accommodate soils of relatively wet grassland and forest regions in moderately continental climates. Phaeozems are much like Chernozems and Kastanozems but are leached more intensively. Consequently, they have dark, humus-rich surface horizons that, in comparison with Chernozems and Kastanozems, are less rich in bases. Phaeozems may or may not have secondary carbonates but have a high base saturation in the upper metre of the soil. Commonly used names for many Phaeozems are: Brunizems (Argentina and France), Dark grey forest soils and Leached and podzolizedchernozems (former Soviet Union), Tschernoseme (Germany), Duskyred prairie soils (older classification of the United States of America), Udolls and Albolls (US Soil Taxonomy) and Phaeozems (including most of the former Greyzems) (FAO).

Connotation: Dark soils rich in organic matter; from Greek phaios, dusky and Russian zemlja, earth or land.

Parent material: Aaeolian (loess), glacial till and other unconsolidated, predominantly basic materials.

Environment: Warm to cool (e.g. tropical highlands) moderately continental regions, humid enough that there is, in most years, some percolation through the soil, but also with periods in which the soil dries out; flat to undulating land; the natural vegetation is grassland such as tall-grass steppe and/or forest.

Profile development: A mollic horizon (thinner and in many soils less dark than in Chernozems), mostly over a cambic or argic subsurface horizon"[87].

PZ

Podzol

"Podzols are soils with a typically ash-grey upper subsurface horizon, bleached by loss of organic matter and iron oxides, on top of a dark accumulation horizon with brown, reddish or black illuviated humus and/or reddish Fe compounds. Podzols occur in humid areas in the boreal and temperate zones and locally also in the tropics. The name Podzol is used in most national soil classification systems; other names for many of these soils are: Spodosols (China and United States of America), Espodossolos (Brazil) and Podosols (Australia).

Connotation: Soils with a spodic illuviation horizon under a subsurface horizon that has the appearance of ash and is covered by an organic layer; from Russian pod, underneath and zola, ash.

Parent material: Weathering materials of siliceous rock, including glacial till and alluvial and aeolian deposits of quartzite sands. Podzols in the boreal zone occur on almost any rock.

Environment: Mainly in humid temperate and boreal regions of the Northern Hemisphere, in level to hilly land under heather and/or coniferous forest; in the humid tropics under light forest.

Profile development: Complexes of Al, Fe and organic compounds migrate from the surface soil downwards with percolating rainwater. The metal–humus complexes precipitate in an illuvialspodic horizon; the overlaying eluvial horizon remains bleached and is in many Podzols an albic horizon. This is covered by an organic layer whereas dark mineral topsoil horizons are absent in most boreal Podzols"[88].

RG

Regosol

"Regosols form a taxonomic remnant group containing all soils that could not be accommodated in any of the other RSGs. In practice, Regosols are very weakly developed mineral soils in unconsolidated materials that do not have a mollic or umbric horizon, are not very shallow or very rich in gravels (Leptosols), sandy (Arenosols) or with fluvic materials (Fluvisols). Regosols are extensive in eroding lands, particularly in arid and semi-arid areas and in mountainous terrain. Many Regosols correlate with soil taxa that are marked by incipient soil formation such as: Entisols (United States of

[87] Fao 2006, 88.
[88] Fao 2006, 91.

America), Rudosols (Australia), Regosole (Germany), Sols peu évolués régosoliques d'érosion or even Sols minéraux bruts d'apport éolien ou volcanique (France) and Neossolos (Brazil).

Connotation: Weakly developed soils in unconsolidated material; from Greek rhegos, blanket.

Parent material: unconsolidated, finely grained material.

Environment: All climate zones without permafrost and at all elevations. Regosols are particularly common in arid areas (including the dry tropics) and in mountain regions.

Profile development: No diagnostic horizons. Profile development is minimal as a consequence of young age and/or slow soil formation, e.g. because of aridity"[89].

SN

Solonetz

"Solonetz are soils with a dense, strongly structured, clayey subsurface horizon that has a high proportion of adsorbed Na and/or Mg ions. Solonetz that contain free soda (Na2CO3) are strongly alkaline (field pH > 8.5). Common international names are alkali soils and sodic soils. In national soil classification systems many Solonetz correlate with: Sodosols (Australia), the Solonetzic order (Canada), various Solonetz types (Russian Federation) and to the natric Great Groups of several Orders (United States of America).

Connotation: Soils with a high content of exchangeable Na and/or Mg ions; from Russian sol, salt.

Parent material: Unconsolidated materials, mostly fine-textured sediments.

Environment: Solonetz are normally associated with flat lands in a climate with hot, dry summers, or with (former) coastal deposits that contain a high proportion of Na ions. Major concentrations of Solonetz are in flat or gently sloping grasslands with loess, loam or clay in semi-arid temperate and subtropical regions.

Profile development: A black or brown surface soil over a natric horizon with strong round-topped columnar structure elements. Well-developed Solonetz can have an albic eluviation horizon (beginning) directly over the natric horizon. A calcic or gypsic horizon may be present below the natric horizon. Many Solonetz have a field pH of about 8.5, indicative of the presence of free sodium carbonate"[90].

VR

Vertisol

"Vertisols are churning, heavy clay soils with a high proportion of swelling clays. These soils form deep wide cracks from the surface downward when they dry out, which happens in most years. The name Vertisols (from Latin vertere, to turn) refers to the constant internal turnover of soil material. Common local names for many Vertisols are: black cotton soils, regur (India), black turf soils (South Africa), margalites (Indonesia), Vertosols (Australia), Vertissolos (Brazil) and Vertisols (United States of America).

Connotation: Churning, heavy clay soils; from Latin vertere, to turn.

Parent material: Sediments that contain a high proportion of swelling clays or products of rock weathering that have the characteristics of swelling clays.

Environment: Depressions and level to undulating areas, mainly in tropical, subtropical, semi-arid to sub-humid and humid climates with an alternation of distinct wet and dry seasons. The climax vegetation is savannah, natural grassland and/or woodland.

Profile development: Alternate swelling and shrinking of expanding clays results in deep cracks in the dry season and formation of slickensides and wedge-shaped structural elements in the subsurface soil. Gilgaimicrorelief is peculiar to Vertisols although not commonly encountered"[91].

*

[89] Fao 2006, 92.
[90] Fao 2006, 94.
[91] Fao 2006, 97–98.

b	*cambic*	"Having a cambic horizon starting within 50 cm of the soil surface"[1]. "From late Latin camblare, change; connotative of change in colour, structure or consistence"[2].
c	*calcaric*	"Having calcaric material between 20 and 50 cm from the soil surface or between 20 cm and continuous rock or a cemented or indurated layer, whichever is shallower"[3]. "From Latin calcium; connotative of the presence of calcium carbonate"[4].
d	*dystric*	"Having a base saturation (by 1 M NH4OAc) of less than 50 percent in the major part between 20 and 100 cm from the soil surface or between 20 cm and continuous rock or a cemented or indurated layer, or, in Leptosols, in a layer, 5 cm or more thick, directly above continuous rock"[5]. "From Greek dys, ill, dystrophic, infertile; connotative of low base saturation"[6].
e	*eutric*	"Having a base saturation (by 1 M NH4OAc) of 50 percent or more in the major part between 20 and 100 cm from the soil surface or between 20 cm and continuous rock or a cemented or indurated layer, or, in Leptosols, in a layer, 5 cm or more thick, directly above continuous rock"[7]. "From Greek eu, good, eutrophic, fertile; connotative of high base saturation"[8].
f	*ferric*	"Having a ferric horizon starting within 100 cm of the soil surface"[9]. "From Latin ferrum, iron; connotative of ferruginous mottling or an accumulation of iron"[10].
g	*gleyic*	"Having within 100 cm of the mineral soil surface in some parts reducing conditions and in 25 percent or more of the soil volume a gleyic colour pattern"[11]. "From Russian local name gley, mucky soil mass"[12].
h	*haplic*	"Having a typical expression of certain features (typical in the sense that there is no further or meaningful characterization) and only used if none of the preceding qualifiers applies"[13]. "From Greek haplos, simple; connotative of soils with a simple, normal horizon sequence"[14].
j	*gypsic*	"Having a gypsic horizon starting within 100 cm of the soil surface"[15]. "From Latin gypsum; connotative of an accumulation of gypsum"[16].
k	calcic	"Having a calcic horizon or concentrations of secondary carbonates starting within 100 cm of the soil surface"[17]. "From Latin calcis, lime; connotative of accumulation of calcium carbonate or gypsum, or both"[18].
m	*mollic*	"Having a mollic horizon"[19]. "From Latin mollis, soft; connotative of good surface structure"[20].
u	*umbric*	"Having an umbric horizon"[21]. "From Latin umbra, shade; denoting the presence of an umbric A horizon"[22].
x	*xanthic*	"Having a ferralic horizon that has in a subhorizon, 30 cm or more thick within 150 cm of the soil surface, a Munsell hue of 7.5 YR or yellower and a value, moist, of 4 or more and a chroma, moist, of 5 or more"[23]. "From Greek xanthos, yellow; connotative of yellow coloured soils"[24].

Tabel notes:

1 Fao 2006, 103.
2 Fao 1988, 18.
3 Fao 2006, 103.
4 Fao 1988, 18.
5 Fao 2006, 104.
6 Fao 1988, 18.
7 Fao 2006, 106.
8 Fao 1988, 18.
9 Fao 2006, 106.
10 Fao 1988, 18.
11 Fao 2006, 108.
12 Fao 1988, 19.
13 Fao 2006, 108.
14 Fao 1988, 19.
15 Fao 2006, 108.
16 Fao 1988, 19.
17 Fao 2006, 103.
18 Fao 1988, 19.
19 Fao 2006, 112.
20 Fao 1988, 19.
21 Fao 2006, 118.
22 Fao 1988, 19.
23 Fao 2006, 119.
24 Fao 1988, 19.

APPENDIX 2

Sites with palynological research from the Eastern Carpathian Basin, with information about individual Holocene phases and a.s.l. elevation.

	Site name	Elevation a.s.l. (m)	LG	PB	BO	AT	SB	SA
1.	Avrig	400	✓	✓	✓		✓	✓
2.	Báb-tava	108				✓	✓	
3.	*Băgău*	290	✓					
4.	*Bâlea Lac*	2040			✓			

5.	*Bátorliget*	130	✓	✓	✓		✓	✓
6.	*Bergerie*	1400			✓	✓		✓
7.	*Bilbor*	910	✓					
8.	Borsec	900	✓					
9.	*Călineasa*	1360				✓	✓	
10.	*Cimetiere*	1280				✓	✓	
11.	*Crişeni*	430	✓					
12.	*Ecedea*	110		✓				
13.	*Fenyves-tető*	1340		✓	✓		✓	✓
14.	*FundulColibii*	900	✓					
15.	*Hoteni*	520					✓	
16.	*IcPonor*	1020			✓	✓		✓
17.	*Iezerul Călimani*	1650	✓	✓		✓	✓	✓
18.	*Lake Brazi*	1740	✓	✓		✓	✓	✓
19.	*Lake Sfânta Ana*	945	✓	✓	✓		✓	✓
20.	*Şieu-Măgheruş*	345	✓					
21.	*MlacaTătarilor*	520	✓	✓	✓			
22.	*Mohoş Tuşnad*	1050		✓	✓		✓	✓
23.	*PadişSondori*	1290				✓	✓	
24.	*Podul de Hârtie*	950				✓		
25.	Poiana Stiol	1540				✓	✓	
26.	*PrelucaȚiganului*	730	✓	✓	✓		✓	✓
27.	*Sălicea*	740				✓		
28.	*Sarlo-hát*	86	✓	✓	✓		✓	✓
29.	*Sárrét-Nádasladány*	83	✓	✓	✓			
30.	*Semenic*	1400				✓	✓	
31.	*Steregoiu*	790	✓	✓	✓		✓	✓
32.	*Ştoboru*	356	✓					
33.	Tăul Băitii	1450			✓			
34.	*Tăul Negru*	1264		✓				
35.	*Tăul Zănogutii*	1840	✓	✓		✓	✓	✓
36.	*Turbuța*	275	✓	✓	✓			
37.	*Valea Morii*	630				✓		

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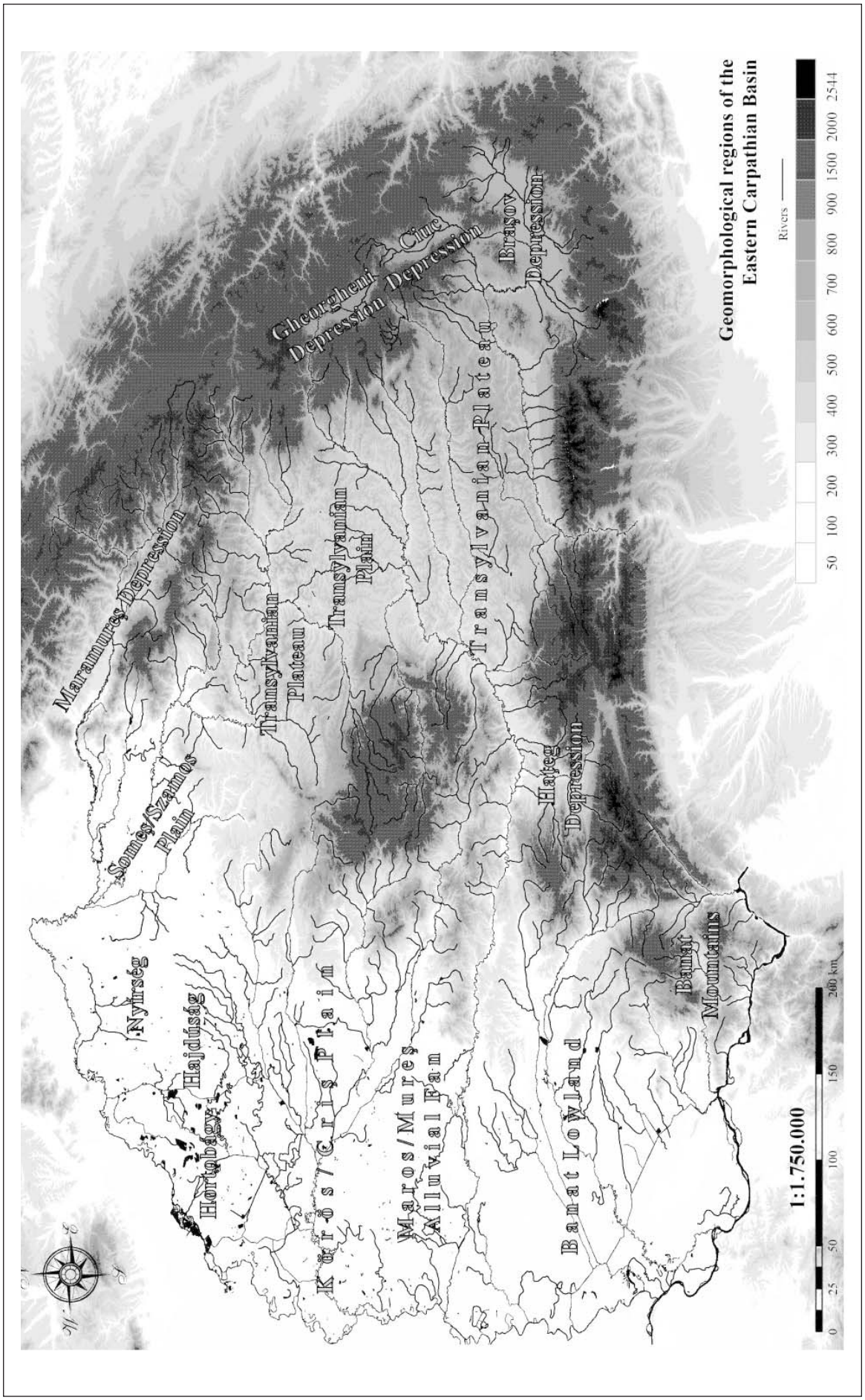

Plate 1. Geomorphological regions of the Eastern Carpathian Basin.

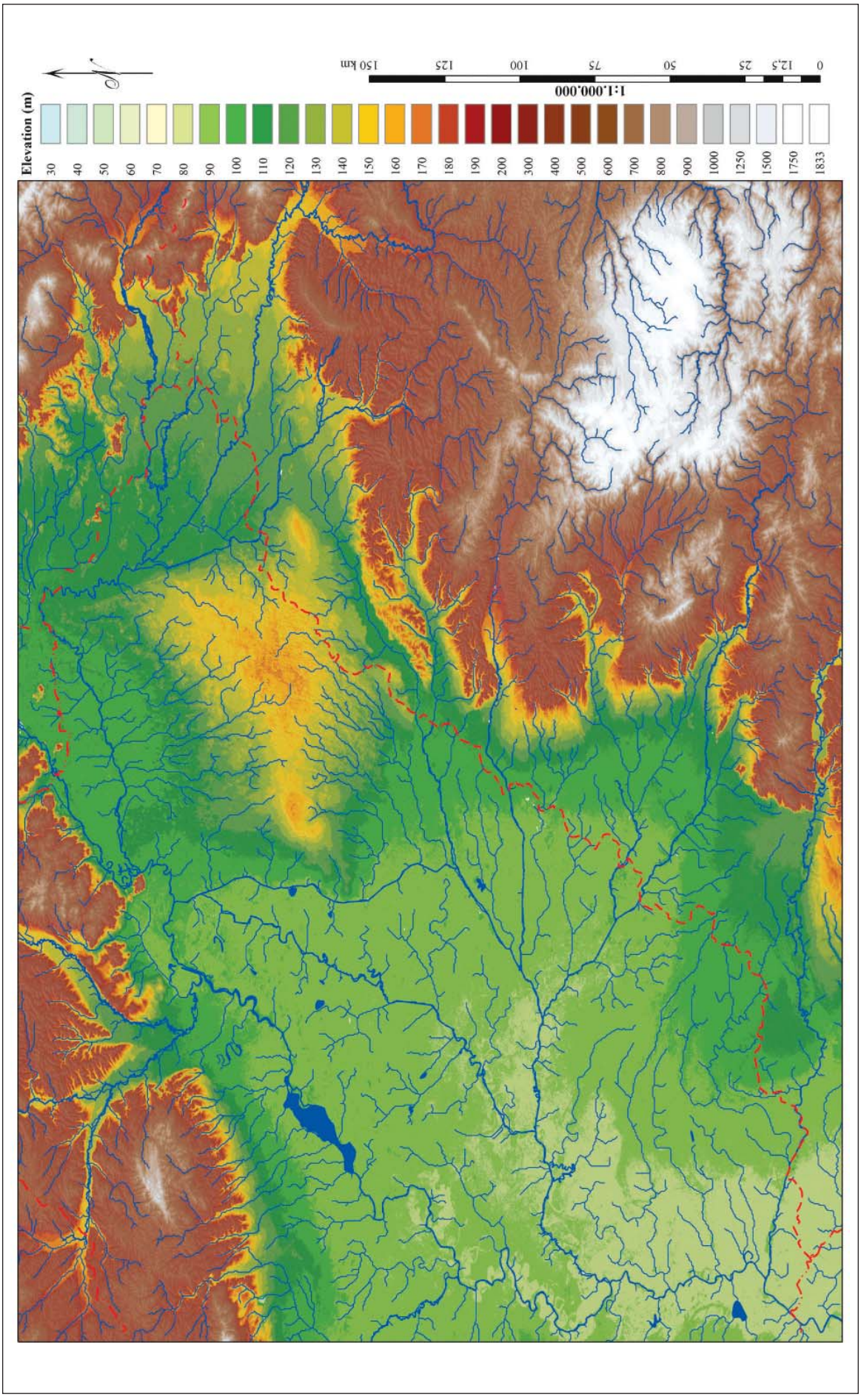

Plate 2. Hydrology and political borders within the Tisza/Tisa Lowland.

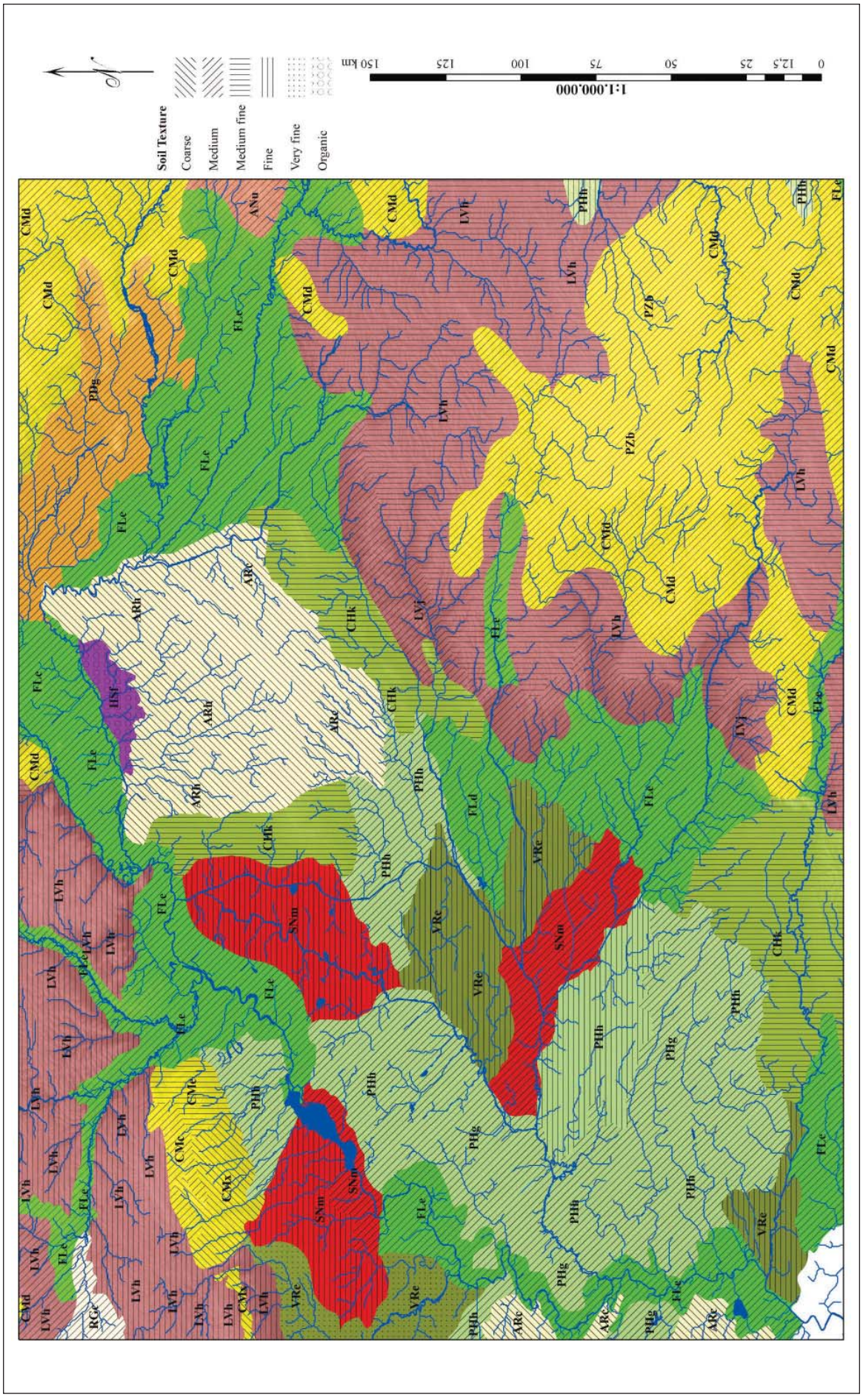

Plate 3. Subsurface lithology of the Tisza/Tisa Lowland.Lowland.

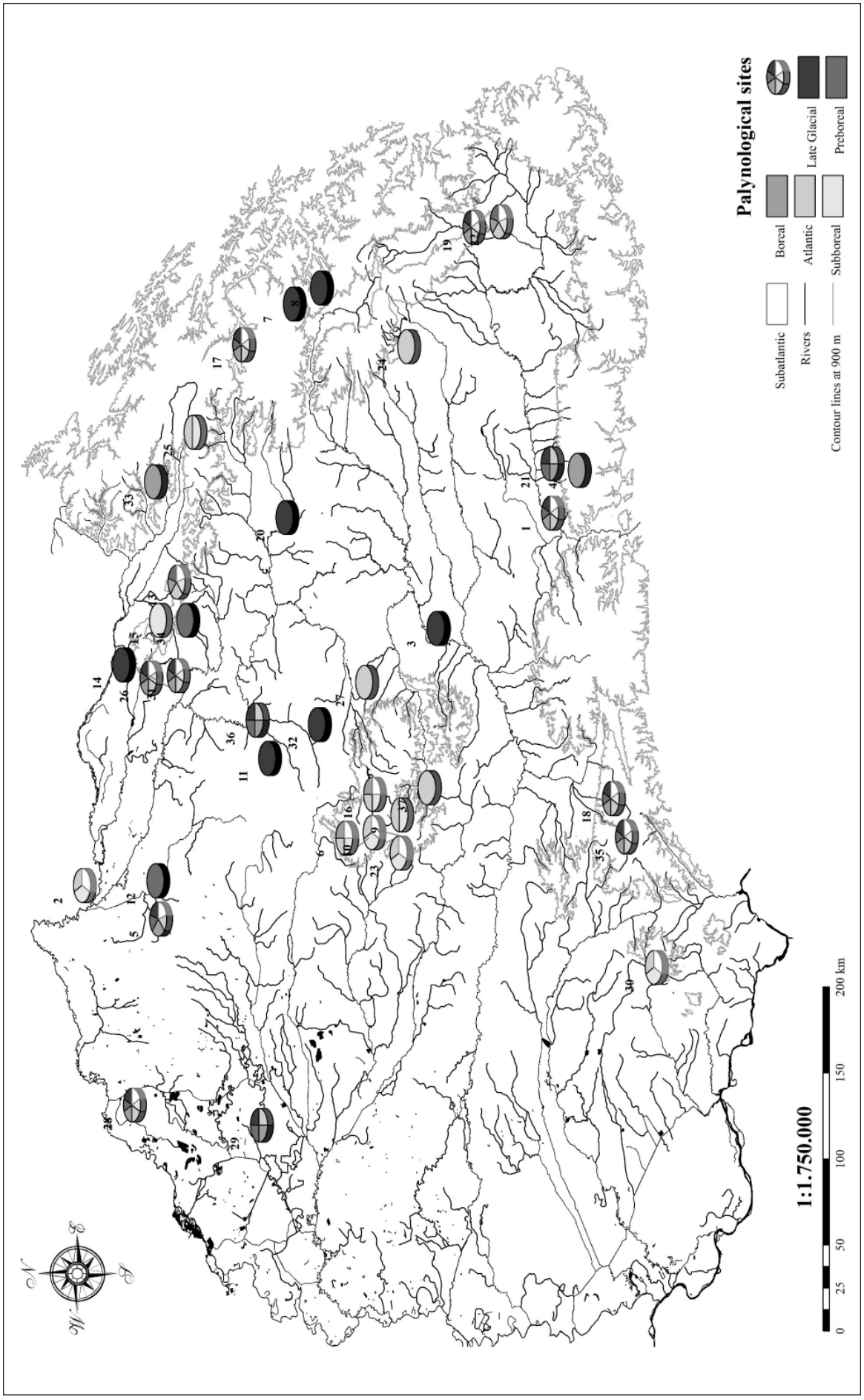

Plate 4. Palynological sites of the Eastern Carpathian Basin with relevance for the Holocene.

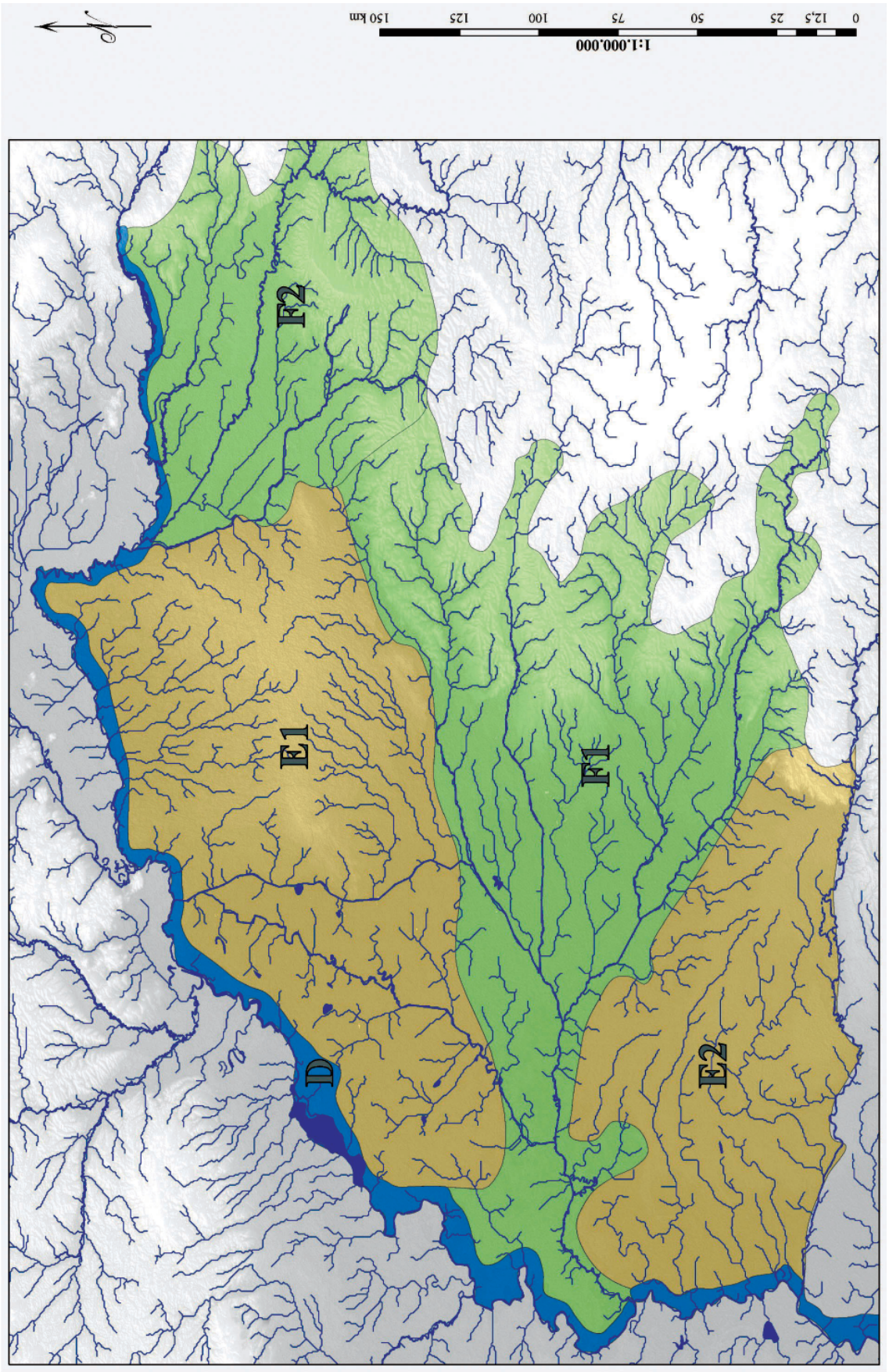

Plate 5. Archeco-zones of the Tisza/Tisa Lowland.

War and Warriors during the Late Bronze Age within the Lower Mureş Valley*

Florin Gogâltan, Victor Sava

To Professor Raczky Pál on his 60th anniversary

Abstract: The article discusses not only the evidence of military conflicts and implicitly warriors within the Lower Mureş Valley during the Late Bronze Age chronological horizon, but it is also a historiographical and theoretical approach of the topic. Fortifications researched in Sântana, Corneşti and Munar are the first indications of conflictive situations. The presence of bronze items showing clear traces of use, such as those discovered in Pecica, Păuliş, Felnac and Sântana is yet another indication. One can also mention the numerous prestige items discovered in the area, indicating a well established social hierarchy. The excavations in Sântana and Corneşti allowed specialists to establish the fact that the fortifications systems were burnt and even the area of a possible attack was identified at Sântana. To such proof one might add the human skull fragment showing traces of violent blows discovered in the defensive ditch in Sântana.

Keywords: Late Bronze Age, Carpathian Basin, strongholds, war, warrior elites.

Today, many of us believe that War, one of the Four Horsemen of the Apocalypse, is one of the most unfortunate human experiences. Throughout history, though, this was not always the case. Ancient literary sources and archaeological finds show that the Bronze Age society had a very strong hierarchic structure, wherein preoccupations of warfare represented a way of living[1]. Although people who built fortifications and impressive tombs, or produced weapons and jewellery for the elites at the top of the social pyramid vanished in the mist of history[2], war heroes and their deeds in combat endured over the centuries within the collective memory[3]. Not by accident did Homer record, after several hundred years, the epic war between the Greeks and the Trojans and Ulysses' cruel revenge upon his return to Ithaca[4]. Similarly, in the second century A.D., Pausanias mentioned the bronze weapons still preserved in Greek temples as relics of a heroic past[5].

*

The identification of European Bronze Age warfare and warriors is so often approached by specialists nowadays that a consistent monograph of the topic may be drafted based only on the extensive bibliography[6]. For instance, to mention only recent research, syntheses such as those provided by

* This work was possible with the financial support of the Sectoral Operational Programme for Human Resources Development 2007–2013, co-financed by the European Social Fund, under the project number POSDRU/89/1.5/S/61104 with the title *„Social sciences and humanities in the context of global development – development and implementation of postdoctoral research*" (Florin Gogâltan). We would like to thank Danielle Boullet and Maya Lowy for the English editing of this article.

1 Buchholtz, Wiesner 1977; Buchholtz *et al.* 1980; Gods and Heroes...; Harding 2000, 271–307; Guilaine, Zammit 2005, 1–16, 195–232; Kristiansen, Larsson 2005, 32–64; Vandkilde 2011, 365–380 etc.

2 Kristiansen, Larsson 2005, 61.

3 Calligas 1988, 229–234; Hägg 1999.

4 van Wess 1992; Vandkilde 2006, 515–528.

5 Pausanias, *Description of Greece*, 3.3.8: "I have evidence that in the heroic age weapons were universally of bronze in the verses of Homer about the axe of Peisander and the arrow of Meriones. My statement is likewise confirmed by the spear of Achilles dedicated in the sanctuary of Athena at Phaselis and by the sword of Memnon in the Nicomedian temple of Asclepius. The point and butt-spike of the spear and the whole of the sword are made of bronze. The truth of these statements I can vouch for" (http://www.perseus.tufts.edu/hopper/text?doc=Perseus:text:1999.01.0160:book=3:chapter=3&highlight=bronze%2Cweapons).

6 Even though a significant part of the content herein rests upon bibliographic sources, we intended to provide only the basic literature available for the subject of warfare and warriors during the European Bronze Age. Thus, it may also be a

Richard Osgood[7], Antony Harding[8] or Kristian Kristiansen[9], a series of collective works[10], an impressive number of studies on various types of offensive[11] and defensive weaponry[12], battle chariots[13], prestige objects[14], fortifications[15], funerary rites and rituals[16], articles debating the theme of violence[17] or even the *Journal of Conflict Archaeology*[18] may be referenced. The warfare approach from a micro-regional viewpoint, as recently proposed by Sussane Weinberger for Weinviertel during the Early Bronze Age[19], or the suggestion of a single archaeological culture[20], are not novel either. All of the above are completed through anthropological and archaeological approaches to social systems[21], the emergence of inequality[22], forms of political organisation[23], warfare[24].

In Romania, interest in the topic of warfare and warriors in the Bronze Age is sparse. Besides the volumes analysing weaponry in the *PBF* series[25] only K. Horedt's previous contributions on hillforts[26] and those of M. Rusu on helmets[27] and battle chariots[28], can be mentioned. Moreover, V. Vasiliev's constant interest for investigating Transylvanian hillforts of the first Iron Age[29] should be noted. More recently, following the current academic tendencies, Romanian researchers have also tried to emphasize the importance of the social structure of this period, including that of warriors[30].

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Discussion on the theoretical aspects of warfare and its social implications has been competently carried out by the above mentioned scholars. Identification of the causes that led to the construction of the most complex fortifications in European prehistory, through the retrospective approach of social archaeology within the Lower Mureș valley (Fig. 1), is a theme that has already been broadly

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start for Romanian archaeologists, who will have a future detailed approach to the issue. For a previous perspective on Bronze Age warfare see H. Vandkilde 2003, 126–144.

7 Osgood 1998; Osgood *et al.* 2000.

8 Harding 2000, 271–307; Harding 2007.

9 Kristiansen 1998, 63–123; Kristiansen, Larsson 2005, 142–250.

10 Carman 1997; Laffineur 1999; Carman, Harding 1999; Eliten in der Bronzezeit; Müller 2002; World Archaeology, 35, 1, 2003; Parker Pearson, Thorpe 2005; Arkush, Allen 2006; Otto *et al.* 2006; Harding *et al.* 2006; Blinjienė 2007; Czebreszuk *et al.* 2008; Uckelmann, Mödlinger 2011 etc.

11 Vulpe 1970; Vulpe 1975; Kemenczei 1988; Bader 1991; Eckhardt 1996; Říhovský 1996; Uckelmann, Mödlinger 2011 etc.

12 Paulík 1968, 41–61; Patay 1968, 241–248; Hencken 1971; Bouzek 1981, 21–38; Hansen 2001, 11–166; Clausing 2003, 149–187; Fokkens *et al.* 2008, 109–140 etc.

13 General remarks in Penner 1998; Vosteen 1999; Fansa, Baumeister 2004; Fields 2006; Anthony 2007; Kaiser 2010, 137–158 etc., papers in which the general literature about this subject can also be found. For the characteristic finds of the Bronze Age in Romania see especially Hüttel 1981; David 1998, 247–305; Boroffka 1999, 81–135 etc.

14 General remarks in Hardt 2003, 415–420. See also Kilian-Dirlmeier 1986, 159–198; Harrison 2004; Harding 2007, 118–123 etc. In our area of interest, exceptional finds are the hoards at Apa (Popescu 1941), Țufalău (Mozsolics 1949, 14–29; Kovács 1999, 48, Abb. 22), or Perşinari (Vulpe 1995, 43–62).

15 We refer only to a few Late Bronze Age sites see: Jockenhövel 1990, 209–228; Kimming 1992; Hrala *et al.* 2000; Abels 2002; Czebreszuk, Müller 2004; Fields 2004; Hellerschmid 2006; Harding *et al.* 2007; Hänsel *et al.* 2009, 151–180 (with older literature); Gogâltan, Sava 2010; Müller *et al.* 2010 etc.

16 Treherne 1995, 105–144; Kovács 1996, 113–126; Branigan 1998; Clausing 2005, 319–420; Giannopoulus 2008 etc.

17 Peter-Röcher 2002, 1–28; Jockenhövel 2006, 101–132; Armit *et al.* 2006, 1–11; Falkenstein 2007, 33–52; Peter-Röcher 2011, 451–463 etc.

18 Insofar, seven volumes were published (2005–2011).

19 Weinberger 2008.

20 Hårde 2006, 341–384.

21 A more recent general presentation in Carneiro 2003. See also the archaeological perspective on the Late Bronze Age of central Europe in Clausing 1999, 319–420.

22 Renfrew, Cherry 1986; Mc Kay 1988; Earle 1997.

23 Earle 2002.

24 Haas 1990; Reyna, Downs 1994; Keeley 1996; Kelly 2000; Schmidt, Schröder 2001; Thorpe 2003, 145–165; LeBlanc 2003; Castleden 2005, 197–217; Peter-Röcher 2007 etc.

25 Vulpe 1970; Vulpe 1975; Bader 1991. A study focusing upon bronze spearheads written by T. Bader (in *PBF* series) is still under print. For a short state of research regarding such topic see Soroceanu 2011, 229–232.

26 Horedt 1966; Horedt 1974, 205–228; Horedt 1976, 397–405.

27 Rusu 1990, 69–78.

28 Rusu 1997, 529–544.

29 Vasiliev 1995; Vasiliev *et al.* 1991.

30 Gogâltan 1997, 55–65; Crețu 2005, 87–114; Popescu, Băjenaru 2009, 5–22; Schuster 2010, 217–233; Băjenaru 2010, 151–162; Dietrich 2010, 191–206; Soroceanu 2011, 225–270; Lazăr 2011, 7–21 etc.

examined. Additionally, a general overview of circumstances in the Carpathian Basin during the Bronze Age would only provide a presentation with which we are already familiar[31]. Therefore, we shall focus on a single aspect suggested by the archaeological finds: conflict situations during the Late Bronze Age (ca. 1500–1000 B.C.).

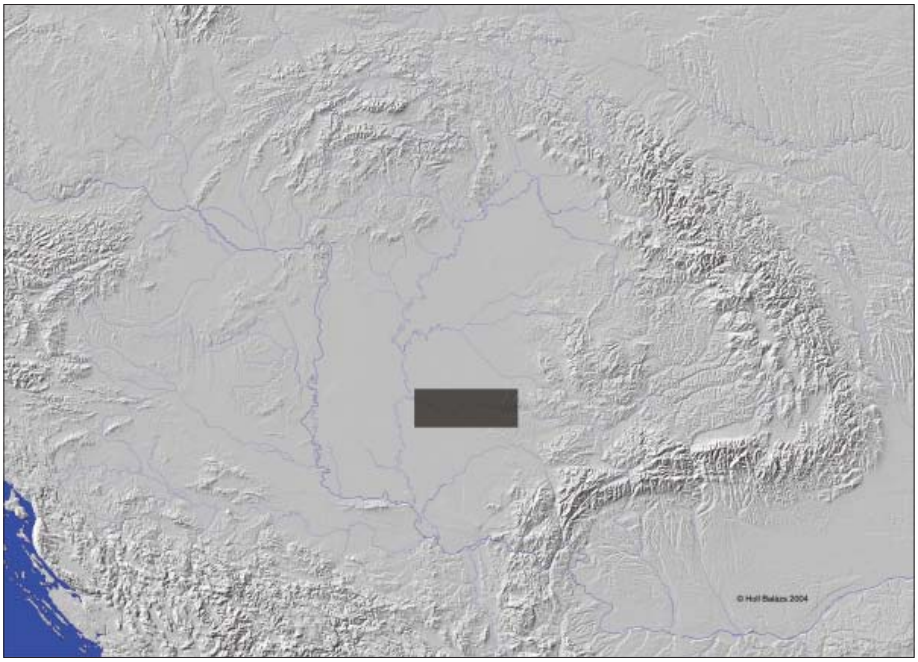

Fig. 1. Carpathian Basin map with the location of the Lower Mureş Valley.

The presence of fortifications and the profane or ritual deposition of weaponry are indirect evidence of existent conflict situations[32]. Moreover, prestige and funerary goods also contribute to the identification of warrior elites[33]. Direct evidence supposes burnt and violently destroyed hillforts, weapons with use prints, or warriors wounded or killed on the battle field[34]. In the Nordic world, representations carved on rock depicting combatants and their war ships are also suggestive for violent acts[35]. These are completed by other war scenes from Portugal, Spain[36], northern Italy, such as those at Val Camonica; or the Mycenaean world, such as the frescoes at Pylos and Thera or the images imprinted on seals[37]. Their ritual character further proves the special function of the warriors and warfare within the Bronze Age society[38].

In the Lower Mureş area, a few fortifications – investigated both in the past and more recently through field walks; archaeological excavations; and topographic, magnetmometric, or aerial surveys – are dated to the Late Bronze Age (Fig. 2). They include the stronghold at Corneşti, Timiş County[39]; Sântana[40]; and Munar, Arad County[41]. According to archaeological finds and ^{14}C data, these strongholds most accurately date from the second half of the second millennium B.C.[42]. Their impressive

[31] An example of such approach is a recently published study on tells' fortifications of the Bronze Age in the Carpathian Basin (Gogâltan 2008, 39–56). For Late Bronze Age see Bader 1982, 47–70; Bándi 1982, 81–90; Furmánek *et al.* 1982, 159–175; Soroceanu 1982, 363–376; Matuz, Nováki 2002 etc.

[32] For a more recent contribution see Čivilytė 2009, 125–146, Soroceanu 2011, 245–260, along with the older literature on the subject.

[33] For the Carpathian Basin see for example Kovács 1996, 113–126; Kovács 1999, 37–62.

[34] Gebhard *et al.* 2004, 181–197; Jockenhövel 2006, 108–115; Harding 2007, 33–40; Falkenstein 2007, 34- 48; Vandkilde 2011, 366–376 etc.

[35] Nordbladt 1989, 323–333; Capelle 2008; Harding 2007, 115–118; Vandkilde 2011, 374–375 etc.

[36] Harrison 2004.

[37] Jockenhövel 2006, Abb. 2, 4.

[38] Kaul 1998; Kaul 2004.

[39] Medeleț 1993, 119–150; Micle *et al.* 2006, 283–305; Gogâltan, Sava 2010, 62–69; Szentmiklosi *et al.* 2011, 819–838.

[40] Rusu *et al.* 1996; Rusu *et al.* 1999, 143–165; Gogâltan, Sava 2010.

[41] Gogâltan, Sava 2010, 57–61.

[42] Medeleț 1993, 133; Rusu *et al.* 1999, 147–162; Gogâltan, Sava 2010, 41–44; Szentmiklosi *et al.* 2011, 827, fig. 9–10.

size[43], the fortification systems composed of ditches and concentric defence ramparts of earth, stone and timber structure; the sophisticated entrance gates; etc., are classic examples of the innovations of this period[44]. Unlike other historical sequences, these fortifications were not meant for refuge during crises, but rather for constant accommodation of a community[45]. In contrast to tells of the Early and Middle Bronze Age (ca. 2500–1500 B.C.), no important satellite settlements[46] developed near the fortifications. One may speak about a habitation clustering within these fortifications. Recent archaeological rescue excavations have proven that considerably sized, unfortified settlements were also in existence. It is possible that the settlement at Şagu, Arad County, situated only 14 km northeast[47], might have been part of the *hinterland* of the great stronghold at Corneşti.

Most likely, these strongholds were not the only ones in the Lower Mureş area. Images provided by *Google Earth* software led certain specialists to assume that large earth fortification systems similar in size to those above also existed at: Dumbrăvița, Timiş County; Semlac "Pusta lui Cucu"; Pecica "Duleul lui Bran"; Turnu "La Prioran"; Bodrogu Nou, "Variaşul Mare"; Vinga; Firiteaz, Arad County[48]; and "Variaşu", Arad County[49]. The surface research which we performed in the fall of 2009 at Variaşu Mare, Arad County and Şiria, Arad County did not confirm the existence of fortifications provided with earth rampart[50]. However, other earth fortifications were identified at Caporal Alexa, Arad

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43 According to the team from Timişoara West University, the stronghold at Cornești "Iarcuri" had the following dimensions: "Enclosure I: 3140 m perimeter, 72 ha surface, 72 000 m^3 estimated volume of wall I. Enclosure II: 5980 m perimeter, 213 ha surface, 144000 m^3 estimated volume of wall II (24 m^2 medium section of the wall). Enclosure III: 8120 m perimeter, 504 ha surface. The volume of the wall cannot be calculated due to the fact that it has not been preserved intact on its entire line; thus any supposition can be considered to be premature. Enclosure IV: 15735 m perimeter, ca. 1722 ha surface, the volume cannot be estimated in this case either, wall IV is the worst preserved of all walls" (Micle *et al.* 2006, 286). Regarding the fortifications at Sântana "Cetatea de pământ": "We were able to estimate the size of the three enclosures based on measurements performed on the field, information supplied by the aerial photographs, and the data provided by Google Earth software. So the zone we labeled as Enclosure I has a surface area of 14 ha and a perimeter of 1524 m. Enclosure II covers a surface of around 50 ha and a perimeter of 2860 m. Enclosure III, the biggest, has a surface area of 80 ha and a perimeter of 3630 m" (Gogâltan, Sava 2010, 36). At Munar "Wolfsberg-Dealul Lupului" the first fortified enclosure was 0.7 ha in surface; however it belongs to the Middle Bronze Age. The second enclosure covers a surface of 4.76 ha, while the third has a perimeter of 14 ha (Gogâltan, Sava 2010, 60–61).

44 For other fortification models existent in the Carpathian Basin see circumstances of the Early and Middle Bronze Age (Gogâltan 2008, 39–56).

45 Calculations provided for the number of inhabitants who might have been sheltered in fortification I and II at Corneşti "around 1500–2000 people" (Micle *et al.* 2006, 292) are simply speculative. Subsequent systematic survey research and magnetometer surveys indicated a much more intense habitation (Szentmiklosi *et al.* 2011, 827–834). Future archaeological excavations would establish house sizes, their density and the exact perimeter of the habitation, the only ones that for lack of cemeteries would be suggestive of the number of inhabitants. For a long and intense habitation period of the fortification at Sântana pleads the stratigraphy of up to 3 m mentioned by the team who performed excavations there in 1963 (Rusu *et al.* 1999, 148).

46 The picture provided by the team from Timişoara West University on the existence of 13 Bronze Age settlements located within a ca. 20 km perimeter around the hillfort at Cornești, related to it, should be regarded with proper reserves (Micle *et al.* 2006, 292–294). Mentioned sites do not belong all to the same chronological level. The fact that the settlement within the first enclosure at Cornești had not been identified at that point hindered any comparison of the finds there with those in these sites. Circumstances improved at Sântana, where potsherds found in excavations could be comparatively analyzed together with those following survey research (Gogâltan, Sava 2010, 39–41, fig. 36). A model for the reconstruction of a micro-region social establishment is that recently provided by the research team from Okolište in Bosnia (Müller *et al.* 2011, 81–106. For the Middle Bronze Age in the Carpathian Basin see also Earle, Kristiansen 2010).

47 Rescue excavations performed by V. Sava, G. P. Hurezan and F. Mărginean in 2010. Site A1_1 was identified at approximately 200 meters south and almost at half distance between Şagu and Cruceni, south of the road which connects these two villages. The geographical coordinates of the site are: Latitude N46°03'25.52'', Longitude: E21°18'33.99''. The absolute altitude of the site varies between 140 and 141 meters. The settlement has a length of about 530 meters and a width of approximately 450 meters thus encompassing an estimated surface of almost 238.500 m^2, which means 23.85 ha. At the end of the archaeological excavation, 321 archaeological features were unearthed and documented. Out of these, 306 features belonged to the Late Bronze Age I-III (Bronze B_2-C, D, and Ha A_1), 14 features to the 3rd–5th centuries A.D. and one to the modern period. Based on these discoveries it can be now stated that the beginning of this settlement should be placed in the Late Bronze Age I stage (Bronze B2-C) and that its peak should be placed in the chronological Late Bronze Age III stage (Ha A_1). For more information see Sava *et al.* 2011.

48 Micle *et al.* 2006, 295–297.

49 Szentmiklosi *et al.* 2011, 835 (information I. Olteanu). It is neither specified whether that was Variaşu Mare or Variaşu Mic nor any previous literature was quoted. In fact, traces of a supposed fortification may be noticed on the territory of Variaşu Mare, Arad County, as in fact already mentioned by Micle *et al.* 2006, 296.

50 In this survey research, our colleague Florin Mărginean from the Arad County Museum was also involved.

County and Lipova "Valea rea", Arad County[51], which belonged instead to the first Iron Age. At Vinga, Arad County, we found one fortified tell containing materials specific to the Corneşti-Crvenka group of Vatina culture, which may thus chronologically place it in the Middle Bronze Age[52].


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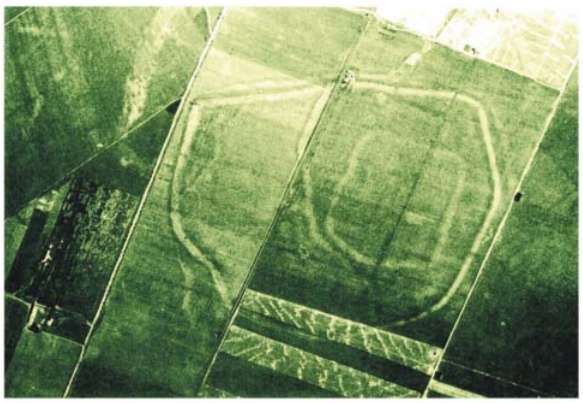
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Fig. 2. Earthworks from Corneşti (1), Sântana (2) and Munar (3).

Regarding weaponry, many deposits and isolated bronze finds in the area provide a comprehensive picture of the end of the period in the Carpathian Basin[53]. Swords, daggers, spearheads, battle axes, pieces of armour, etc., were the main symbols and weapons of the warrior elites[54]. The sword part of Hoard III found at Pecica – Arad County (Fig. 3) carries out evident marks indicating a long period of wear[55], as do the dagger discovered at Felnac – Arad County (Fig. 4), the spearheads documented

[51] This is also mentioned by Pădureanu 1993, 23, no. 6. In 1970 excavations were performed by D. Demşa, but these researches focused only upon the medieval donjon.

[52] It was assigned by E. D. Pădureanu, alike other Middle Bronze Age sites in the Lower Mureş, to Otomani culture (Pădureanu 1988, 507–528). For the new cultural affiliation see Gogâltan 2004, 79–153.

[53] Novotná 1970; Mozsolics 1973; Soroceanu 1982, 363–376; Kemenczei 1984; Mozsolics 1985; Kobal' 2000; Sicherl 2004 etc.

[54] Höckmann 1980, 275–319; Kristiansen 1984, 187–208; Deger-Jalkotzy 2006, 711–718; Harding 2011, 194–198 etc.

[55] Bader 1991, 13/81; 17/150; About the wearing marks identified on the blade of the artefacts see Bridgford 1997, 95–115; Kristiansen 2002, 319–326; Kamphaus 2007, 113–120. A certain uncertainty concerning the efficiency of these bronze

as being part of the hoard at Păuliș (Fig. 5)[56], the battle axe discovered in Arad County (Fig. 6/1) and some other celts (Fig. 6/2–3)[57]. Besides those listed above, we can infer other weapons (both offensive and defensive) made out of organic material, more or less spectacular, which were also part of the basic military gear of that period[58]. A dagger fragment, several socketed axes, an arrowhead and harness items were discovered in the stronghold at Sântana[59].

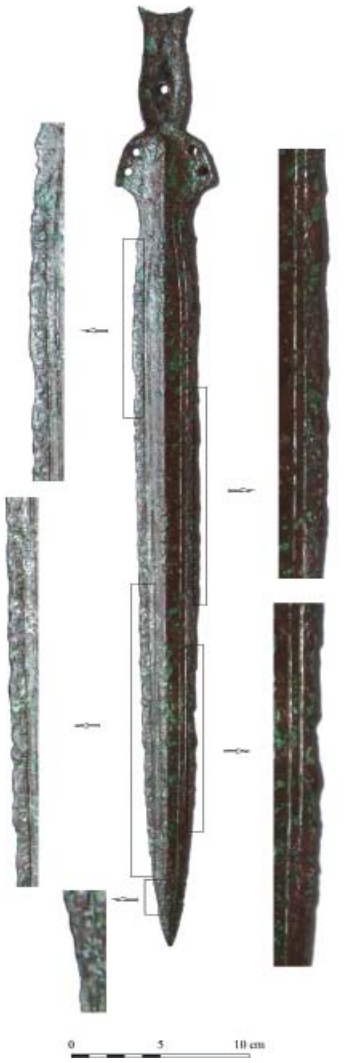

Fig. 3. Sword discovered at Pecica.

Fig. 4. Dagger discovered at Felnac.

Other prestige objects also belong to the same category of power and wealth symbols. At Sântana, excavations, field walks and isolated finds yielded an impressive number of bronze jewellery items, including belts, bracelets, pendants, buttons, saltaleoni, pins and rings[60]. One particular gilded bronze belt, 87 cm long and 10 cm wide[61], is an exceptional specimen, through its artistic value and complexity of technological production. It is interesting that, following excavations and survey

swords in actual combat was expressed by Harding (Harding 1999, 166). Others have insisted especially upon their ritual rather their functional character (Neustupný 1998, 27–30). An artefact supporting the opinion which implies that such bronze swords were actually used in combat is an identical sword, but made out of wood, interpreted as a weapon used in training activities (Stevenson 1960, 191–193).

56 For the fights which implied spears and lances see Schauer 1979, 69–80.

57 The celts could be used not only as tools, but also as weapons (Roberts, Ottaway 2003, 119–140).

58 Capelle 1982, 265–288.

59 Mureşan 2007, 120, n. 8; Gogâltan, Sava 2010, 25, fig. 13–15.

60 Mureşan 1987, 313–317; Rusu *et al.* 1999, 158, 161–162, Abb. 15/1–5, 7–9; Gogâltan, Sava 2010, fig. 14, 39, 41, 72. Until now, 53 bronze artefacts have been found: 21 discovered during the excavation and 21 found during field walks, while 5 were stray finds.

61 Rusu *et al.* 1999, 159, 161, Abb. 15/14.

research at Cornești[62], covering a much larger area than at Sântana, the number of metal objects found was insignificant. Instead, large amounts of quern fragments[63] were identified in the first enclosure. Future research would confirm whether the Sântana stronghold was prosperous due to control over copper and gold ores in the area and metalwork production and distribution, in contrast to that at Cornești which mainly focused on farming and animal breeding, activities for which the landscape was probably more suitable.

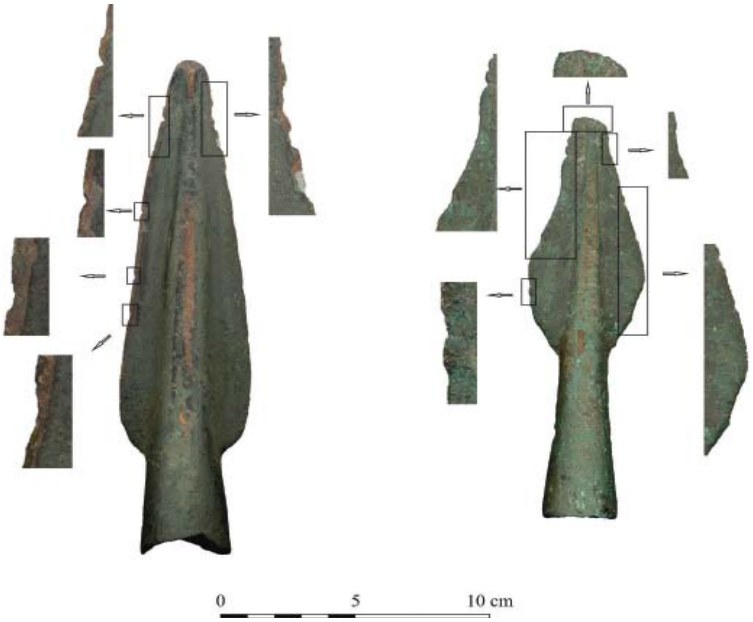

Fig. 5. Spearheads discovered at Păuliș.

Fig. 6. Battle axe and celts discovered in Arad County (1), Pecica (2) and Sântana (3).

A vessel that contained, besides human remains, a hoard composed of 23 golden pieces was discovered at Sântana in 1888 in the ditch in front of the 3rd enclosure rampart[64]. Other golden hoards or isolated jewellery items are known from Alioș, Arad County; Carani; Cerneteaz; possibly Cornești,

62 Szentmiklosi *et al.* 2011, 832–834.
63 Fl. Gogâtan's remark during the field research carried out in September 2008.
64 Dörner 1960, 471–479; Mozsolics 1973, 208, Taf. 104–105; Gogâltan, Sava 2010, 17, fig. 5.

Timiş County; Firiteaz; and Sacoşu Mare, Arad County[65], thus placing the Lower Mureş area amongst the Carpathian Basin areas with the most numerous Late Bronze Age gold discoveries[66]. Golden jewellery and bronze swords mirror best what we intend to prove herein: the existence of warrior elites[67]. Only the bravest warriors accepted close confrontations and fearlessly displayed their social status, as we know from the depictions in Pylos or Mycenae[68].

Unfortunately, the information on funerary rites and rituals of the Late Bronze Age is inconclusive[69]. We assumed that the great earth barrow enclosed in the stronghold at Sântana belonged to one of the community chieftains there[70]. He could have been the heroic ancestor that founded the fortification or maybe one of his heirs[71]. For this period, circumstances at Lăpuş, or further south in the region of the Adriatic, where a strong Mycenaean influence can be documented[72] are known. Future rescue excavations would confirm, from the perspective of burials, that which is recognised as reality of the period.

Archaeological excavations provided clear clues on the burnt earth strongholds at Corneşti and Sântana. Thus, the palisade of the 1st enclosure at Corneşti was set on fire[73]. One cannot decide whether this was the result of a direct attack or of destruction during the conquest/abandonment aftermath. At Sântana we were fortunate enough to research the fortification area which was clearly besieged. We found *in situ* that the clay wall and its timber structure, as well as the palisade, were destroyed by clay sling projectiles and that they were torched[74]. One may assume that the area where the attack occurred is approximately 400–500 m in the northern part of the 3rd enclosure, where over time clay sling projectiles were found in impressive numbers[75] and where at the surface, even today, one may notice chunks of clay and burnt earth from the wall. We presume that the attackers chose this location instead of one of the access gates because there the defence ditch was no longer functional during the confrontations due to clogging[76]. Moreover, according to its present state, the fortification was not as high up as in the gated area. The considerable number of these projectiles and the extremely violent attack of a large sector of the defence system of the 3rd enclosure at Sântana make evident the presence

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65 Gogâltan, Sava 2010, 80–81.

66 Kemenczei 1999, 63–79.

67 Sperber 1992, 63–77.

68 Gogâltan 1997, 59–61.

69 The existence of a necropolis at Felnac (Arad County) belonging to the so called "Tumuli culture" is supposed (Kacsó 1992, 97–98; Bejinariu 2004, 67–71). The necropolis at Bobda (Timis County) which was only mentioned (Horedt 1967, 147–148; Gumă 1993, 155–156; Boroffka 1994, Abb.1), remains unpublished. More recently, A Ursutiu investigated a small cremation cemetery belonging to the Late Bronze Age on the occasion of some rescue excavations undertaken for the construction of the future bypass in Arad (information kindly provided by A. Ursuțiu). As part of the rescue excavations for the future Nădlac-Arad highway, the archaeological department of the Arad County Museum unearthed another Late Bronze Age necropolis. This new discovery is situated 3.5 km NNE from the centre town of Pecica. Inside the perimeter of the future highway 41 tombs were identified, out of which 27 were inhumation burials and 14 cremation burials. The deceased were, in their vast majority, crouched, and they displayed very rich funerary inventories. Small cups and large pots were usually identified around their feet and hips. Cases in which animal parts are found close to the feet of the bodies are quite frequent. Apart from these, a great number of the deceased possessed quite rich funerary inventories consisting of needles, bracelets, appliqués, bronze daggers or axes; amber beads were found in one tomb. Based on the funerary inventory of these graves, we can assert that the inhumation tombs belong to the Late Bronze Age I chronological stage (Bronze B2-C). The urns of the cremation burials contained almost every time artefacts deposited as funerary inventory. This enabled archaeologists to find a large quantity of small bronze artefacts such as simple or plurispiralic rings or bracelets. In some of the urns small cups have been also documented. The fact that some of the urns were actually big pots is worth mentioning, but there are also cases in which the urns consist of small bowls. Based on the funerary inventory and the types of vessels used as cinerary urns we can date the cremation graves in the Late Bronze Age II-III stages (Bronze D – Ha A_1).

70 Gogâltan, Sava 2010, 75.

71 Apart from the well-known placement and significance of the funerary monuments from Mycenae (Mylonas 1982, 75–77, fig. 57) or Ägina (Kilian-Dirlmeier 1997), we would like to mention a recent discovery from Monkodonia as well (Hänsel *et al.* 2009, 151–180).

72 Hänsel, Teržan 2000, 161–183.

73 Szentmiklosi *et al.* 2011, 826–827, fig. 7.

74 Gogâltan, Sava 2010, 33, fig. 26, 28–30.

75 In 1976, close to our excavations, behind the former *railway station Cetatea Veche,* a tractor driver dug out *"a kiln" full (ca. 200 pieces!) with clay sling projectiles (balls*) (Mureşan 2007, 120, n. 7, 121). Other projectiles were found in 1980 (Mureşan 2007, 120, n. 8).

76 Gogâltan, Sava 2010, 33, 36.

of an expeditionary force rather significant in numbers and very well trained militarily (Fig. 7)[77]. Clay sling projectiles were purposely fired at high temperatures for greater endurance and their weight was up to 600–700 g. Their launch was very precise, as proven by the discovery of approximately 80 pieces in the four meters investigated archaeologically within the fortification (Fig. 8)[78]. The projectiles' weight and the distance they needed to be safely shot by the attackers makes us think of the possibility that catapults and not only simple leather slings or other perishable materials were used[79]. The siege tactics should have been the same as those used in the case of the conquest of fortifications in the Mycenaean or Oriental world[80]. The reply of the besieged is suggested by the position *in situ* of a bronze arrow shot from within the fortification to the 3rd enclosure area that had already been conquered at that point (Fig. 9)[81]. It is hard to say whether the attack was fatal or not to the entire fortress. Previous excavations identified the prints of large-sized burnt houses and human remains in the last inhabitancy level of the 1st and 2nd enclosures at Sântana[82].

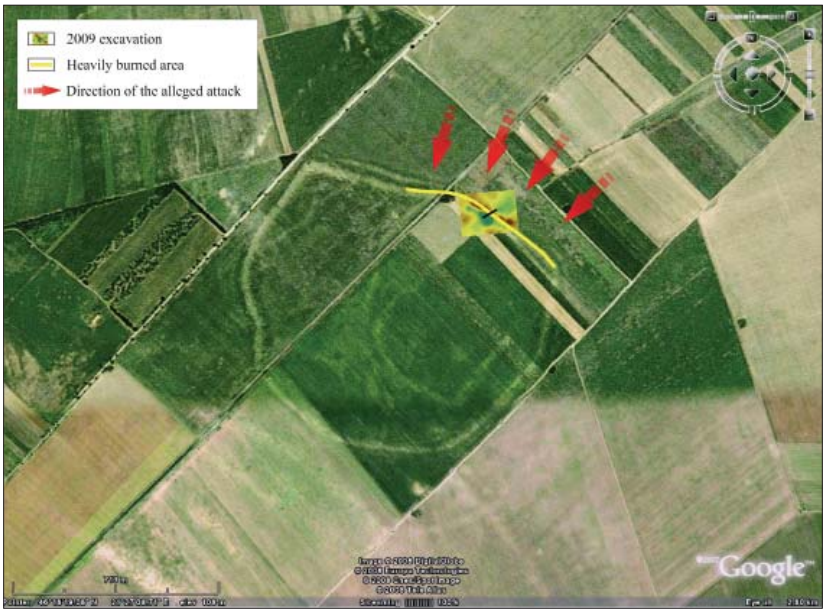

Fig. 7. Sântana "Cetate Veche". Representation of the alleged attack.

In the area in question, there are no human skeletons with traces of physical violence yet there are many such examples for the prehistory of Europe[83]. For the Bronze Age, worth mentioning are the finds in the Carpathian Basin as well as those in the graves of Chłopice-Veselé, in Nitra and Aunjetiz cultures from southwest Slovakia[84], in the settlement at Nižná Myšľa[85], in grave 122 at Hernádkak[86], in central Europe at Velim and Blučina[87], in the Netherlands at Wassenaar[88], in England at Tormarton[89]

[77] The military organization and fighting strategy are well known for example from depictions of the battle from Kadeš (Müller-Karpe 1980, Taf. 52/9, 53/6, 54/A, 55/1–2; 56/1–2, 57/1, 58, 59, 60/1–2, 61/1–2), against the so-called "sea people" (Müller-Karpe 1980, 71/1, 72/1, 73/1, 74/1, 75/1) or of other military campaigns (Müller-Karpe 1980, Taf 57/2, 60/5, 61/3, 67/1, 70/1). In the Nordic Bronze Age there were naval expeditions that could involve up to 125 participants (Pfeiffer-Frohnert 1997, 460–461, Abb. 4).

[78] Many of them shattered upon impact against the clay wall, thus their exact number is unknown.

[79] Korfmann 1987, 129–149.

[80] Karo 1930, 175, Abb. 83–84 – Micene; Müller-Karpe 1980, Taf. 54/D – Debir, 56/2 – Mutir, 56/3 – Dapur, 57/4 – Askalon), 68/2 – Tunip etc.

[81] This is proven by the position where the arrow got stuck in an ancient stream behind the 3rd enclosure (Gogâltan, Sava 2010, 43, fig. 40).

[82] Rusu *et al.* 1999, 151–152, Abb. 3/a-b; 5.

[83] Thorpe 2003, 150–159; Knüsel 2005, 49–65; Peter-Röcher 2007, 194–216 etc.

[84] Bátora 1999, 41–52.

[85] Jakab *et al.* 1999, 91–127.

[86] Bóna 1975, 150, Taf. 155/4; Schalk 1992, 142, Abb. 56/1, Taf. 24/1–2, 31/1, 5.

[87] Recently abstracted by Harding 2007, 86–93.

[88] Louwe Kooijmans 2011, 1–20.

[89] Osgood 2006, 331–340.

and those from northern Europe[90]. A new view of the Bronze Age warfare is given by the possible battle fields at Weltzin and Altentreptow in Mecklenburg-Vorpommern German Land[91]. It is hard to say whether the skull remains of a male, aged approximately 20–30, found in the filling lens of the fortification ditch at Sântana belonged to an aggressor (Fig. 10)[92].

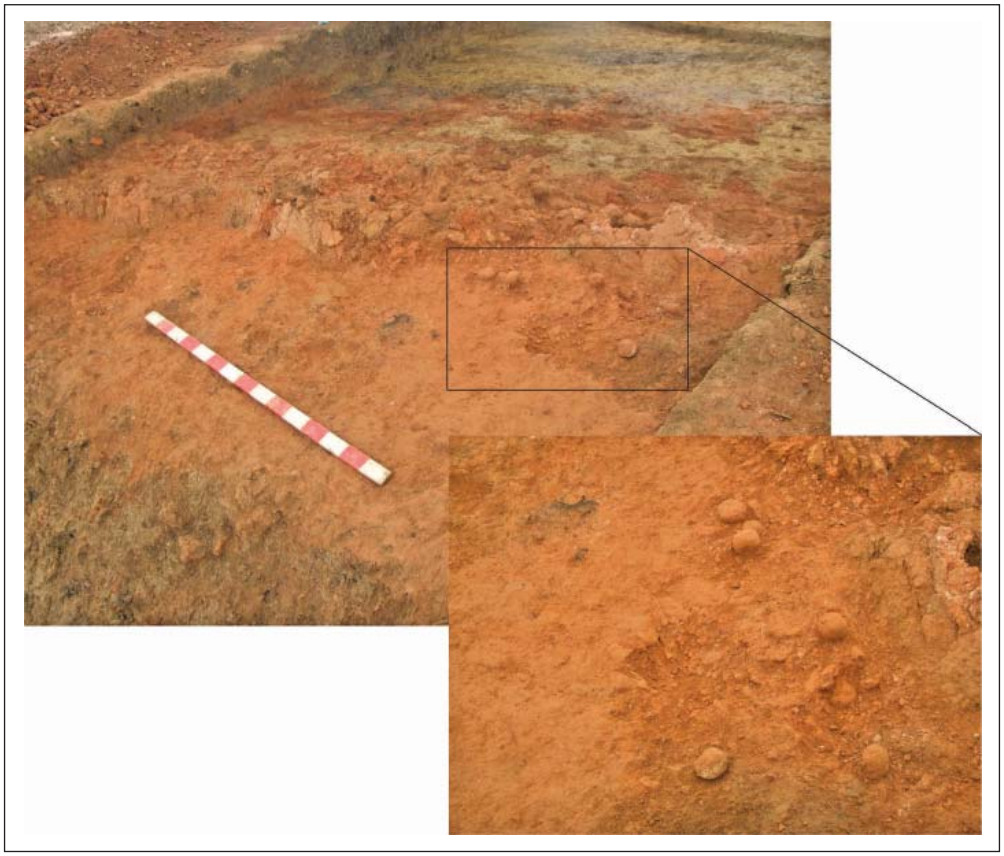

Fig. 8. Sântana "Cetatea Veche". Clay sling projectiles discovered *in situ*.

As history tells us, the reasons underlying these conflicts may be diverse; however, everything was connected to power, prestige, wealth and their preservation[93]. Evidently, the 17th-century image in Thomas Hobbes's *Leviathan* of past societies governed by the motto *Bellum omnium contra omnes* ("the war of all against all") is far from Bronze Age reality[94]. We believe that Kristian Kristiansen and Thomas Larssen's more recent inter-contextual approach[95] is closer to the historical truth. Ruler dynasties, initiation quests of royal successors, dynastic alliances, a warrior aristocracy, betrayal and court intrigue, as reported by ancient literary sources, is the scenario that may also be proposed for the Late Bronze Age by the Lower Mureş. Only charismatic leaders had the power to enforce the construction of earth strongholds like those at Corneşti, Sântana and Munar; they could not be the product of a very well organised social system based upon economic, religious and implicitly hierarchical criteria[96]. It is difficult to imagine the huge effort it must have taken to build these fortifications[97].

90 Fyllingen 2006, 319–330.
91 Internet information is supplemented by that in Laschinski 2009.
92 The skull fragment was discovered in the defense ditch of the 3rd precinct documented at Sântana "Cetatea Veche" together with other human bone fragments (layers 6, 7, 8, 22). On the skull, two clear unhealed blow marks are still visible and we believe they are the cause of a violent death. The anthropologic analysis performed by L. Andreica showed that we are facing an individual with a very good dentition, a sign of a healthy life and alimentation. Gogâltan, Sava 2010, 36.
93 Jockenhövel 2006, 118–120; Peter-Röcher 2011, 455–456.
94 Otto *et al.* 2006, 9.
95 Kristiansen, Larsson 2005, 142–250.
96 Breuer 1990.
97 Gogâltan, Sava 2010, 75–79.

Moreover, recurrent repairs of clay walls, as noticed at Sântana[98] and the cleaning of the defensive ditch were additional duties to daily activities. Their day and night defence would have involved such a large number of warriors that the community, or the entire *hinterland*, could not support. The protection system must have been broader, based on the involvement of all those directly connected to the stronghold and also of the participation of certain allies. In the case of precincts III and IV form Corneşti, their huge dimensions and their simplified fortification elements make us think more and more of the possibility that these precincts could have had a symbolic meaning and function – that of marking and protecting the designated space of a community against savage animals or other predators. Their defensive efficiency seems to be much reduced in order for them to face real, wide-scale military conflicts.

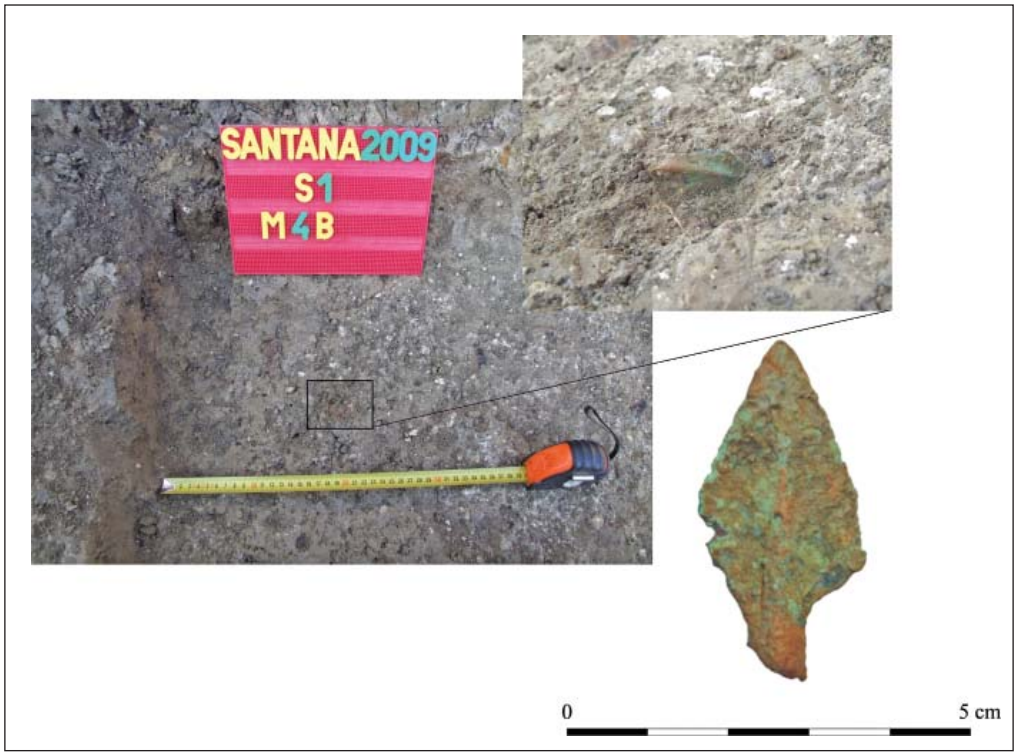

Fig. 9. Sântana "Cetatea Veche". Bronze arrow head discovered *in situ*.

The conclusion to be drawn from the above is that recent archaeological finds in the Lower Mureş area, dated to the Late Bronze Age, confirm what is known or suspected about the society of the period. Furthermore, the image of a world peripheral to the classical Bronze Age civilisations from Greece, the Near East and Egypt gains a new dimension. By their archaeological realities, these earth strongholds perfectly integrate what the most regretted British archaeologist, Andrew Sherratt, defined as the "Bronze-Age world system"[99].

Florin Gogâltan
Archaeology and Art History Institute Cluj-Napoca
Cluj-Napoca, RO
gogaltan@yahoo.com

Victor Sava
Museum Arad
Arad, RO
sava_vic@yahoo.com

98 Gogâltan, Sava 2010, 33, 77–78, fig. 30.
99 Sherratt 1993, 1–58. See also Frank 1993, 383–405.

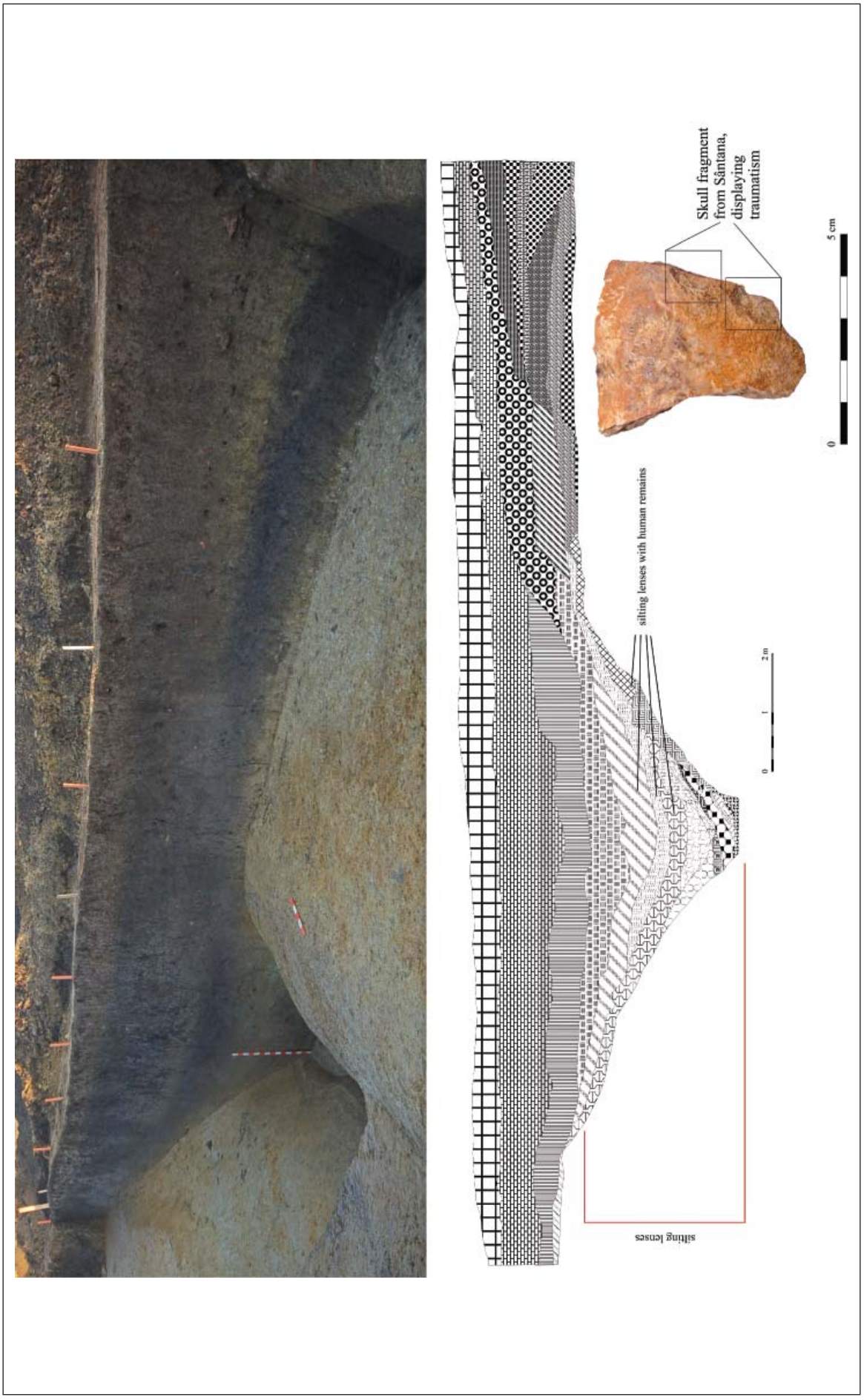

Fig. 10. Sântana "Cetatea Veche". Fragment of a human skull displaying traumatism, discovered in the ditch.

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Late Bronze Age Metal Artifacts Discovered in Şagu, Site "A1_1", Arad – Timişoara Highway (km 0+19.900 –0+20.620)*

Victor Sava, George Pascu Hurezan, Florin Mărginean

Abstract: Bronze objects were only found in 13 of the 322 complexes discovered on the "A1_1" site. The discovery of these bronze objects raises the question of their provenance: were they produced inside the settlement or are they the result of exchanges with other communities? No certain answer can be given in the case of objects found in complex Cx_236, because no indication of local bronze processing can be identified for the BB2-C horizon in Şagu. The number of bronze objects increases and proof of metal processing can be found during the BD/HA1 horizon. Thus, moulds made of clay and sandstone were found in complexes Cx_25, Cx_182, Cx_194 and Cx_198, pottery fragments with bronze smelt traces on the inside were discovered in Cx_198 and casting remains in Cx_66, Cx_182 and Cx_193. Given the above enumerated finds, one can assert that bronze objects were cast on the "A1_1" site during the BD/HA1 horizon.

Keywords: rescue excavation, Lower Mureş, Late Bronze Age, settlement, bronze artifacts.

Introduction

Infrastructure development in the county of Arad and other factors brought numerous benefices to archaeology; thus, more than 50 new sites were identified and catalogued between 2006 and 2009 through field evaluations for the future highway section that connects Nădlac and Timişoara, part of the IVth European corridor. The site located through the archaeological diagnosis performed in 2007 on the border of the village of Şagu is one of these new sites.

The preventive archaeological research of the site labeled "A1_1", located between kilometers 0+19.900 and 0+20.620, was determined by the need to provide archaeological discharge papers for the 720 meters of land about to be affected by the future highway. The large-scale infrastructure works required for the project allowed for soil removal over an extended surface that contained types of settlements from different periods. The recorded contexts and recovered artifacts are testimonies of less known and less researched historical periods in this region (i.e. the end of the Bronze Age and the Post-Roman, Sarmathian Era). The present study is intended as a mere preamble to a future monograph of the entire site. Taking into consideration the scale of discoveries, this initiative is nevertheless more complex and time-consuming. Through the present paper we only intend to present metal items discovered on site and the relevant contexts in which they were found.

Physical and geographical context

The archaeological site under analysis is located in the piedmont plain of Vinga, the most ancient and complex geographical unit in the area, in fact an ancient delta of River Mureş. The Mureş Valley is the northern limit of this plain, the settlements of Aluniş-Alioş form its southern border, while to the east it borders Podişul Lipovei and to the west Câmpia Jimboliei, by the settlements of Satu Mare-Satchinez. The plain's altitude varies between 180 and 190 m (to the south-east) and 100 m (to the west). In fact, the relief consists of very high terraces and deep valleys[1].

Through repeated surface researches, specialists have noted that the site extends over the third terrace of River Mureş. The location is ideal: there is little chance of flooding, the spot is sheltered from air currents and it provides good visibility, especially to the north.

* English translation: Ana M. Gruia.

1 Posea 1997, 360–366, fig. 38.

As it is well known, an area's geographical context undergoes constant changes: "Thus, primary biocenoses and forest steppe habitats underwent radical changes, through natural plain areas being turned into agricultural fields"[2]. The idea of associating current and prehistoric geographical factors cannot be taken into consideration due to changes that took place during time. Human intervention in the areas north of River Mureş started in 1774, when the numerous marches of the lower areas started to be drained and channeled; the processes was only completed during the Communist period, in 1960–1970[3].

The reconstruction of geographical contexts since prehistory and until the dawn of the modern era is a sinuous and approximate initiative. In order to recreate an approximate picture of the area before it was drained and channeled, one can employ Habsburg military maps compiled in the end of the 18th century and during the 19th century. Besides these, another source to provide useful data consists of maps compiled between 1723 and 1725 by Mercy (the governor of Banat during that period).

Site location

The settlement of Şagu is located 15 km south of the city of Arad, along the national road 69 that connects Arad and Timişoara (Pl. 1/1). Site "A1_1" was identified 200 m south of the mid-distance between Şagu and Cruceni, south of the road connecting the two settlements (Pl. 1/2; 2). The center of the site has the following geographical coordinates: Latitude N46°03'25.52'', Longitude: E21°18'33.99''. The absolute altitude of site surface varies between 140 and 141 m.

History of research

The first research of the site surface that we are ware of were performed by S. A. Luca during the 1990s. No other research was carried out on the site until 2007. During the archaeological evaluation of the future highway Arad-Timişoara section, one team from the Museum Complex of Arad re-identified this site between kilometers 0+19.900 –0+20.620 of the above mentioned section.

The report prepared by specialists from the Museum Complex in Arad (P. Hügel, G. P. Hurezan, Fl. Mărginean and Zs. Kopeczny) notes that the site develops lengthwise between kilometers 0+19.900 –0+20.620 m and the entire estimated surface of the site reaches 357,700 m^2 (720 × 496 m; 35.77 ha). Several items were recovered from the multi-layer site: pottery fragments, elements from grinders and adobe pieces dated to the 3rd–5th centuries A.D. and pottery, a small iron knife and a saddle stirrup dated to the interval between the 10th and the 11th century A.D.

Two years later (2009), while archaeologically expertising the location of a clay deposit site, Fl. Mărginean and V. Sava performed surface research both inside and around the site. They collected numerous pottery fragments from the Late Bronze Age and some that can be dated to the 3rd–5th and 11th–13th centuries A.D. From the perspective of the quantity of discovered pottery, most of it can be dated to the Late Bronze Age (BD/HA1), while only a few atypical fragments belong to each of the other two eras (3rd–5th and 11th–13th centuries A.D.) The same surface research allowed archaeologists to determine the maximum pottery density in the south-eastern perimeter, over a surface of 100 × 100 m.

Representatives of the Museum Complex in Arad performed archaeological research on the site during 2010 that aimed at safeguarding the archaeological patrimony that was about to be affected by the future Arad-Timişoara highway.

Site dimensions

Measurements taken in 2009 partly confirm the dimensions noted in the archaeological diagnosis report for the Arad-Timişoara highway: in length, along the west-east axis, it measured 450 m while in width, along the north-south axis it measured 720 m, thus the estimated size of the entire site reaches 324,000 m^2 (32.4 ha). The settlement dated to the end of the Bronze Age BD-HA1, is

[2] Berindei, Măhăra 1971, 33.
[3] Posea 1997, 79.

measuring 530 m in length and ca. 450 m in width. The site's length (of 530 m) is exact since it has been verified through excavations, while the 450 m of width were determined through field research thus the width of the Bronze Age site can be, for now, considered as approximate. Nevertheless, one can state that the prehistoric settlement covered ca. 238,500 m^2, i.e. 23.85 ha.

The habitation of the 3rd–5th centuries develops between kilometers 0+19.900 –0+20.170, along just 270 linear m. The width of this settlement cannot be estimated since no significant pottery fragments dated to this period have been identified on the surface. Due to this drawback, one cannot estimate the size of the settlement dated to the 3rd–5th centuries A.D. Though several early medieval items were discovered, no such complexes have been delimited in the area under research.

Description of research methodology

Since the methodology followed during the excavation of large-size archaeological objectives that are to receive archaeological discharge papers lacks unity, a strategy intended to combine both the constructor's needs and archaeological scientific rigor was designed in the beginning of 2010.

Thus, in order to speed the works, the team requested the mechanical removal of the upper layer over the entire site area about to the affected by the highway section. This stage was performed with slope blade excavators. The first stage envisaged the removal of the vegetation layer that measured ca. 0.20–0.25 m, but we had to remove a layer of up to 0.10–0.15 m because *in situ* archaeological remains (undisturbed) started to appear at a depth of 0.10–0.15 m; among them there were two hearths. This 0.10/0.15 m thick layer was removed over the entire length and width of the site's affected side (720 m; 28,800 m^2; 2.88 ha). Each complex was marked, excavated and recorded and new layers were removed until the archaeological sterile was met; at that level we identified complexes that went deeper into the yellow clay layer. Each complex was labeled with identification numbers, from 1 onwards.

All archaeological complexes located on a site require unitary, but as complete as possible excavation techniques and recording system. Thus all such complexes have standard record files containing data such as their dimension, the depth where they have been identified, the type of complex, an exhaustive description of the filling (in the case of complexes dug in the soil), identified artifacts etc. These records were filled throughout the excavation of a complex and all files were filled in by the same person. In the end of each day, all complete records were digitalized.

Various excavation techniques were used for the different types of complexes, but the same principles applied. Complexes dug in the ground were initially emptied by half, in order to create a profile. Usually, such complexes were sectioned along their north-south axis or along the long sides. In case of larger pits, they were cross sectioned in order to allow for a better documentation. Each of these levels was numbered, described and its color was determined according to a standard catalogue (Munsell Soil – color charts 2009).

When an archaeological complex could not be sectioned (since it contained too many artifacts, or for other reasons), its horizontal deposition levels were excavated and recorded; the deposition levels could include up to nine layers. In order to best document each such layer, they were photographed, drawn and described separately in the standard record files.

After each archaeological complex was half excavated and a profile obtained, it was photographed and drawn. After the completion of these operations, the other half was emptied and the entire emptied archaeological complex was photographed and drawn dimensionally.

All artifacts were collected according to the archaeological complexes in which they were discovered. The artifacts were collected in plastic bags and each bag contained the name of the site, the identification number of the archaeological complex, the level of discovery and depth of discovery of the artifacts. Special artifacts, the most interesting or spectacular ones, were collected in separate bags and deposited in other boxes.

An electronic database was designed in order to allow easy access to data collected during the excavation. The database contained standard record files of each complex, all its photographs (and the time when it was identified, sectioned, intermediate photos, images of details, when emptied and, if required, photos of each layer) and drawings (of the profile, when emptied, or, if such was the case, of each level).

General stratigraphy of the site

After the site was uncovered, we could note the fact that the culture layer was only preserved over 90 m, between kilometers 0+20.230 –0+20.320 m, containing 41 complexes (especially concentrations of pottery and hearths) that belong to the Late Bronze Age.

Despite the fact that *in situ* archaeological complexes have been identified in the culture complex, parts of this level were disturbed by modern and contemporary agricultural works. One argument that supports this statement is the discovery of modern pottery fragments (dated to the 18th–19th century) among the prehistoric artifacts inside the culture level.

The rest of the culture level on site surface was destroyed by successive plowing that we were able to identify in some areas down to –0.60 m. Several hearths escaped untouched by plowing, such as those labeled Cx_19 (kilometer 0+20.090) and Cx_21 (kilometer 0+20.370). The archaeological sterile level (yellow clay) was found on the entire surface of the site at ca. –0.60 m.

Catalogue

1. *Miniature axe* (Pl. 3/1). Bronze. The head is emphasized, slightly wider by the socket mouth, thinner and wider towards the blade. The socket mouth is not perforated throughout. The blade is slightly nicked; the rest of the head does not show traces of usage. The entire surface is covered in grayish green (5GY – 5/2[4]) patina and in some places there are traces of light olive green (5GY – 5/4) oxidizing. Length: 5.5 cm; blade width: 1.28 cm; head thickness: 0.48 cm; thickness by the socket mouth: 0.58 cm; blade thickness: 0.18 cm; weight: 5 gr. Cx_26.
2. *Needle fragment* (Pl. 3/2). Bronze. A small part of the needle is preserved. One of the sides is round in section, while the other side is rectangular. The patina is light grayish green (5GY – 6/2). Length: 2.4 cm; thickness: 0.2 cm, weight: 0.8 gr. Cx_33, ▼ 0.10; level 1.
3. *Needle fragment* (Pl. 3/3). Bronze. The tip and part of the shaft are preserved. The body is hexagonal in section and the tip is rectangular. The color of the patina on the lower part is grayish green (5GY – 6/2) and pale green (5G_/2 – 6/2) in the upper part. Length: 5.26 cm; thickness in the upper part: 0.3 cm; thickness in the lower part: 0.16 cm, weight: 2 gr. Cx_35, ▼ 0.63 m, level 1.
4. *Ring fragment* (Pl. 3/4). Bronze. The item is concave in section and the body is wavy. The patina is grayish green (5GY – 5/2). Length: 1.8 cm; width 0.08 cm; weight: 0.6 gr. Cx_40, ▼ 0 –0.10 m, level 1.
5. *Fragmentary saw blade* (Pl. 3/5). Bronze. The teeth are not very visible. One can note the braking line at both ends; at one end the blade is slightly turned outwardly, while at the other end it turns inwardly. The patina is very dark grayish green (5GY – 3/2) and does not cover the entire body; it is absent mainly on the lateral areas. The item is of a weak red (5R – 4/4) color. Length: 3.08 cm; width: 1.59 cm; thickness: 0.11 cm; weight: 3 gr. Cx_79, ca. ▼ 0.10 m.
6. *Wire fragment* (Pl. 3/6). Bronze. At one end it is rectangular in section, while throughout the rest it is round. The item is bent. The patina is light grayish green (5GY – 6/2). Length: 7.2 cm; width: 0.18 cm; weight: 1 gr. Cx_84, ▼ 0.20 m, level 1.
7. *Wire fragment* (Pl. 3/7). Bronze. The item is round in section and is bent. The patina is light grayish green (5GY – 6/2). Length: 7 cm; width: 0.12 cm; weight: 0.8 gr. Cx_156.
8. *Fragmentary saw blade* (Pl. 3/8). Bronze. The end of the saw is preserved and part of the main body. The end is highlighted through two triangular extensions. The teeth are rather well visible. The patina is very dark grayish green (5GY – 3/2). Length: 6.2 cm; width: 1.5 cm; thickness: 0.19 cm; weight: 5 gr. Cx_170, southern corner.
9. *Dagger handle fragment with orifices for fastening the hilt* (Pl. 3/9). Bronze. The end of the handle becomes narrower and is provided with orifices, of which only two are preserved. Casting traces are visible on the surface. The patina is light grayish green (5GY – 6/2). Length: 3.18 cm; width: 2.3 cm; thickness: 0.32 cm; diameter of the orifice on the handle: 0.4x0.3 cm; weight: 6 gr. Cx_201, ▼ 0.34 m.

[4] To determine the colors we used Munsell Soil-Color Charts 2009.

10. *Finger ring with multiple spirals* (Pl. 4/1). Bronze. The ring consists of four spirals, is slightly concave in section and has rounded ends. One of the spirals is pushed inwardly. The patina is grayish green (5GY – 5/2). Length: 21.5 cm; inner diameter: 1.56 × 1.52 cm; outer diameter: 1.79 × 1.8 cm, width: 0.12 cm; weight: 4 gr. Cx_230, ▼ 0.23 cm, level 1.
11. *Saltaleon fragment* (Pl. 4/2). Bronze. The item is slightly bent. The patina is grayish green (5GY – 5/2). Length: 2.7 cm; width: 0.42 cm; thickness: 0.08 cm; weight: 0.9 gr. Cx_236, ▼ 0.20 cm.
12. *Reversed-heart-shaped pendant* (Umgekehrt herzförmige, durchbrochene Anhänger) (Pl. 4/3). Bronze. The patina is grayish green (5GY – 5/2). Length: 3.2 cm; width: 3.04 cm; thickness: 0.28 cm; weight: 4 gr. Cx_236, ▼ 0.10 cm.
13. *Appliqué* (Pl. 4/4). Bronze. It has two circular orifices (performed from the outside), on each side of the item, measuring 0.02 cm in diameter. One end is bent inwardly and the rest of the item is twisted due to mechanical factors. It is cracked, especially on the margins. The patina is grayish green (5GY – 5/2). Preserved diameter: 2.66x2.1 cm, width: 0.04 cm; weight: 0.6 gr. Cx_291, ▼f 0.15 cm.
14. *Fragment of an item with uncertain function* (Pl. 4/5). Bronze. It is rectangular in section and the patina is pale green (5G_/2 – 6/2). Length: 2.94 cm; width: 0.44 cm; thickness: 0.22 cm; weight: 1 gr. Cx_295.
15. *Ring* (Pl. 4/6). Bronze. It is concave in section and has flat, overlapping ends. The patina is pale green (5G_/2 – 5/2). Length: 4.7 cm; width: 0.2 cm; inner diameter: 1.2x1.2; outer diameter: 1.44x1.98 cm; width: 0.1 cm; weight: 0.4 gr. Inside the culture layer.
16. *Bronze plate* (Pl. 4/7). Part of the edge is preserved. The patina is grayish green (5GY – 5/2). Length: 1.98 cm; width: 1.72 cm; thickness: 0.16 cm; weight: 0.9 gr. Inside the culture layer, 1 m north of de Cx_113.
17. *Needle fragment* (Pl. 4/8). Bronze. The tip and part of the shaft have been preserved. The shaft is circular in section. The patina is grayish green (5G_/2 – 4/2). Length: 5.32 cm; thickness in the upper part: 0.3 cm; thickness in the lower part: 0.2 cm, weight: 2 gr. Inside the culture layer, around kilometer 0+20.300.
18. *Bronze plate* (Pl. 4/9). The body of the item is very slightly bent and its patina is grayish green (5G_/2 – 5/2). Length: 3.3 cm; width: 2.74 cm; thickness: 0.19 cm; weight: 6 gr. Inside the culture layer, 5 m north-west of Cx_02.
19. *Bronze plate* (Pl. 4/10). The body of the item is slightly bent and its patina is pale green (5G_/2 – 8/2). Length: 2.02 cm; width: 1.6 cm; thickness: 0.1 cm; weight: 1 gr. Inside the culture layer, around kilometer 0+20.220.

Description of finding contexts

Cx_26. Waste pit. The edges of this context were clear and they were identified due to differences in color. The filling of the pit consisted of two layers. The first was identified between 0 and –0.50/0.60 m; the soil was darker and pigmented with adobe. This layer included pottery and animal bone fragments. The second layer was identified between –0.60–1.13 m; the soil of this layer was light grey in color, with numerous yellow intrusions and of clayish consistence. It included several artifacts, such as pieces from an oven and a grinder fragment. There were also one pottery fragment decorated with grooves forming a garland, a bowl decorated on the outside with incisions in shape of a star and pottery fragments decorated with wide grooves. The pit was almost circular in shape, with walls tilted outwardly and flat bottom. Identification depth: 142.08 m; length: 1.20 m; width: 1.05 m; depth: 1.13 m.

Cx_33. Waste pit. The edges of this context were clear and they were identified due to differences in color. The filling of the pit consisted of two layers. The first was identified between 0 and –0.55 m and consisted of grey soil pigmented with adobe and coal. The soil was of clayish consistence. Most artifacts were discovered in this first layer: the bronze needle, a perforated fish vertebra, pottery fragments decorated with wide grooves, fragments of adobe and animal bone remains. The bone fragment was discovered at a depth of –0.10 m, in the central area of the western side. The second layer was identified between –0.55 m and 0.78 m. The filling consisted of grayish-yellow, little pigmented, clayish soil. The shape of the pit was oval, with walls tilted outwardly and flat bottom. Identification depth: 142.09 m; length: 2.55 m; width: 1.70 m; depth: 0.78 m.

Cx_35. Waste pit. The edges of this context were clear and they were identified due to differences in color. The filling of the pit consisted of two layers. The first continued until 0.90 m and consisted of grayish-yellow soil pigmented with adobe. Both layers had clayish consistence. A large part of the pottery fragments, clay weights, ornamented fragments from movable hearths and the needle fragment were discovered in this first layer. Among the pottery fragments, some are decorated with grooves placed as to form garlands. The second layer was identified between –0.90 and 1.35 m. It was of grayish-yellow color. The shape of the pit was circular, with almost straight walls and flat bottom. Identification depth: 142.11 m; length: 1.26 m; width: 1.28 m; depth: 1.35 m.

Cx_40. Waste pit. The edges of this context were clear and they were identified due to differences in color. This complex cut through Cx_41 towards the north-east. The filling of the pit consisted of two layers. The first layer continued until the depth of 0.37 m; the soil was dark grey, of ash-like consistence, pigmented with a large quantity of ashes. Ash lenses were found on the upper part of the complex. The layer contained several pottery fragments decorated with grooves, adobe fragments, animal bone fragments and the bronze ring fragment. The second layer was identified between –0.37 and –0.76 m; the soil was grayish-yellow, with intrusions of yellow clay, slightly pigmented with adobe and was of ash-like consistence. This second layer contained more artifacts than the first. The shape of the pit was oval, with walls tilted outwardly and slightly alveolar bottom. Identification depth: 142.053 m; length: 1.44 m; width: 1.12 m; depth: 0.76 m.

Cx_79. Waste pit. The edges of this context were clear and they were identified due to differences in color. The filling consisted of dark brown soil, pigmented with coal and very few adobe fragments. It contained pottery fragments decorated with wide grooves, animal bone fragments and one piece from a bronze saw. The latter was discovered in the center of the pit, at ca. –0.10 m. The shape of the pit was almost oval, narrower towards the north, with straight walls and alveolar bottom. Identification depth: 142.02 m; length: 1.45 m; width: 1.34 m; depth: 0.28 m.

Cx_84. Waste pit. The edges of this context were clear and they were identified due to differences in color. The filling of the pit consisted of two layers. The first continued until the depth of 0.33 m. The soil was of grayish-yellow color, pigmented with adobe and coal and had ash-like consistence. Layer 2 was identified between 0.33 and 0.42 m. The soil of this layer was dark grey in color, pigmented with a little adobe and coal. A lens of ash was identified in the center of the pit, between the two layers. The bronze wire was found in the first layer, besides pottery fragments decorated with wide grooves, human bone fragments and ornamental fragments from movable hearths (these fragments in particular were identified in the first layer). The shape of the pit was almost oval, with walls slightly tilted inwardly and alveolar bottom. Identification depth: 142.040 m; length: 1.40 m; width: 1.06 m; depth: 0.42 m.

Cx_156. Waste pit. The edges of this context were clear and they were identified due to differences in color. After emptying the pit, archaeologists were able to identify two layers. The first measured 0.56 m in thickness, was of a dark grey color, pigmented with a lot of adobe and a few coal fragments and was of clayish consistence. The second layer was identified between the depths of 0.56 and 0.90 m, was light grey, little pigmented and of clayish consistence. The most numerous pottery fragments were found inside the second layer, some decorated with incisions placed in the shape arches or decorated with grooves, adobe fragments and animal bone remains. The shape of the pit was irregular, with walls slightly tilted outwardly and alveolar bottom. Identification depth: 141.702 m; length: 1.90 m; width: 1.71 m; depth: 0.90 m.

Cx_170. Clay extraction pit? The edges of this context were clear and they were identified due to differences in color. A single layer has been identified, of a dark grey color, pigmented with adobe in the upper part, especially along the south-western side. Few artifacts were recovered from the filling, among which a lobed bowl, small fragments of adobe, animal bone remains and one saw fragment. The shape of the pit was irregular, with almost straight walls and alveolar bottom. Identification depth: 141.140 m; length: 6.40 m; width: 5.64 m; depth: 0.80 m.

Cx_201. Waste pit. The edges of this context were clear and they were identified due to differences in color. The filling consisted of a single layer of very dark grey soil, pigmented with little adobe and of ash-like consistence. Besides the bronze plate fragments, archaeologists have also uncovered pottery fragments decorated with wide grooves, animal bone remains, one grinder fragment and a clay weight.

The shape of the pit was circular, with straight walls and flat bottom. Identification depth: 140.840 m; length: 1.38 m; width: 1.45 m; depth: 0.36 m.

Cx_230. Waste pit. The edges of this context were clear and they were identified due to differences in color. The filling of the pit consisted of four layers. The first continued down to 0.34 m, was of a very dark brown-grey color, pigmented with coal and adobe and had ash-like consistence. The second layer was identified between –0.34 and –0.50 m, was brown-yellowish in color, with numerous intrusions of yellow clay, pigmented with coal and of ash-like consistence. The third layer was identified between –0.50 and –0.73 m, was dark grey in color, unpigmented and of ash-like consistence. The final layer was identified between –0.73 and –0.92 m, was of a dark brown color, unpigmented, with ash-like consistence. The multi-spiral bronze ring was discovered in the first layer. Besides the few pottery fragments decorated with wide grooves, there were also some animal bone remains. The shape of the pit was oval, with walls strongly titled outwardly and alveolar bottom. Identification depth: 140.878 m; length: 1.70 m; width: 1.40 m; depth: 0.92 m.

Cx_236. Waste pit. The edges of this context were clear and they were identified due to differences in color. A single layer was identified, dark grey in color, pigmented with adobe and a little coal, with intrusions of yellow clay and of clayish consistence. The pendant and the saltaleon were discovered at –0.10 and –0.20 m, respectively, on the eastern side of the southern wall. Besides these bronze items, the filling of the pit also included pottery fragments decorated with incisions. The shape of the pit was circular, with straight walls and flat bottom. Identification depth: 140.377 m; length: 1.80 m; width: 1.70 m; depth: 0.52 m.

Cx_291. Waste pit. The edges of this context were clear and they were identified due to differences in color. A single layer was identified, of dark brown color and sandy consistence. Besides the bronze appliqué, there were also pottery fragments decorated with incised arches, circular incisions and wide grooves, one fragment from a lobed bowl and animal bone remains. Its shape was almost rectangular, with straight walls and alveolar bottom. Identification depth: 137.321 m; length: 2.90 m; width: 2.60 m; depth: 0.30 m.

Cx_295. Waste pit. The edges of this context were clear and they were identified due to differences in color. After emptying the pit, archaeologists identified three filling layers. The first was 0.10 m thick and consisted of fragments from movable hearths and pottery. The second layer, identified between –0.10 and –0.25 m, consisted of large fragments from movable hearths, mainly located on the northern side of the pit, pottery fragments and a bi-trunk-shaped pot located on the southern side. The third layer was identified between –0.25 m and –0.50 m and consisted of undecorated movable hearths fragments and a grinder fragment. In the last layer, reaching down to –0.78 m, archaeologists uncovered pottery fragments decorated with grooves and very few fragments from movable hearths. The shape of the pit was oval, with walls slightly tilted outwardly and almost flat bottom. Identification depth: 136.083 m; length: 2.15 m; width: 1.46 m; depth: 0.78 m.

Chronological identification of discoveries

Since bronze items discovered on the "A1_1" site in Şagu cannot be dated to narrow chronological intervals, we have decided to associate them to the pottery material discovered in each complex. We will subsequently discuss the chronological framing of each complex.

Besides a bronze miniature axe with emphasized head (Pl. 3/1), the pit labeled Cx_26 contained pottery fragments decorated with grooves forming garlands, decorating bi-trunk-shaped pots (Pl. 10/5) and cups (Pl. 10/4, 8). The pottery fragment illustrated on Pl. 10/5 was almost certainly part of a bi-trunk-shaped pot. The shape of such pots originated in the urns typical to period BD/HA1, that already displayed characteristic traits such as the bi-trunk-shaped body and decoration placed on the maximum diameter of their belly[5]. The earliest examples were found in Biharkeresztes[6], Doboz[7], Hódmezővásárhely[8], Karaburma[9] and Nagyhalász[10]. Among the most recent, one can

[5] Szabó 2002, 45, fig. 2, IV.B.1.
[6] Szabó 2002, pl. 134/1.
[7] Szabó 2002, pl. 146/6.
[8] Szabó 2002, fig. 26, IV.B.2.
[9] Todorović 1977, grob 2, grob 3, grob 49, grob 109, grob 185, grob 226.
[10] Kemenczei 1984, pl. CXXIX/9; Szabó 2002, fig. 26, IV.B.2.

mention the item in Kalakača[11] (dated sometime during stage HB2-HB3), two items in Teleac level III[12] – associated by the authors of this site's monograph to stage HB3-HC[13] and Dej[14], contemporary to the third level in Teleac. Grooves forming garlands, that decorated bi-trunk-shaped pots, but other items as well, were widely spread towards the end of the so-called pre-Gáva horizon (BD-HA1), in Cornuțel[15], Jánosszállás[16], Moldova Nouă – "Cariera de banatite"[17], Polgár[18], Susani – "Grămurada lui Ticu"[19], Timişoara – "Fratelia"[20] and Vladimirescu[21]. The cup fragment illustrated on Pl. 10/8 has analogies in Susani – "Grămurada lui Ticu"[22] and Battonya[23], in the HA1 horizon. Thus, on the basis of these analogies, one can establish that the pit conventionally labeled Cx_26 belongs to the HA1 chronological horizon.

The needle fragment shown in Pl. 3/2, identified in Cx_33, of which a small part is preserved, cannot be dated. Unfortunately, neither does the pottery discovered in the same context. One of the pottery fragments is decorated with vertical grooves. As it is well known, grooves are typical to the so-called second phase of the Cruceni-Belegiš culture[24], paralleled to HA1[25].

Besides a bronze needle fragment (Pl. 3/3), complex Cx_35 also contained a bowl decorated with grooves forming garlands (Pl. 11/4) and the upper part of a bi-trunk-shaped vessel decorated with horizontal grooves and grooves forming garlands (Pl. 12/1). As previously mentioned (see the discussion of Cx_26) bi-trunk-shaped vessels thus decorated belong to the HA1 horizon.

Besides the ring fragment (Pl. 3/4) discovered in Cx_40, the saw blade (Pl. 3/5) discovered in Cx_79 and the wire fragment (Pl. 3/6) in Cx_84, pottery fragments decorated with grooves were found, that can probably be dated in HA1 as in the case of Cx_33. The saw blade fragment is the only one of the three bronze items that could be dated more precisely. This type of artifact is widely spread in the Cincu-Suseni series (HA1), though it also features in deposits such as those in Uriu, Jupalnic-Turia and Moigrad-Tăuteu[26].

Another bronze item that cannot be dated is the wire fragment with round section (Pl. 3/7) discovered in Cx_156. Nevertheless, its chronological framing can be narrowed down on the basis of pottery fragments discovered in the same complex. Among the most representative such items, one can mention the cup fragment decorated with horizontal, vertical and arcade-like placed incisions (Pl. 13/1) and two fragments decorated with grooves (Pl. 13/2–3). Decorative elements consisting of incisions forming arcades were also found in Giroc "Mescal"[27], Timişoara "Fratelia", in the Cruceni-Belegiš environment phase I and in Sântana "Cetatea Veche"[28].

Another saw blade was identified in the clay extraction pit labeled Cx_170. Several pottery items were discovered near this bronze item, among which a lobed bowl (Pl. 13/4). The latter type was found in both the BD chronological level in Debrecen[29] and in HA1 contexts, such as the one in Susani[30].

The dagger fragment with orifices for fixing the handle (Pl. 3/9) and the multi-spiral-shaped ring (Pl. 4/1), discovered in Cx_201 and Cx_230 respectively, were associated with pottery fragments decorated with wide grooves (Pl. 13/5–7). Thus, such pits can be paralleled to Cx_26, Cx_33, Cx_35, Cx_40, Cx_79 and Cx_84.

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11 Medović 1988, fig. 295/10.
12 Vasiliev *et al.* 1991, fig. 32/5, 7.
13 Vasiliev *et al.* 1991, 100.
14 Horedt 1964.
15 Gumă 1993, pl. XIII/12.
16 Szabó 2002, pl. 35/1–2.
17 Gumă 1993, pl. XVII/3.
18 Szabó 2002, pl. 70/2.
19 Stratan, Vulpe 1977.
20 Gumă 1993, pl. XVI/3.
21 Pădureanu 1985, pl. VII/2.
22 Stratan, Vulpe 1977, Taf. 7–8.
23 Szabo 2004, Abb. 12/7.
24 Tasić 1984, 33; Szentmiklosi 2009, 132–134.
25 Tasić 1984, 40; Bukvič 2000, 35, 223–224.
26 Ciugudean *et al.* 2006, 39; Bejinariu 2007, 40.
27 Szentmiklosi 2009, pl. LXVII/1–2, 6, 8; LXVIII/6–9; LXXIII/4; LXXIV/10.
28 Gogâltan, Sava 2010, fig. 37.
29 Szabo 2004, Taf. 12/17–47.
30 Stratan, Vulpe 1977, Taf. 4/6a-b; 5/218; 15.

A reversed-cross-shaped pendant (Pl. 4/3) and a saltaleon (Pl. 4/2) were discovered in Cx_236. Out of the two items, the pendant is the one that provides the dating of the entire complex. Such a pendant was discovered in tomb no. 17 in the necropolis of Detek[31], in the tumular environment, in tomb no. 2 in Szentes[32], in Zákányszék, (BB2)[33], but also in the Piliny environment, in Nagybátony (B2-C)[34]. Other pendants of this type were discovered in the tombs from Hetény (the Koszider horizon)[35] and in tomb D359 in Tiszafüred "Majoroshalom" part of the Hajdúdámson-Apa-Ighiel-Zajta group[36].

The appliqué discovered in Cx_291 (Pl. 4/4) was associated with pottery decorated with incisions forming arcades (Pl. 14/3, 5, 8, 12) and with grooves (Pl. 14/4, 6, 11). The bronze appliqué is not a good dating element since items of this type can be found since the Hajdúdámson-Apa-Ighiel-Zajta horizon[37] and until the Cincu-Suseni horizon[38]. On the basis of pottery finds, the items discovered in this complex are contemporary to those in Cx_156.

The other bronze items (Pl. 4/5–10) cannot be attributed to any chronological horizon. Nevertheless, taking into consideration the fact that the entire settlement, with the exception of some Sarmathian complexes, belongs to various phases of the Late Bronze Age, these bronze items can be dated to the same period.

One can easily note that the vast majority of bronze items that can be dated (in themselves or in association with various pottery fragments) belong to the BD/HA1 chronological horizon. The pendant and the saltaleon discovered in Cx_236 belong, as an exception, to the B2-C horizon.

The significance of discoveries

Bronze items were only identified in 13 of the 322 complexes discovered on the "A1_1" site. Two such items, a saltaleon (Pl. 4/2) and a pendant (Pl. 4/3), were found in Cx_236, thus 14 items were discovered in archaeological complexes. The other five items were found inside the culture layer.

As for their function, up to the present state of research, the above mentioned complexes are believed to be refuse pits. As an exception, Cx_170 might be a clay extraction pit, later on turned into a refuse pit, due to its significant size, irregular shape and the fact that the pottery kiln Cx_180 was located near by.

The discovery of these bronze items makes one wonder if they were produced on site or reached it through exchanges with other communities. No certain answer can be given for items discovered in complex Cx_236, since the BB2-C horizon in Şagu did not reveal traces of local bronze processing. The number of bronze items increases during the BD/HA1 horizon and there is already proof of local processing. Clay and sandstone molds were thus found in complexes Cx_25, Cx_182, Cx_194 and Cx_198; pottery fragments with traces of melted bronze on the inside were found in Cx_198 and casting traces in Cx_66, Cx_182 and Cx_193. Taking into consideration the above mentioned discoveries, one can state that bronze items were cast on the A1_1 site during the BD/HA1 horizon.

Considering the large size of the excavated area, 28000 m^2, representing ca. 8–10% of the entire estimate surface of the site, one can note that the number of bronze items is very small (just 19). Besides, the 19 items cumulate a very small quantity of metal, i.e. 45 grams. The case is not unique, since there are other sites as well, of large size but with a small number of such finds, such as the ones in Petea "Csengersima"[39] and Nyíregyháza – Oros "Úr Csere"[40]. Another site, relatively well researched, is the fortification in Sântana "Cetatea Veche", but unlike the above mentioned cases, an impressive number of bronze objects was discovered there[41]. 53 bronze items were discovered during the numerous field researches (32 itesm) and archaeological excavations (21 items). The difference

31 Kemenczei 1989, abb. 3/9.
32 Nagy 2005, abb. 1/18.
33 Sánta 2004, abb. 10/15.
34 Kemenczei 1984, Taf. 6/23.
35 Mozsolics 1973, Taf. 2/2–3.
36 David 2002, Taf. 271/3–4.
37 David 2002, Taf. 271/6.
38 Petrescu-Dâmboviţa 1977, pl. 116/25; 126/17.
39 Marta 2009, 44–45; 83–84.
40 Marta *et al.* 2010, 47–53.
41 Rusu *et al.* 1996, pl. XIV; Gogâltan, Sava 2010, fig. 13–15, 39–42.

between "A1_1" and Sântana "Cetatea Veche" under this respect can be explained by the fact that the latter site was a power center while the first was a settlement in the area of influence of a power center in the Lower Mureș.

Victor Sava
Museum Arad
Arad, RO
sava_vic@yahoo.com

George Pascu Hurezan
Museum Arad
Arad, RO
gphurezan@yahoo.com

Florin Mărginean
Museum Arad
Arad, RO
finnlands@yahoo.com

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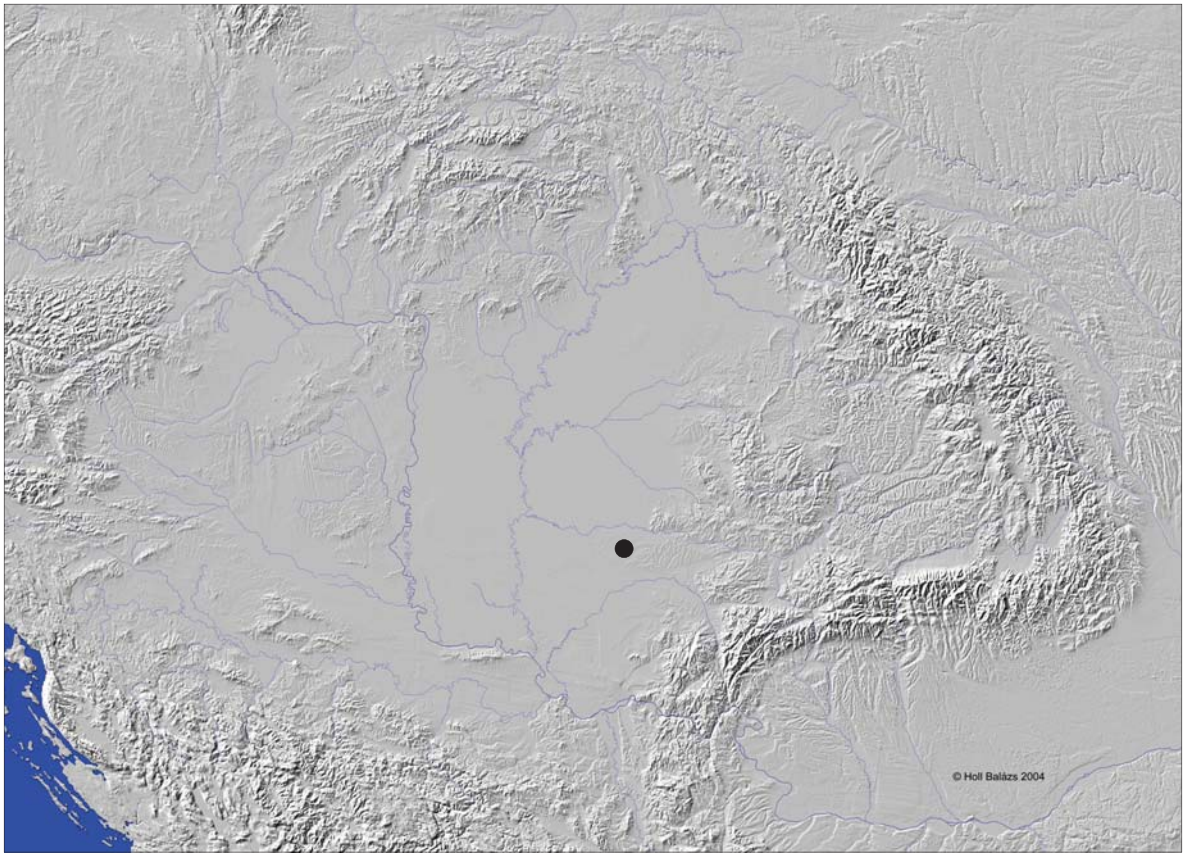

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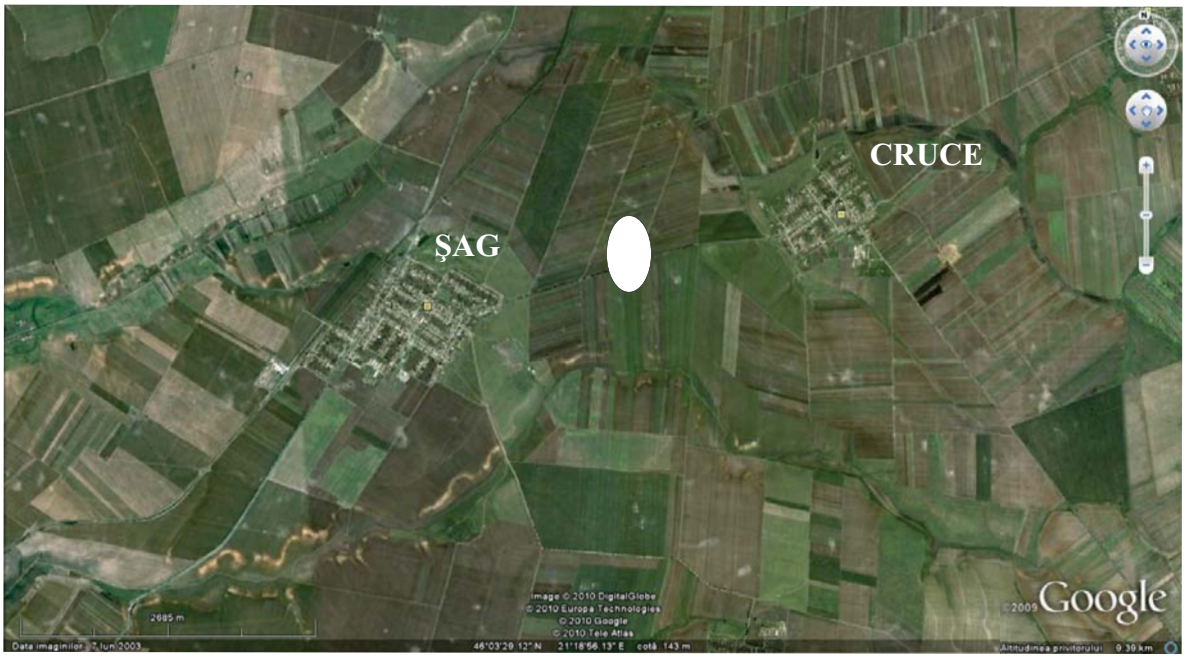

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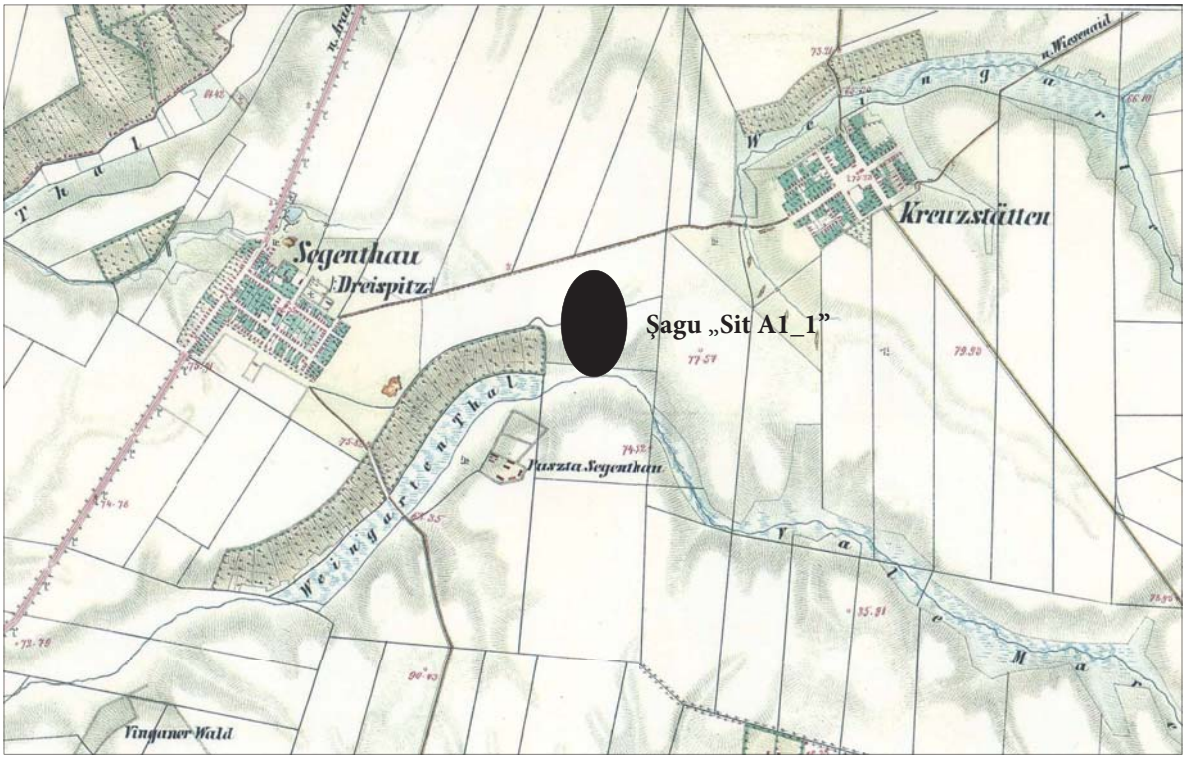
Plate 1. 1. Carpathian Basin map with the localization of the site „A1_1"; 2. Satellite image of the area Şagu-Cruceni with the localization of the site „A1_1" (source: Google Earth).



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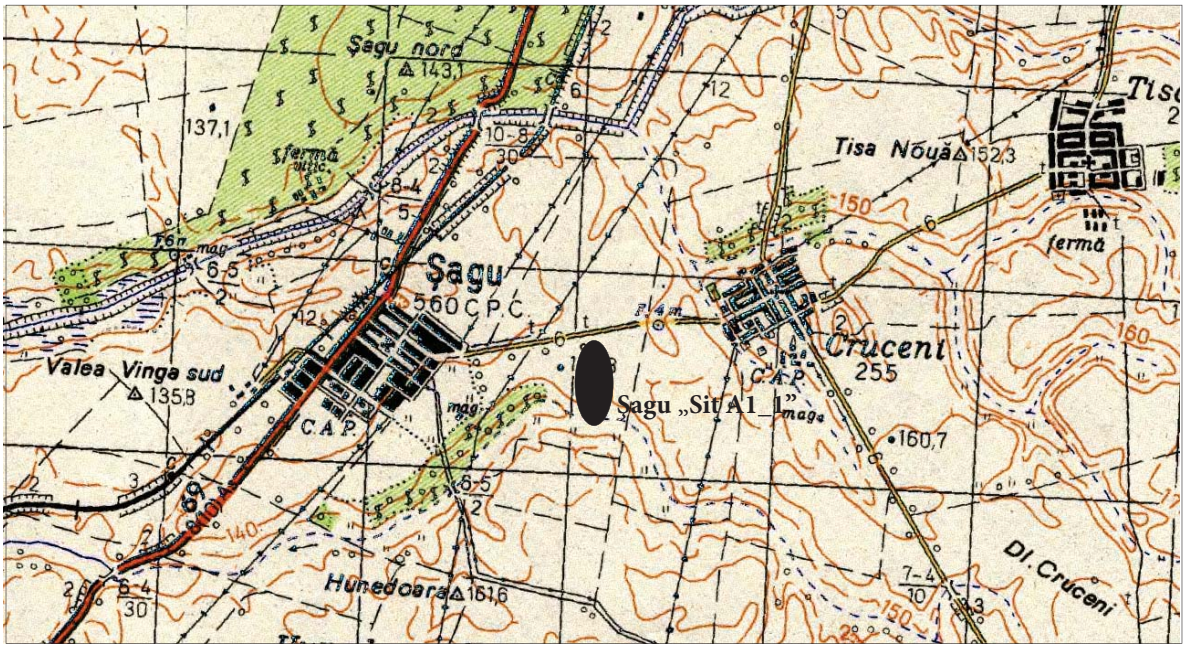

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Plate 2. 1. XIXth century map of Şagu-Cruceni area with the localization of the site „A1_1”; 2. Şagu-Cruceni area map with the localization of the site „A1_1” (1:50.000).

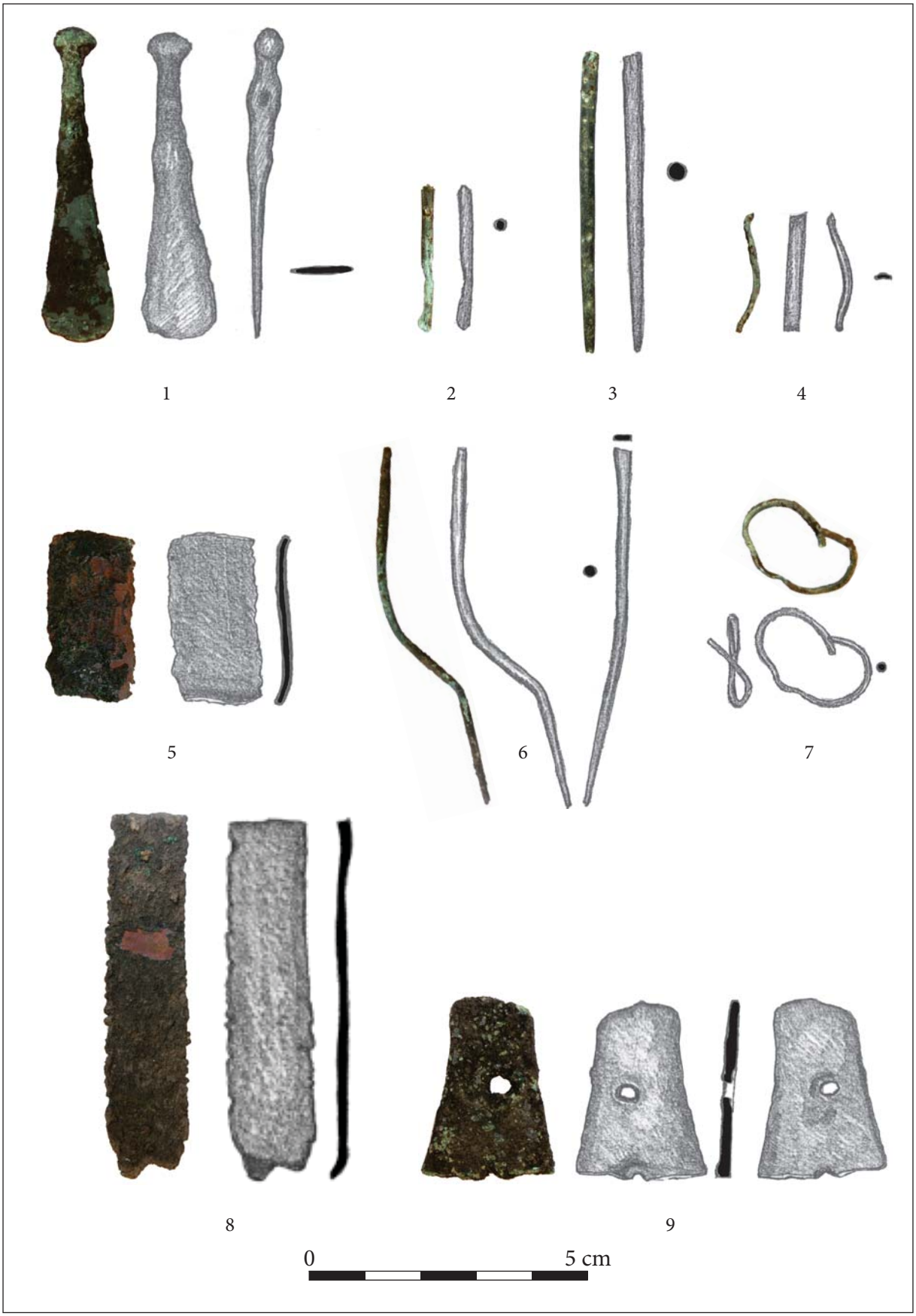

Plate 3. Bronze. 1. Cx_26; 2. Cx_33; 3. Cx_35; 4. Cx_40; 5. Cx_79; 6. Cx_84; 7. Cx_156; 8. Cx_170; 9. Cx_201.

Plate 4. Bronze. 1. Cx_230; 2–3. Cx_236; 4. Cx_291; 5. Cx_295; 6–10. Archaeological stratum.

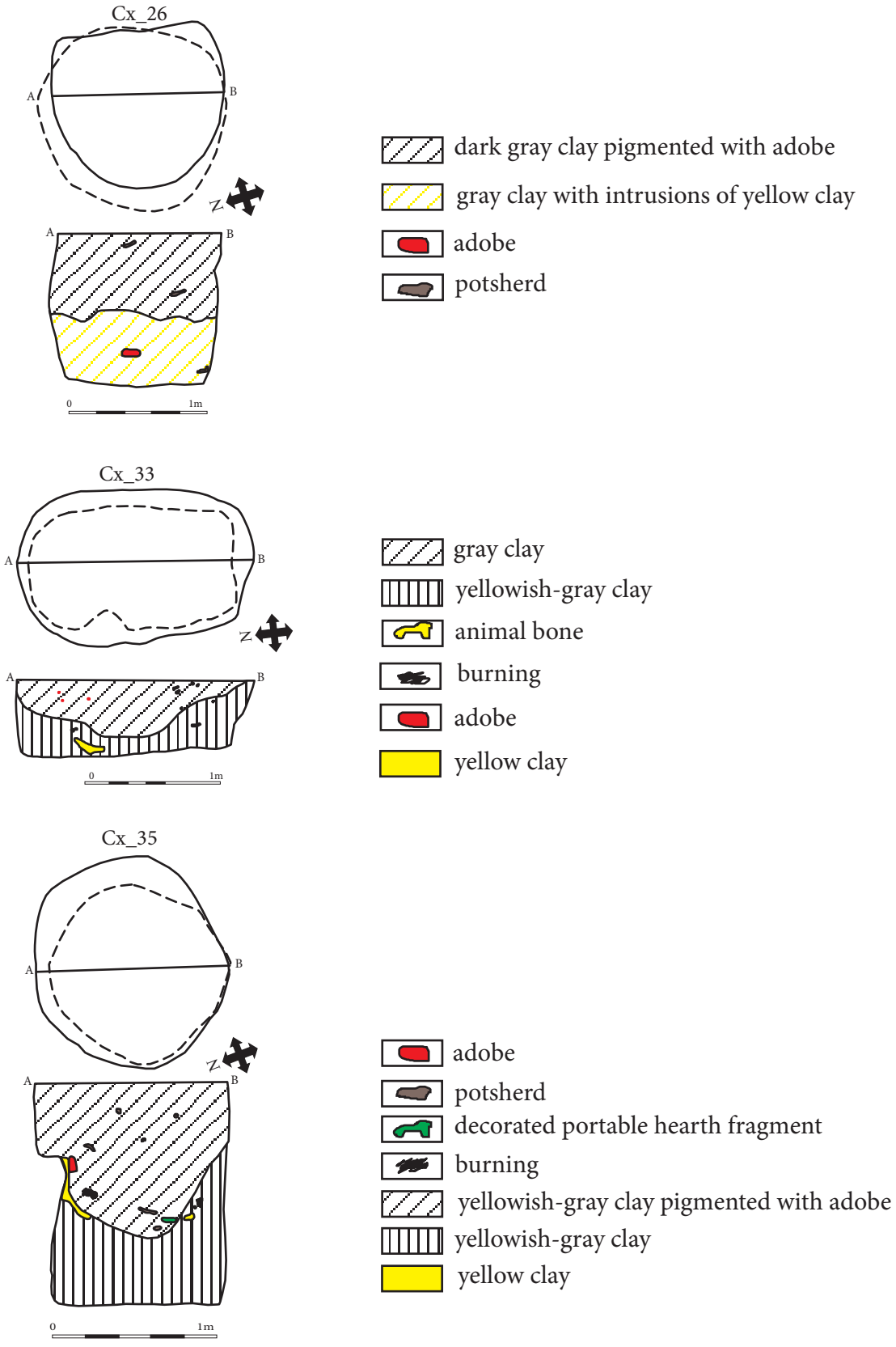

Plate 5. Drawings of the archaeological complexes 26, 33, 35.

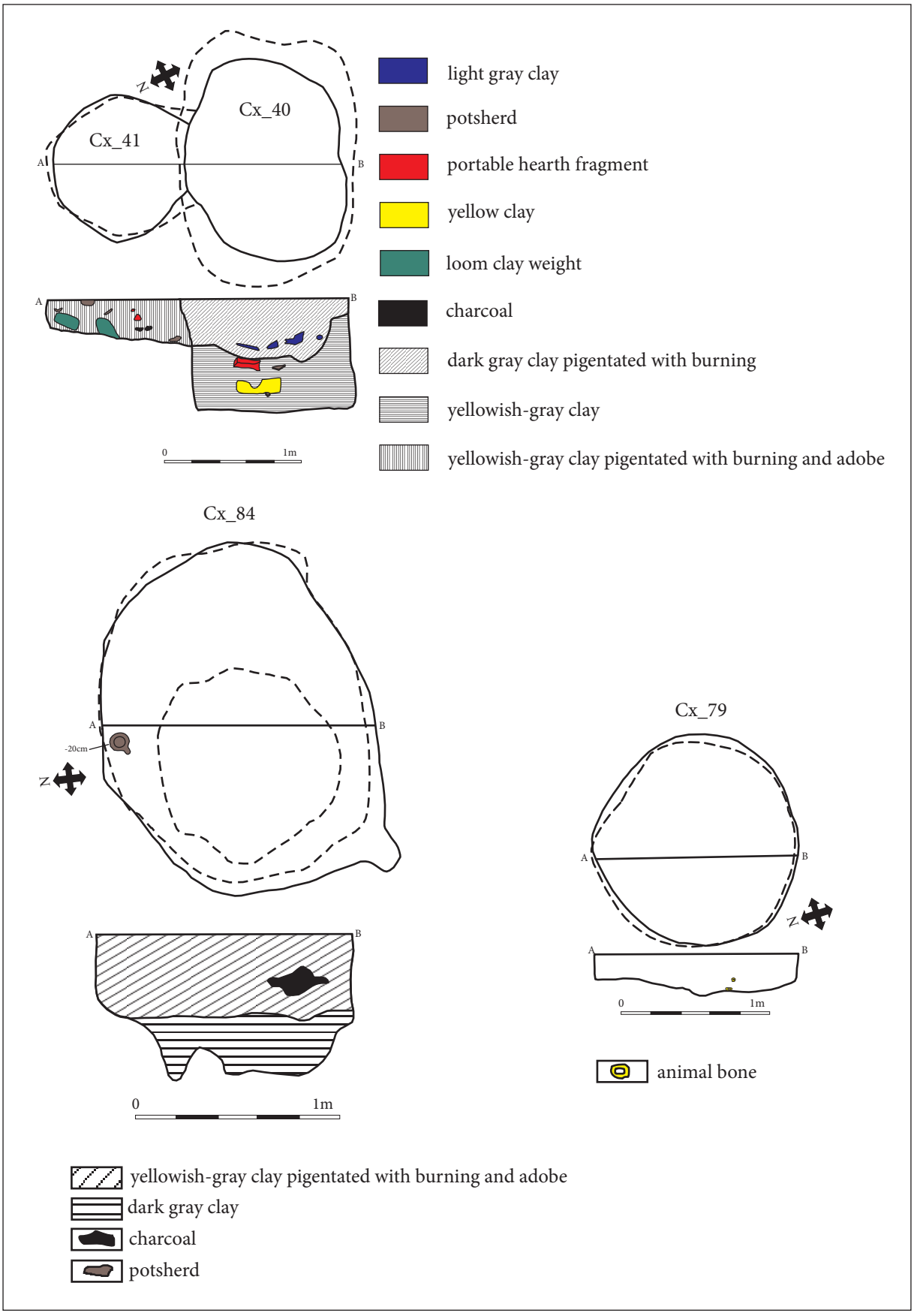

Plate 6. Drawings of the archaeological complexes 40/41, 79, 84.

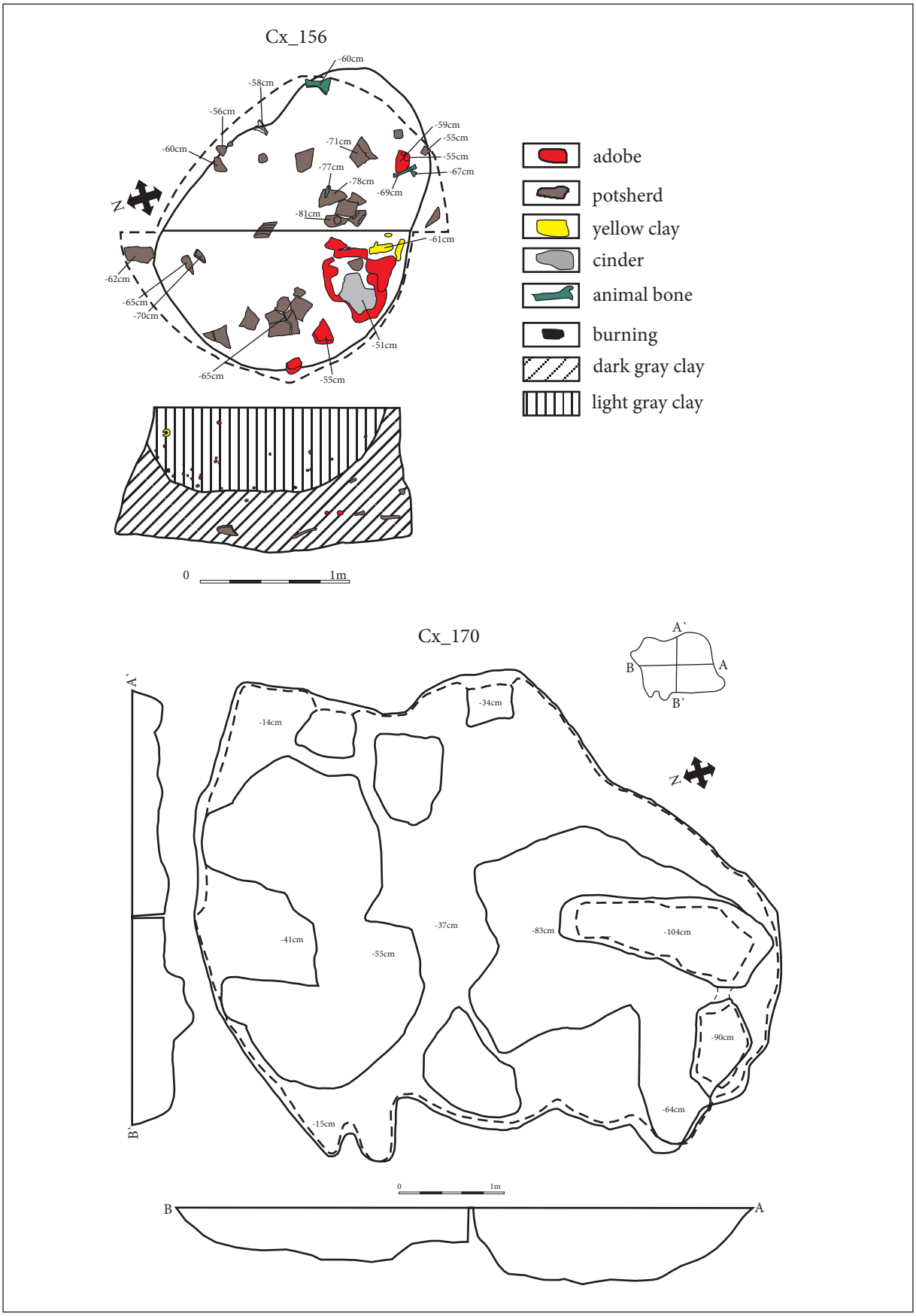

Plate 7. Drawings of the archaeological complexes 156, 170.

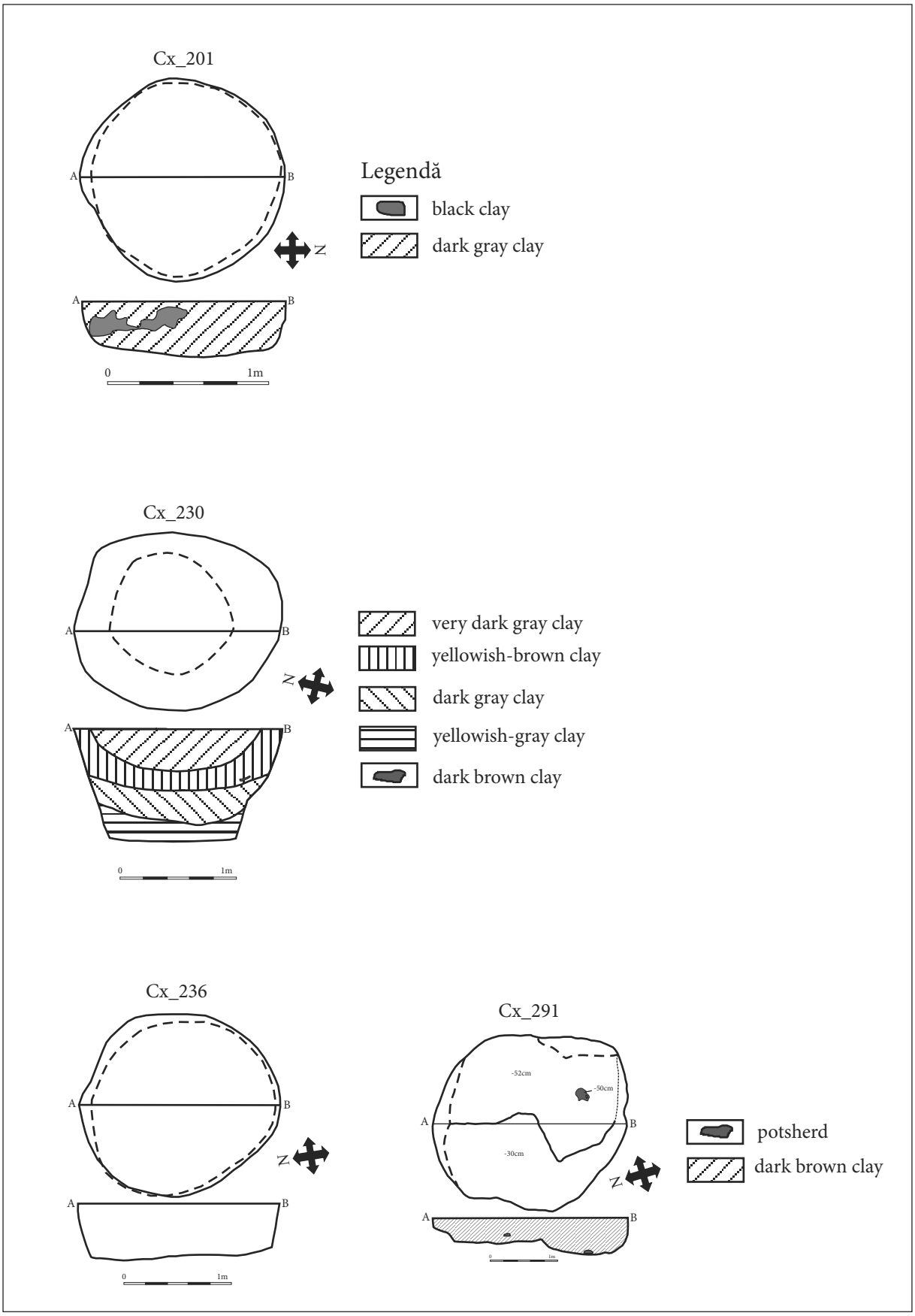

Plate 8. Drawings of the archaeological complexes 201, 230, 236, 291.

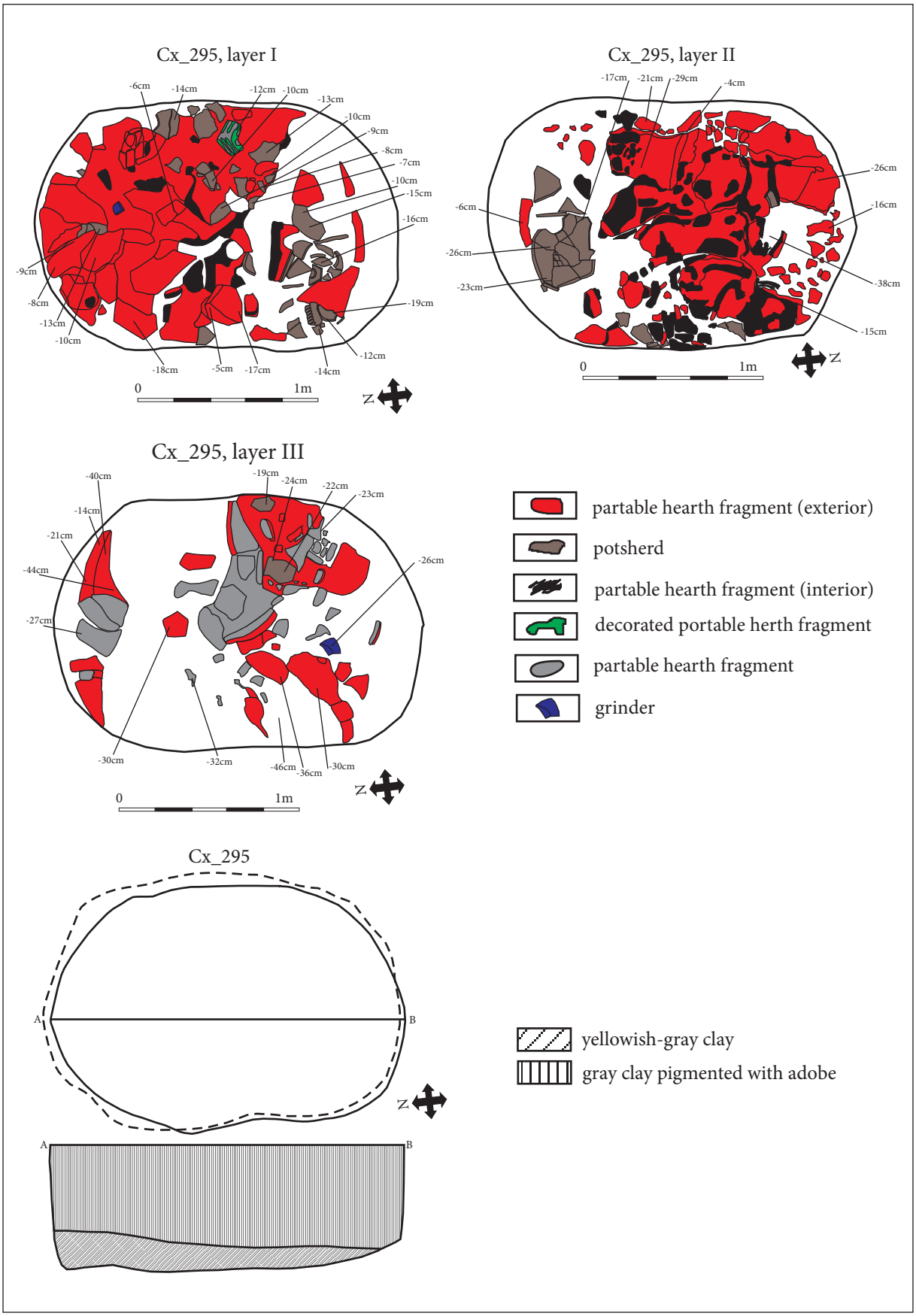

Plate 9. Drawings of the archaeological complexes 295.

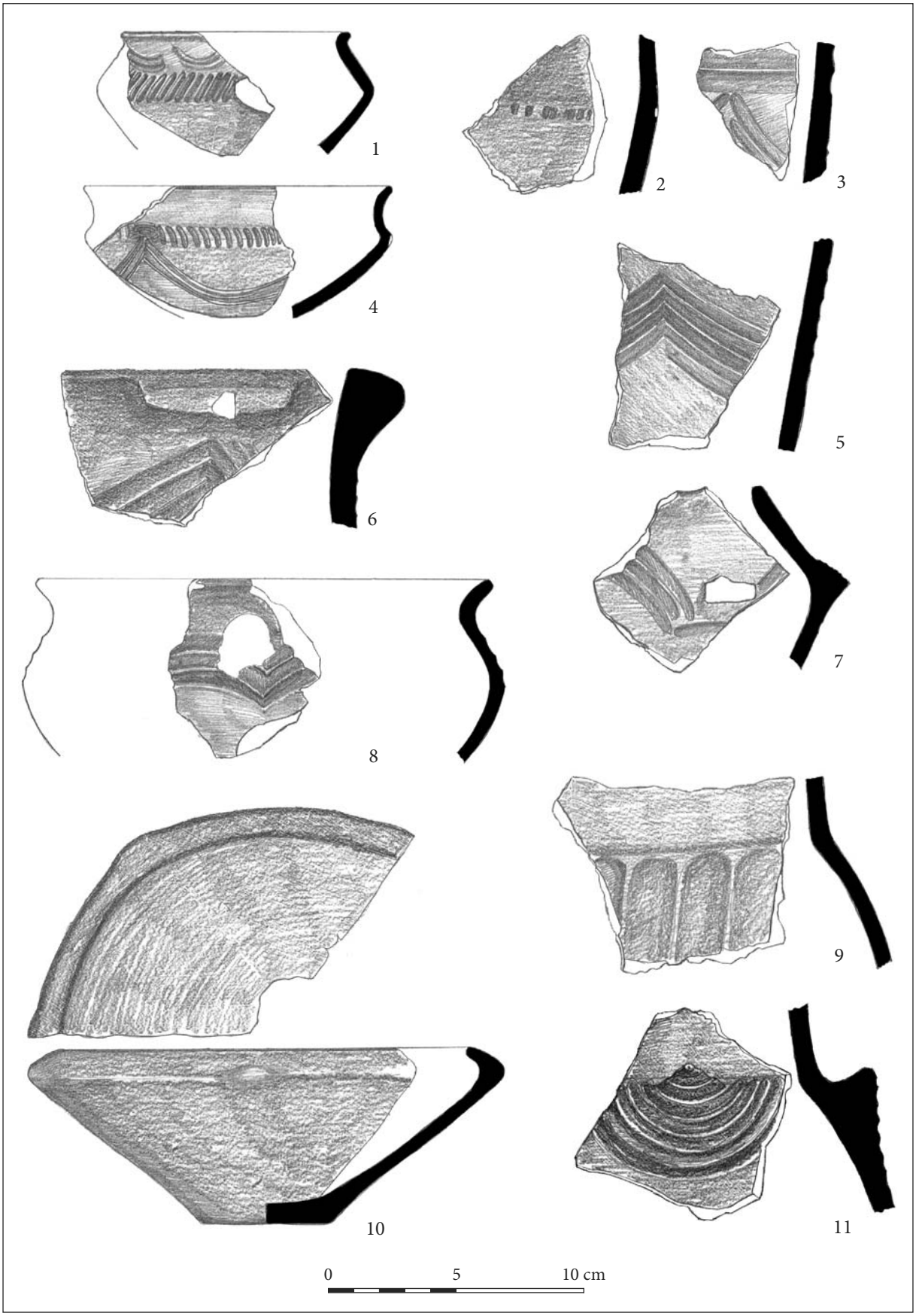

Plate 10. Pottery. Cx_26.

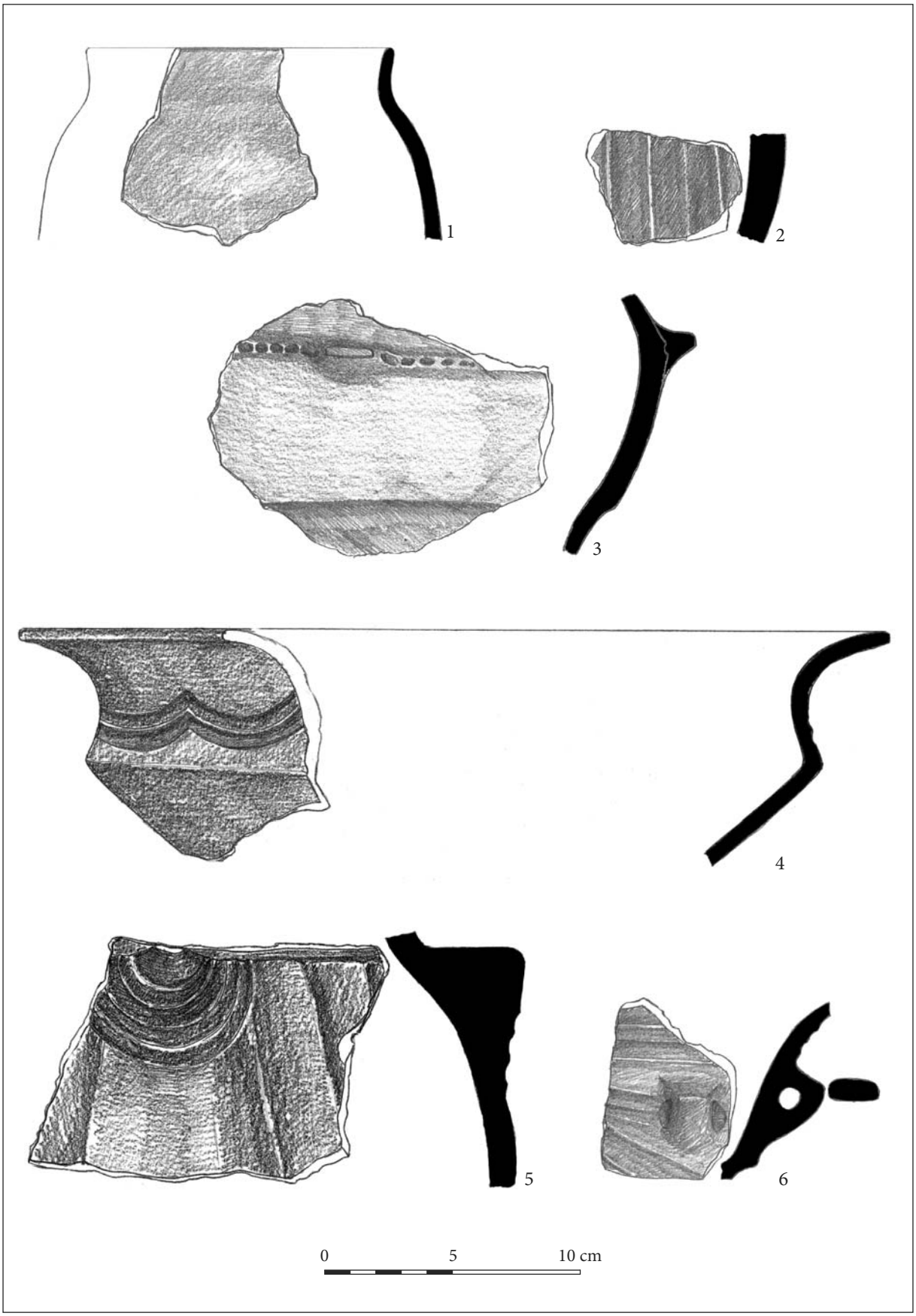

Plate 11. Pottery. 1–3. Cx_33; 4–6. Cx_35.

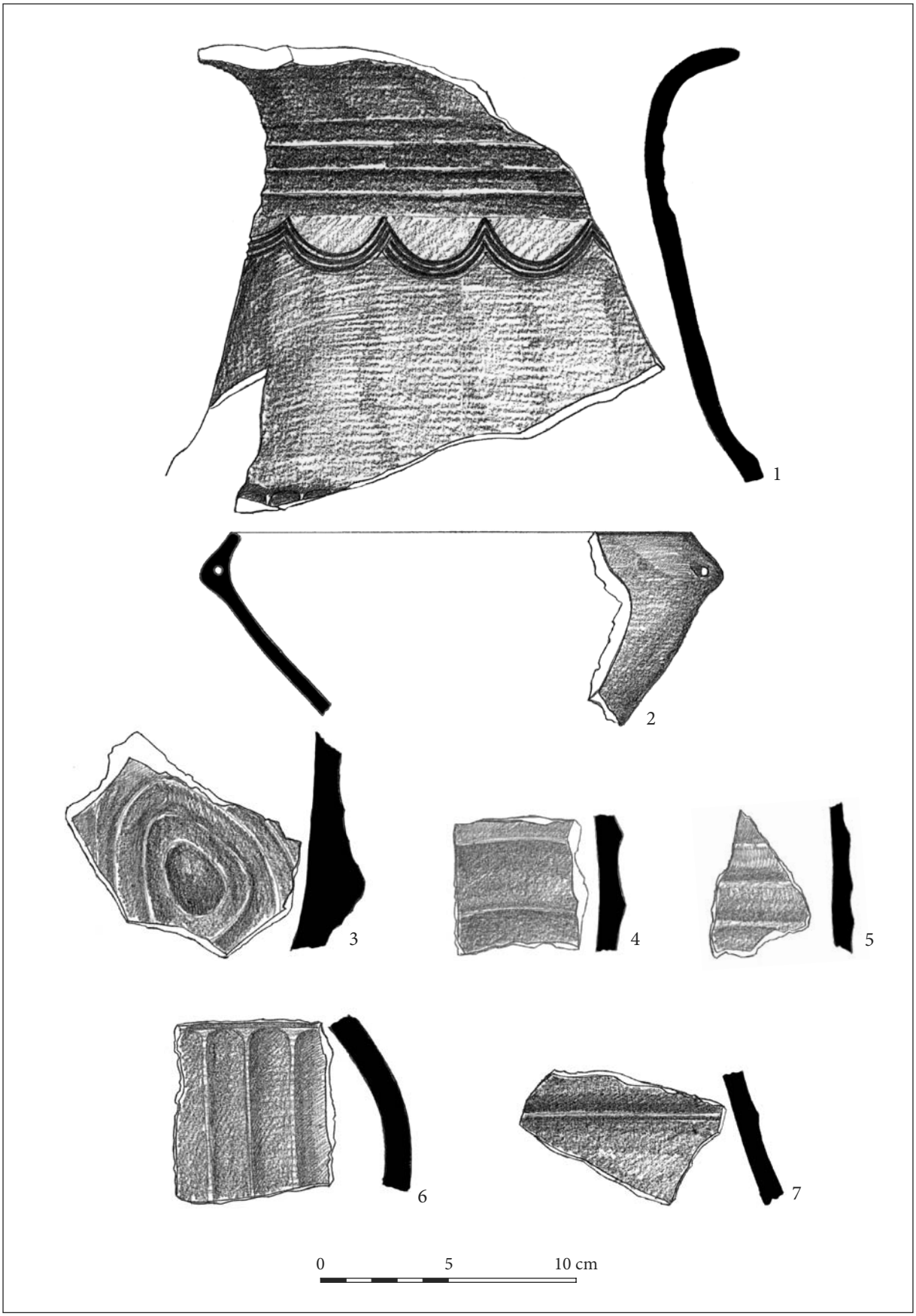

Plate 12. Pottery. 1. Cx_35; 3–5. Cx_40; 6. Cx_79; 7. Cx_84.

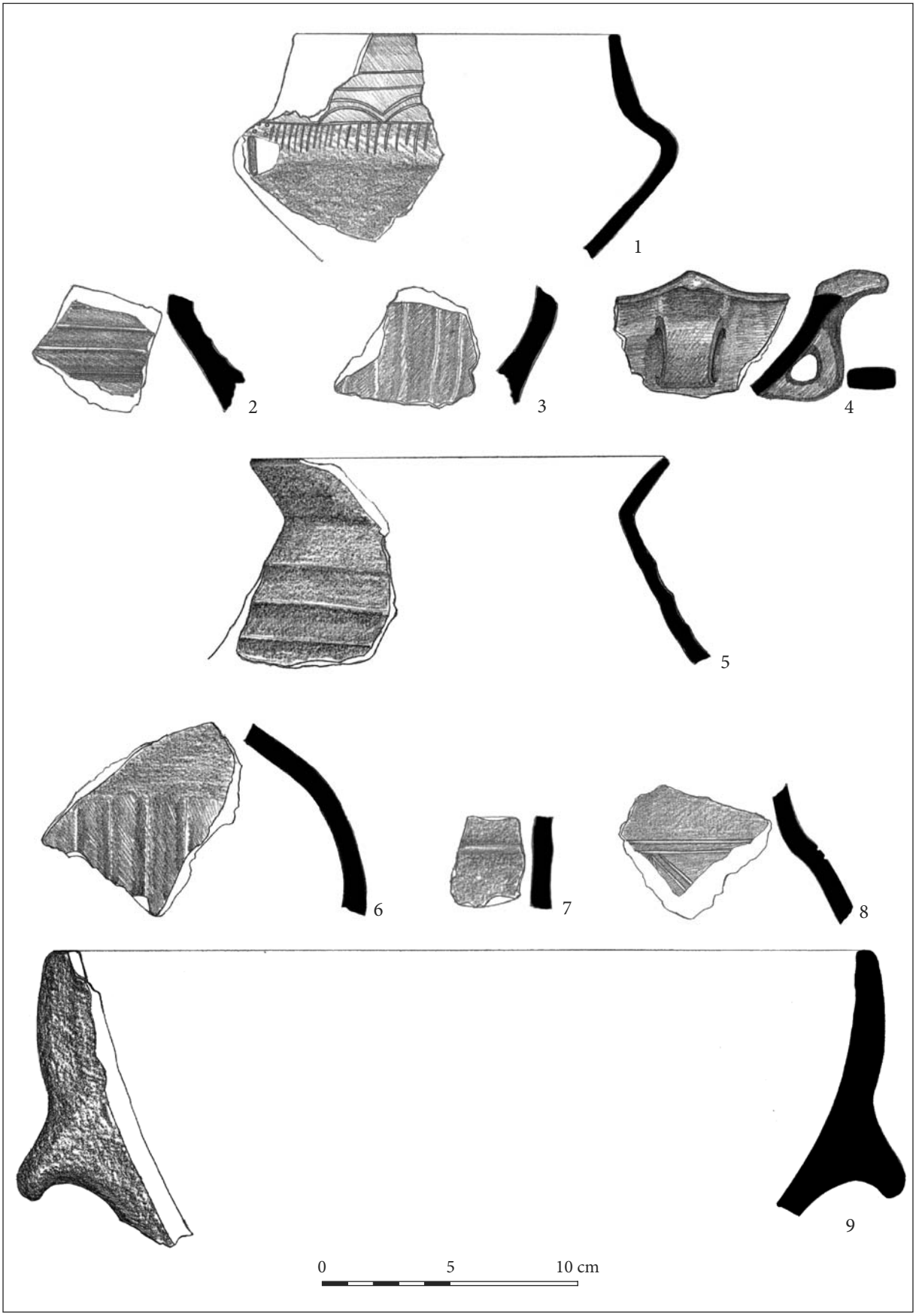

Plate 13. Pottery. 1–3. Cx_156; 4. Cx_170; 5–6. Cx_201; 7. Cx_230; 8–9. Cx_236.

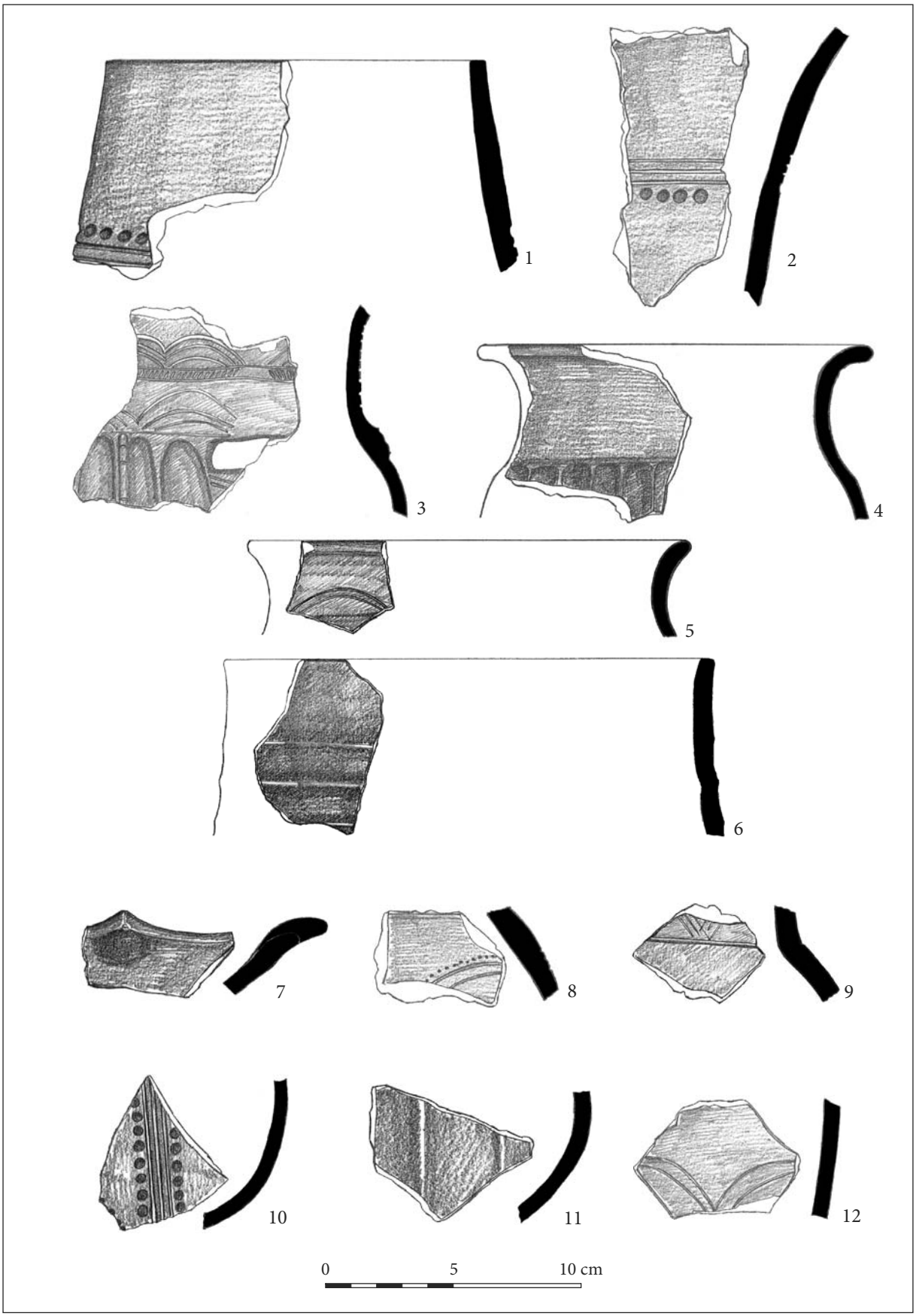

Plate 14. Pottery. 1–2. Cx_236; 3–12. Cx_291.

Abandoned Forts and their Civilian Reuse in Roman *Dacia*[*]

Dan Matei

Abstract: Through its generally well located position – both geographically and for logistics –, through its form and internal planning resembling that one of a city, and through its well made inner constructions, one deserted fort could be attractive for reusing by civilians. Before showing the situation for the *castra* in *Dacia*, we presented some historiographical approaches, some general aspects related to the issue and discussed the legal regime of the deserted forts.

Keywords: *Dacia*, abandoned Roman forts, civilian reuse.

For the beginning

The planimetry and architecture of a Roman permanent fort were mainly aimed at fulfilling practical needs: a rapid mobilization and exit of the troop, its optimal encampment, and, in general, good conditions of soldierly life with everything it involved. These military planimetry and architecture, nevertheless, never developed independently of the civilian ones. Even at the time the province of *Dacia* was founded, Polybios's statements from the 2nd century B.C.: "*the whole camp thus forms a square, and the way in which the streets are laid out and its general arrangement give it the appearance of a town*"[1], were still partially valid. And the ones of L. Aemilius Paulus from the speech he gave before the battle of Pydna (168 B.C.), were no less significant or current in their essence, despite the different times and despite envisaging short-term castra and not permanent ones: "*Camp… this abode is a second home for the soldier, its rampart takes the place of city walls and his own tent is the soldier's dwelling and hearthside*"[2].

Generally placed in areas sheltered from flooding, with easy access to water sources and mandatorily connected to the network of roads, an abandoned Roman fort could continue to ensure good living conditions to civilians that might have used its inner buildings, defensive parts, or open areas. The forts did not lack sacred and aesthetically elements: there were no actual temples[3], but they included other types of religious areas; there were no grand works of art, but art was to be found applied on parts of inner architecture. Multiple aspects thus competed in rendering former Roman forts attractive to civilian reuse, no matter how this reuse resulted.

In the following lines we intend to discuss the civilian reuse of forts abandoned by the army in the province of *Dacia*, focusing especially on the reuse of their inner buildings.

Historiographical issues

No special work focusing on the civilian reuse of abandoned forts in *Dacia* is available. The topic has been touched, more or less directly, in synthesis works[4]. On a particular level, the case of the *Colonia Ulpia Traiana Sarmizegetusa* has raised the most interest under this respect, generating an abundant literature (see *infra*).

We have already approached the topic twice, without analyzing it *in extenso*, since in both cases the territory under discussion and the size and balance of those works did not allow it. Both in 2007[5]

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[*] English translation: Ana M. Gruia, Dan Matei.

1 Polybius, *The histories*, VI, 31.10 (p. 377).

2 Livy, *From the founding of the city*, XLIV, xxxix. 3–5 (p. 221, 223).

3 An overview of the issue in Marcu 2007, 83, 98 *sq*., 101.

4 Opreanu 2000; Ardevan 2000.

5 Matei 2007, 502, 507 *sq*.

and 2011[6] we have limited our analysis to certain situations and to formulating certain considerations. Readdressing the topic now, we naturally focused our attention on the results obtained by other historiographies as well. The topic has already made a career in British historiography in particular[7], where it was tackled with professionalism and deep investigative means. So, the advance of knowledge for the forts in *Britannia* is proportional in this matter.

The development of forts abandoned in the very Roman period and reused in the same interval in various ways has also been knowledgeably tackled in the German literature. In his 1988 famous work on the *vici militares* in *Germania Superior* and *Raetia*, through the case study of the vicus in Zugmantel, C. S. Sommer also approached, and not necessarily in a marginal fashion, the issue of abandoned forts, wondering: "*Wie und wann wurde ein Kastellareal vom Militär freigegeben und eventuell ziviler Nutzung überlassen?*"[8]. A discussion extending over three pages and the year 1988[9] thus mark the size and year when the topic became consecrated in the German historiography. It became obvious that the author maintained a high level of interest in the matter, as several years later happily "recidivated" in a work entitled *Vom Kastell zur Stadt – Aspekte des Übergangs in Lopodunum/Ladenburg und Arae Flaviae/Rottweil*[10]. The subsequent "Roman" development of certain fortifications abandoned by the army has also led to the only synthesis work dedicated so far to the fate of certain forts after they lost their military function. We envisage a focused work signed by M. Luik who discussed cases from the trans-fluvial areas of *Germania Superior* and *Raetia*: *Kastell Köngen und das Ende des Neckarlimes. Zur Frage der nachkastellzeitlichen Nutzung von Kastellen des rechtsrheinischen Limesgebiets*[11].

A perspective about the issue

Leaving aside abandoned forts which after a certain time got back their military destination[12] or which, altough without a garissoning troop, further remained in the use of the army as supply bases[13], there are numerous cases in the Empire in which abandoned forts were reused by the civilians.

The foundation of *colonia* on the surface of some ex-fortifications is attested since 4th–3rd centuries B.C.: about of 340 *Ostia*, in 295 *Minturnae*. Octavianus will found two victory-cities *Nicopolis* (but which will not become *colonia*): one on the surface of a camp near *Actium*, the other on the surface of another camp from *Alexandria* of Egypt – this one in the year 30 B.C.[14].

Temporally advancing in the Principat period, we are informed by ancient literature about the founding of the *Colonia Augusta Praetoria Salassorum* (today Aosta), on the place of an former camp used in the year 25 B.C. in the war against Salassi[15]. Also *Colonia Iulia Augusta Taurinorum* (the modern Turin), founded about the same time like the one mentioned before (*i.e.* several years after 25 B.C.), was brought in discussion as originating in a former camp[16]. But their military origin is doubted[17], although is the case of the *Colonia Salassorum* the testimony of Strabo is clear.

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6 See our contribution in Nemeth *et al.* 2011, 44, 46–48, 87.

7 Crummy 1977, esp. 90 *sq.*; Crummy 1982; Webster 1988, with contributions. We could not yet consult other studies we are aware of – of which some we suspect to be fundamental – dedicated to the issue by British specialists.

8 Sommer 1988, 632.

9 Sommer 1988, 632–635, see also 640.

10 Sommer 1997. We would also like to mention the exhibition and catalogue appropriately entitled: *LOPODVNUM 98. Vom Kastell zur Stadt* (Ausstellung des Landesdenkmalamtes Baden-Württemberg vom 11. Juni bis 27. September 1998 in Ladenburg; B. Rabold/C.S. Sommer, mit Beitr. von H. Galsterer/M. Scholz; Hrsg. von der Stadt Ladenburg und dem Landesdenkmalamtes Baden-Württemberg; Ladenburg/Stuttgart 1998).

11 Luik 2002.

12 Nuber 1997, 67; Mirković 2002, esp. 757; see also Mócsy 1972, 166 with n. 97 = Mócsy 1992, 158 with n. 97.

13 Sommer 1988, 629 and n. 822 with lit.; 634 *sq.* with n. 848 and 852; v. Petrikovits 1979, 242 = v. Petrikovits 1991, 70; Luik 2004, 108, 110; also see Mehl 1986, 266, n. 24.

14 Keepie 2000, 302 *sq.* with lit.

15 Strabo, *Geography*, 4.6.7: *„and Caesar sent three thousand Romans and founded the city of Augusta in the place where Varro had pitched his camp*" (p. 281); see also Cassius Dio, *Roman history*, LIII.25.5 (p. 259); according to Keepie 2000, 303 with n. 18. On the passage of Dio *cf.* Rich 1990, 55, 160.

16 Keepie 2000, 303 with n. 17 wherer he cites Wheeler 1964, 43. But these one is mentioning there that "*...a Roman colony such as Aosta or Turin or Verona was primarily a copybook War Office fortress ameliorated by an urban content*" and while for certainly knew the military origin reported by Strabo for *Colonia Salassorum*, he is discussing about them as civilian creations (43 *sq.*, 46) – albeit about the aforesaid colony is specified that"*its situation, 50 miles north of Turin near the foot of Mont Blanc, was of a tactical importance reflected in its severe military outline*" (43).

17 Keepie 2000, 303 and n. 19 *sq.* with lit.

There are a few colonies founded under the first emperors on the surface of some legionary abandoned fortress; among them, Colchester, Lincoln or Glouchester[18]. Enough of the veterans' colonies of Traianus have been founded in this way. Cited can be *Poetovio*, *Oescus*, *Theveste*, *Ratiaria*, *Thelepte*, maybe *Sarmizegetusa*. "*The urban site itself*" was in this way assured. With the allotments is another matter. This ones were given from the ex-subsistence territory of the legion (*prata legionis*[19] or the modern largely used term "military territory"[20]), but, as it could happen not to be always enough, some more was needed to be purchased. As a corollary, the founding of some *colonia* in the perimeter of the former forts meant above all financial saving for the state[21]. And if the more or less from the ex-military structures were reused by the new inhabitants, these could save considerable effort and time in erecting their own dwellings and annexes. L. Keepie thought that the former military barracks would have been reused just temporarily, by the next residents of the city as far the erecting of some appropiate dwellings for a civilian habitation but possible also for the veterans while they erected their farms outside the city[22].

Not much time was needed for civilians – including not only the soldiers' families, but also craftsmen/merchants and other people attracted by the military presence – to set around a newly built/still in construction fort, even if it was to have only a short period of use[23]. If that fort was located in a province, some of the civilians might have remained after the departure of the troop and thus the existence of the civilian settlement continued; naturally, on a smaller scale in the beginning[24]. And from here to the extension of that settlement inside the former fort, reusing its buildings or not, was just one step away.

An abandoned fort and the attached civilian settlement were able to optimally perform a future administrative function. It has been noted in the case of centers of *civitates* in *Germania Superior* and *Raetia* established on sites with abandoned forts that the most significant edifices of such centers were built inside the former forts. Thus, it is possible that is was intended to maintain the initial setting of the inhabited area[25]. Just as it is "*...wahrscheinlich, daß im Falle einer Übergabe an eine zivile Siedlung nach Abzug der Truppen das aufgelassene Kastellareal mit geringstmöglichen Veränderungen aufgeteilt und der weiteren Verwendung zugeführt wurde. Vermutlich erstellte man davor eine Art «Flächennutzungsplan»*"[26].

In *Arae Flaviae*-Rottweil (*Germania Superior*), a former barn of the III[rd] fort was turned into a commercial area after the civilians started to use the area inside the fort[27]. In the case of *Lopodunum*-Ladenburg (Germania Superior), several military buildings inside the fort, if not most or all of them, were pulled down and leveled, but civilian buildings that reused the former precinct wall were revived. Most of the former roads inside the fortification were also kept in use[28].

One can cite enough cases of settlements developed inside the perimeter of former forts and that did not become centers of a *civitas*. *E.g.*, in *Grinario*-Köngen (*Germania Superior*), where the former *aedes principiorum* in the *principia* is documented as a place where the imperial cult was celebrated[29] and at least one part of the edifice was to probably fulfill an official public function which implied that religious activity. The possibility that the former headquarters' building to function as the local administration seat was taken into consideration[30]. A space added to *principia* and the introduction of channel heating system in one of the buildings' rooms were highlighted[31].

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18 For these, Keepie 2000, 302 and n. 8 with lit.; 304–306.

19 For now, *territorium legionis* is a term with a later occurence and maybe is not having the same meaning as *prata*; see Mócsy 1972, 133 *sq*., 155 *sq*., 165 = Mócsy 1992, 125 *sq*., 147 *sq*., 157; Mócsy 1980, 370 *sq*. = Mócsy 1992, 167 *sq*.; Mason 1988, 165 *sq*; *cf*. MacMullen 1963, 8, n. 21, with the older lit. there.

20 On this very term („Militärterritorium") and its meaning, Wiegels 1989, 71, n. 30; 80–85 with n. 58–63, 66 *sq*., 71–73, 75; 80 *sq*. with n. 58 *sq*; 83, n. 71; 84 *sq*. with n. 75; all with lit.

21 For these, Mann 1983, 60 *sq*., see also 65.

22 Keepie 2000, 306.

23 Sommer 1988, 490–493, see also 498, 500, 640.

24 Sommer 1988, 630–632, see also 638 *sq*.

25 Sommer 1988, 630 *sq*.; 634 with n. 849. On the latter assertion, a stand in opposition to Luik 2002, 79.

26 Sommer 1997, 516.

27 Sommer 1997, 514, 516.

28 Sommer 1997, 511–514.

29 Luik 2002, 75 *sq*.

30 Luik 2002, 75.

31 Luik 2004, 104; Luik 2002, 75 *sq*.

In Heidenheim, after the fort was abandoned around 160, its north-western area (*praetentura sinistra*) was leveled, the wooden buildings there were dismantled and the precinct wall and the western gate were also pulled down to varying degrees. Nevertheless, no new constructions were built in this north-western area of the fortification, probably with the exception of a well. This happened though in the south-eastern area of the fort (*retentura dextra*), where the *vicus* extended as well. Research has identified a stone house of the *Striphouse* type, probably a well, and a wooden building whose function remains uncertain, probably part of the above-mentioned *Striphouse* complex[32]. Civilians used some of the barracks as barns[33].

Few enough appear for now the sure attested cases in which the internal constructions of the abandoned forts were reused by the civilians. More frecvently, *Striphouses* were erected, and these had nothing to do with the former military structures[34].

In many cases, just the timber from military buildings must have been reused and not the very constructions themselves, which were demolished. It is believed that this was the case in *Lopodunum*[35]. And in at least some cases, when civilians took over the structures of an abandoned fort, the line of the roads was kept and they remained in use, to varying degrees[36].

If in the case of stone buildings, the potential of valorizing the heritage left behind by the military seems very high due to the strength of the building material and the quality of the execution[37], buildings made of timber and adobe show obvious limitations under this respect[38]. So, it must have been impossible to use them for more than several decades without significant repairs[39].

On the juridical *status* of abandoned forts

Ancient authors made no explicit reference to the juridical *status* of abandoned forts that remained inside the Roman territory. Archaeological research seems to clearly document the fact that such fortifications were generally not dismantled/destroyed.[40] But what was their *status* after being abandoned?

According to A. Mócsy, the area of a former fort could not be bought by private persons, but only employed for public use by civilians. The named specialist invoked the case of the *coloniae* of *Poetovio* and *Oescus*, created on the sites of former legionary fortress, and the erection of an altar for the imperial cult in the province of *Pannonia Inferior* inside the former auxiliary fort in *Gorsium*-Tác. Starting from these examples alone, in 1971, the named author rejected the possibility that private persons might have bought the former surface of forts since such areas must have become private property inside municipal territories[41]. Thus, civilian reuse was possible as long as it adressed a community (such as the inhabitants of the two above mentioned *coloniae*) or of state institutions (as was the altar for the imperial cult in the province).

Research performed during the decades since that significant work brought many more examples of known cases inside former forts – and even of inner fort buildings – reused by civilians as a community[42]. It also seems that in several cases they were used by private persons. In connection to this

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32 Scholz 2009, 39, 112–114; Scholz 2004, 109, 112–116, Abb. 2, 5, 12 *sq*.; Scholz 2005, 850–852.

33 Cichy 1971, 56 *sq*. *apud* Sommer 1988, 635 with n. 851.

34 Suggestive in this sense is the image depicted from Luik 2002, *passim*, with lit.

35 Sommer 1997, 511.

36 Sommer 1997, 515 *sq*.

37 Enlightening for the building technique, Shirley 2001, *passim*.

38 On their possible building methods, see informatively, Weber 2002; a complex analysis in Shirley 2001, *passim*.

39 In a certain case, the life period of such a building, but of the Late Roman period, was approximated at around five decades: Wilmott 2005, 133.

40 In this sense, *cf*. Sommer 1988, 632–634; Sommer 1997, 511. Unlike this, we are told about fortifications during campaigns, that: "*When the camp is to be broken up…they then set fire to the encampment, both because they can easily construct another [on the spot] and to prevent the enemy from ever making use of it*": Josephus, *History of the Jewish war against the Romans*, III, v.4 (p. 603); according to H. Schönberger cited by Mócsy 1972, 158, n. 96 = Mócsy 1992, 166, n. 96; see also Sommer 1988, 632 with n. 840.

41 Mócsy 1972, 166 *sq*. = Mócsy 1992, 158 *sq*.; see also Mócsy 1974, 355; related to these, Wiegels 1989, 88, n. 88; see also 74, n. 40. For the problem *cf*. v. Petrikovits 1979, 242 = v. Petrikovits 1991, 70; Mehl 1986, 265, to be consulted in paralell with Wiegels 1989, 77, n. 48; 87, 98.

42 See the works indicated at n. 7; Luik 2002. C.S. Sommer's assertion is of special relevance: "*…für praktisch alle Siedlungen rechts des Rheins und nördlich der Alpen einen militärischen Stützpunkt als Ursprung anzunehmen*": Sommer 1988, 489 *sq*., see also 630, n. 825; 630 *sq*., 639.

private use, it have been suggested that from a juridical perspective, the issue of "military teritory" must be regarded less strictly[43]. Besides, it was drawn attention that no ancient source is indicating some special juridical regulations for these lands[44].

A *villa rustica* was built inside the *numerus* fortlet in Neckarburken after it was abandoned around 160 (extending over 0.64 ha. and belonging to the so-called *Odenwaldlimes*, in the trans-Rhenan territory of *Germania Superior*). The main building of the farm reused the former *principia* and extended beyond the precinct of the fortification[45]. Cases in which *villae rusticae* were established inside former forts can additionally be mentioned for *Germania Superior* and *Raetia*[46], as for example in Seckmauern[47].

At *Burnum* (*Dalmatia*), the *prata*[48] of *IV Flavia* legion stationed here became after the troops' departure imperial estate (*saltus*)[49], being under the supervision of the *procurator Augusti*[50]. Through a *conductor*, the procurator could lease parts from the former *prata legionis* to private persons[51], but these cannot buy them[52]. What happened with the perimeter of the now abandoned fortress? Did it shared the same juridical condition as *prata*? Missing some additional data, we can only speculate.

A case which for now seems to be special is recorded at Walheim (*Germania Superior*). Here, the perimeter of a settlement born in the perimeter of the former fort II appears in one inscription as *solum Caesaris*[53]. A pregnant reserve was manifested by the equalization of these *solum Caesaris* with an imperial estate[54], being in exchange regarded as a land excluded from the private use or from the use and administration of some autonomous/quasiautonomous communities. It would have been under the supervision of a central authority, maybe the provincial administration or the one of the imperial's estates, maybe through the army[55]. It was considered that in the *vicus* under discussion, craftsmen have been settled, posibly who come from other areas[56].

As we can see, the few direct evidence we dispose at the moment appear as partially contradictory. The inscriptions seem to indicate that after the troops' departure, their ex-forts (Walheim) or at least their ex-*prata* (*Burnum*), became *solum Caesaris* respectively *saltus*; in both cases the emperor appear as a "owner". On the other hand, archaeological researches attested *villae rusticae* developped in some forts' perimeters, which *seems* to belong to some private individuals. Of course, terrain from imperial estates could be leased to private persons, but could these one also built their farms on the leased surface?

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43 Sommer 1988, 634 *sq*.

44 Vittinghoff 1974, 112 *sq*., 124 = Vittinghoff 1994, 127, 138; on the issue see also Wiegels 1989, 74 *sq*. and n. 39–41 (with supplementary lit.); who is pronouncing without reserves for the idea advanced by F. Vittinghoff (76, see also *sq*. with n. 49).

45 Reutti 1980, 149, Abb. 95 *sq*.; Schallmayer 2010, 136 *sq*., with a figure showing how it may have looked on the bottom of p. 57; Baatz 2000, 205 and Abb. 110.

46 Sommer 1988, 629 and n. 820 *sq*. with lit.; Luik 2002, 79.

47 Schallmayer 2010, 77.

48 CIL III 13250 = ILS 5968 (Vedro Polje, today in Sisačko-moslavačka county, Croatia): *[TERMINI P]O[S(iti) INTER P]RA / TA LEG(ionis) [E]T FINES / ROBORETI FLA(vi) / MARC(iani) PER AUGU / STIANUM BELLI / C(i?)UM PROC(uratorem) / AUG(usti)*. The inscription is to be dated according to the *cursus honorum* of the procurator towards the reign of Traianus or in its first years: Devijver 1976, C 122 (after year 88 another procuratorial mission is next and then the one mentioned in our text); Mason 1988, 164, is dating it about the year 100.

49 Already Schulten 1894, 491; esp. Vittinghoff 1974, 114 *sq*. = Vittinghoff 1994, 128 *sq*.; followed by Wiegels 1989, 82 *sq*. with n. 69; 90 with n. 92; but with reticence, Bérard 1992, 83: "*…mais on connaît trop mal le sort dévolu aux camps légionnaires après leur évacuation pour être totalement affirmatif, notamment sur ce dernier point : rien n'empêche après tout que la* IIII Flauia *ait conservé, après son transfert en Mésie, un dépôt, ou du moins la responsabilité du camp de Burnum*".

50 Wilkes 1969, 99, 105, 218, 392, 459.

51 Wilkes 1969, 392.

52 Mócsy 1972, 154 = Mócsy 1992, 146.

53 Mehl 1986, 264 = AÉ 1987, 783; text revised by Wiegels 1989, 62–70: *– – – / [SUL]PICIUS VE[PA / NUS ?]* vel *VE[IA / NUS ?]* vel *VE[RI / NUS ?] ET SULPICIA / PERVINC[A] COIIUX / TES(stamento) AEDE[M I]N SOLO / CAESARIS POSU / ERUNT FUSC[I]ANO / ET [SI]LANO II CO(n)S(ulibus) / (ante diem tertium) K(alendas) APRILES / L(aeti) L(ibens) M(erito)*; subsequently, in the first three kept lines, changes have been operated, resulting: *[SULP]ICIA VEPA / [NA ?] ET SULPICIA / PERVINC[A] F(ilia ?) D(e) S(uo) /* etc.
After *consules*, the monument is precisely datable: March 30 of the year 188. On the discovery point and its position within the ancient Walheim settlement: Mehl 1986, 259 with n. 1, 3; 261; Wiegels 1989, 85 *sq*. with n. 79–84; 99 with n. 121.

54 Wiegels 1989, 90–97, esp. 97; for a *saltus*, Körtum, Lauber 1999, 359.

55 Wiegels 1989, 97 *sq*.

56 Wiegels 1989, 99 *sq*., 102 with lit.; see also 85 *sq*. with n. 80–82.

Civilian reuses of abandoned forts in *Dacia*

In *Dacia*, there is little documentation on civilian reuses of abandoned forts. The following cases have been documented:

The briefly researched fort near the city of Sighişoara, on the site called "Podmoale"/"Burgstadl", provides for *Dacia* at the present state of research the most consistent proof of civilian re-inhabitation of the perimeter of an abandoned fort. Civilian beneficiaries could reuse an area of ca. (~)140 × (+)178 × (~)130 × (+)182 m[57], thus more than 2.43 ha. The civilian settlement there seems to have been significant since – despite the fact that just a few archaeological trenches were excavated there – traces of the settlement seem to extend over most of the area of the former fortification, except for its northern corner[58]. Buildings, pits, and leveling works belonging to the civilian settlement were identified in the area of the *via sagularis* and the area of the defensive elements of the former fort: *vallum*, berma, and the two *fossa*[59], since the fort was not provided with a stone surrounding wall[60]. Only a few details are available on these evidences of habitation. One knows that a dwelling was located over a section of the rampart that was leveled for the purpose on the south-western side and that a coin minted in 200 was discovered there[61]. A complex, identified as probably a pottery kiln, was discovered on the same side and it included a little-used coin minted in 161[62]. On the basis of the results of excavations performed on the site, specialists have hypothesized that the civilian settlement was denser in the southern and eastern areas of the fortification[63], but this observation might be only due to the limited research available. It is very probable that some of the building uncovered during 19th-century researches belonged to the civilian settlement developed inside the fort. Those buildings, (also) of stone, might have been given domestic use, while a larger building – since a column base, measuring almost 1 m in diameter, made of local sandstone, was discovered inside – was deemed as a possible temple[64].

The above mentioned coin of 161 can be a good *terminus post quem* for the civilians settling inside the former fortification[65], though this might have happened somehow earlier than this unique numismatic proof indicates. Further on, life seems to have continued there until late in the 3rd century[66] and probably during the subsequent century as well.

Older and more recent excavations make no reference to former military buildings reused by civilians. Even if such buildings were made of wood and brick and roof tiles seem to have been used just in a few cases[67] – and thus the buildings were short-lived – this fort provides real possibilities for future research to identify how this took place. Because it seems impossible that at least in some cases, buildings in good state were not taken over by civilians.

The issue of whether the future *Colonia Ulpia Traiana Sarmizegetusa* developed or not from the structures of a camp of the *IV Flavia Felix* legion has gained obsessive accents in archaeological literature, continued and developed even to hilariousness[68]. The discussion yet lacks strong arguments that would settle the issue one way or another.

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57 Mitrofan, Moldovan 1968, 104, fig. 1.

58 Mitrofan, Moldovan 1968, 100 and n. 10, 104, 106. One regrets that in their brief contribution, the authors made little reference to the civilian settlement (see Mitrofan, Moldovan 1968, 100 and n. 11; 106, n. 39), since the issue was never taken up again. We are not aware of the current location of the documentation prepared on that occasion; a more recently published work only include a few mentions of a single building. It was – as one can deduce – a stone building, completely uncovered, located on top of one of the fortification's ditches on the north-eastern side and it included two rooms: one rectangular in shape, measuring 10–12 × 6.5 m; and an apse towards the east-north-east, measuring 6.5 × 4 m (Baltag 2000, 116 *sq*. fig. 33; according to data provided by I. Mitrofan).

59 Mitrofan, Moldovan 1968, 100, n. 16; 103; 105, n. 35.

60 Mitrofan, Moldovan 1968, 104.

61 Mitrofan, Moldovan 1968, 103 with n. 25.

62 Mitrofan, Moldovan 1968, 103 with n. 23 *sq*.; 106 with n. 41.

63 Mitrofan, Moldovan 1968, 106, n. 43.

64 For such issues, Baltag 2000, 116, see also 114.

65 Like this, in Mitrofan, Moldovan 1968, 106, 108 with n. 52 *sq*. The authors considered the possibility that the fortification was abandoned during the interval of 167–170 when the defense of the province proved difficult, or shortly before.

66 Horedt 1958, 38, n. 41.

67 As modern excavations seem to indicate: Mitrofan, Moldovan 1968, 106 and n. 38, though they did not touch the inner surface of the fort too much.

68 An overview of the debates until then: Piso 2006, 37–39; henceforth Piso 2008, 319–322; see also Ardevan 2000, 97–99 (among the *pro* stands, significant exemplifications in Löbuscher 2002, 91, 98 *sq*.; Strobel 2006, 107, n. 9; 108 *sq*.; and Opreanu 2006, 61–69); subsequent interventions on the discussion in Opreanu 2008, 228–232; Opreanu 2010, 40–55.

On the wooden phase of the first forum of the *colonia* (the so-called *forum vetus*), it has been argued that it initially functioned as the *principia* of the presumed camp. Though accredited by solid archaeological arguments and complementarily supported by a historical logical argumentation that nobody can dispute, the idea of a *principia* was regarded with caution by the very archaeologists who performed the most modern and intense excavations that the site ever knew[69]. They admit the possible existence of a camp only after the end of the second Dacian-Roman War (106) and believe it might have functioned until the *colonia* was established in 109 or soon afterwards[70]. On the other hand, it has been realistically noted that "*it may well be to much to ask from an archeological excavation to identify such a change of ownership, especially if there were no major alterations to the original plan of public buildings. If on the next day colonists took over military headquarters which could be re-used as a forum, such a change would be extremely difficult to identify through excavation*"[71].

Convergent evidence is thus required in support of the existence of a camp. On a complex of buildings contemporary to the wooden phase of the *forum vetus* and identified south of that construction, it has been initially believed that it might have also been the *praetorium* of the camp, even if more credit was given to an *insula*[72]. Later on, only the civilian version was retained[73]. The statement was nevertheless disputed on the basis of a planimetric analogy from the British legionary fortress in Inchtuthill; a residential edifice for the use of the tribune being compared to some of the buildings part of the complex in *Sarmizegetusa*[74]. Despite this analogy, the issue of this complex remains unsettled as well; at this point, it cannot offer the required strong proofs.

It seems that the fort in Vărădia "Pustă"/"Rovină" ceased to function after a general fire[75], either a willful act of the Roman soldiers or the consequence of an enemy siege[76]. The only stone structures of the fort identified so far are the precinct wall and some of the headquarters' building (without *armamentaria*). Considering the fact that the wooden structures researched so far: those belonging to the curtain wall, gates, towers, and military barracks (*contubernia*) or the *principia* were affected by the fire[77], it may well be that all wooden structures burned down.

In these conditions, it was possible to reuse the fort's inner buildings only to a lesser degree. But until now, the few archaeological researches did not lead to the identification of any certain case. One coin, believed to have been minted in the 3rd century[78], if this determination is correct, represent too untrustworthy an argument[79] even for emitting preliminary statements on the issue.

After the fortress in *Bersobis*-Berzovia was very probably abandoned at the beginning of Hadrianus's reign, its surface seems to have been reused by the civilians[80]. For the time being, one does not know to what degree they reused the very former military buildings, since archaeological excavations on the site were rather restricted and discontinuous, and do not provide relevant data. Civilians must have favored stone buildings: the edifice of the headquarters and other buildings, just

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69 Étienne *et al.* 2004, 70, 72–94; Diaconescu 2004, 89–103; Piso 2006, 37–39, 318 *sq*.; Étienne *et al.* 2006, 65–79.

70 Étienne *et al.* 2004, 87 *sq*.; Diaconescu 2004, 97; Piso 2006, 39, 318 *sq*.; Étienne *et al.* 2006, 73 *sq*.; see also before Piso/Diaconescu 1997. This possibility no longer features in Diaconescu 2010; *cf*. Diaconescu 2008, 61 *sq*., 67 *sq*., 71.

71 Diaconescu 2004, 97.

72 Piso, Roman 2001, 215.

73 Étienne *et al.* 2004, 64 with n. 13; 90 *sq*. with n. 64; Diaconescu 2004, 97–99, fig. 4.6; Étienne *et al.* 2006, 48 with n. 7; 75 *sq*. with n. 62.

74 Opreanu 2006, 67; Opreanu 2008, 228 *sq*.

75 Florescu 1934, 72.

76 In this sense and suggesting a possible burning of the fort during the Roman-Yazig war of 117–118: Nemeth, Bozu 2005, 206; Nemeth 2005a, 691.

77 Milleker 1906, 258, 261 *sq*. (also here we would like to thank our colleague Al. Berzovan, for making this work available to us, together with one translation); Nemeth, Bozu 2005, 202–204, 206; Nemeth 2005a, 689–691.

78 The coin was discovered in the north-western corner of the fortification during B. Milleker's research of 1901 and 1902; it seems not to have been found inside the very fort, but inside the *fossa*: "*De a sánctesteben, 2 mnyre az árok északnyugati végéhez egy 2 m. vastag sávot kereszteztünk, mely vörösre égetett földböl állott. Itt, és pedig 0.4 mnyre a falrészlet felett, fordult elö egy nagy,* világos bronzból vert érem a harmadik századból (o.u.: one third-century light-color bronze coin)": Milleker 1906, 257 *sq*. The lack of a more precise identification made specialists caution in accepting its historical value: Nemeth, Bozu 2005, 206; Nemeth 2006, 478, n. 8.

79 Other two coins dated to the IIIrd century are mentioned as discoveries during the recent research: Bozu 1999, 128 (or at *http://www.cimec.ro/scripts/arh/cronica/detaliu.asp?k=1735*). About them, the author of the discoveries kindly informed us – and we thank him for it – that initially they were erroneously identified.

80 Protase 1967, 50 = Protase 1995, 99; Protase 2010, 42 = Protase 2011, 228.

partially identified so far[81]. At least some of these stone buildings were affected by the fire, with their perishable components burning down[82], but maybe the entire fortress was affected by a general fire. In such conditions, civilians had to perform certain repair and adaptation works if they wanted to use the military buildings.

One knows for certain that at least the open areas of the former fortress were envisaged by civilians. A dug-out dwelling was set in the inner part of the *vallum* on the northern side of the fortress, in its eastern third. The filling of this dwelling revealed pottery fragments, two iron keys, and a bronze coin minted under the rule of emperor Nero, but no other details have been published[83].

A large wooden fortification is located between Turnu-Severin and the village of Schela Cladovei: 650 × 576 m[84]. Though specialists have presumed that it was only a temporary one, possibly erected in the time of Trajan's wars[85], or even during Domitian's wars,[86] we believe that it might have been in use for a longer period. The numerous traces of Roman walls and a water tank supplied through a subterranean pipe[87] might be indicators for such a prolonged use. The civilian settlement identified in the vicinity[88] seems to support this hypothesis as well. It is nevertheless believed that this civilian settlement was only established after the fortification was abandoned and might have extended inside the fort, as was the case in *Bersobis*[89]. Thus, it might well be that the stone structures identified on this site rather belong to the civilian settlement. No matter when the civilian settlement was established (during the time the fortification was still in use or after it was abandoned), we believe it is very probable that civilians reused the buildings inside the fortification.

At *Samum*-Căşeiu, one early fort was flooded at some time by the river Someş and abandoned. On its site, the *vicus* of the other fort erected near by is attested[90], but we ignore if the former military constructions here were in a condition permitting their reuse by the *vicani*.

The timber-and-earth fort located in the place called "Rovină"/ "Progadie" near Surducul Mare (*Centum Putea* ?), is measuring 132 × 128 m (almost 1,7 ha) and was also very probably abandoned at the beginning of Hadrianus' reign[91]. It was scarcely researched. One wood (and probably adobe) barrack was documented as being burnt, another barrack and a construction with unknown functionality, these one too of wood (and adobe), showed signs of sharing the same destiny. The fact that these constructions were situated at a longer or short distance each other, and the fact that also in other parts of the fort, burnt adobe and coal was highlighted by the researches[92], allow us to suggest with caution that a generalised fire affected the fort. Taking into consideration that no stone structure was revealed till now, the possibility of reusing the ex-military structures must have been quite reduced. Any clue is missing so far.

Archaeological research on the area of the *municipium Aurelium Apulense*, later on *colonia Aurelia Apulense*, in the area of "Partoş", is only at its beginning, with proportional results[93]. It has been argued that the colonist *vicus* from which the future *municipium* developed might have reused a former timber-and-earth fortification of the *I Adiutrix* legion that was supposed to have stationed here between 105/106 and 114/119[94]. The hypothetical existence of the fortification was approved[95], received with

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81 Bozu, Rancu 2003, 161–163; Medeleţ, Petrovsky 1974, 134. At the present state of research, we do not know how many of the noted stone structure still stood at the time the soldiers left the fortress; some of them, located on the eastern third and *latera praetorii*, had been demolished before: Moga 1971, 54, 57; see also Medeleţ, Petrovsky 1974, 135.

82 Protase 2010, 42, also 37–40 = Protase 2011, 228 and 218, 220 *sq*., 222; Moga 1971, 57; Medeleţ, Petrovsky 1974, 134 *sq*. and n. 5.

83 Protase 2010, 35 *sq*., pl. 5 (with an erroneous numbering of the profile's meters) = Protase 2011, 214.

84 Tudor 1978, 300 *sq*., n. 44, fig. 39.1, 2; Petolescu 2007, fig. 1–3.

85 Tudor 1978, 301.

86 During Cornelius Fuscus's north-Danubian campaign in 87: Petolescu 2000, 77, see also 125; Petolescu 2007, 39 (*addendum*); Petolescu 2010, 103, see also 137.

87 Tudor 1978, 301.

88 According to a piece of information provided by M. Davidescu, Tudor 1978, 301.

89 Petolescu 1980, 106; Petolescu 2007, 37.

90 Esp.: http://www.cimec.ro/scripts/ARH/Cronica/detaliu.asp?k=922; Isac 2003, 40, see also 32.

91 Protase 1967, 67 = Protase 1995, 107, 114 *sq*.; Protase 1975, 348 = Protase 1995, 243.

92 Protase 1975, 347 *sq*. = Protase 1995, 241 *sq*.

93 Diaconescu, Piso 1993, 67–70; Diaconescu *et al.* 1997, 1; Bogdan-Cătăniciu 2000, 119.

94 Opreanu 1999, esp. 573–575; Opreanu 1998, esp. 124–127, 132; Opreanu 2000b, esp. 82.

95 Benea 1999, 40–48 (with the hypothesis that *legio XIII Gemina* was camped simultaneously in the fort until 107/108; this was done for tactical reasons, but also because the fortified surface seems to large for a single legion; subsequently, the *XIII* legion was to built her own fortress on the site called "Cetate"); Strobel 2006, 109 *sq*.

caution[96], or fully rejected[97]. If this will prove correct, one still has to clarify if, how much, and in what way did the colonists reuse the old military buildings.

Some final words now, depicted from the general image we illustrated on the civilian reusing of the abandoned *castra* in Dacia. A legionary camp in *Sarmizegetusa* on the site of the future *colonia* is not yet clear proved and one fotification on the site of the future *Municipium Aurelium Apulense* remains a hypothesis. So, for now they cannot be invoked in the discussion. Then, leaving aside the marching-camps from the Dacian-Roman Wars which were of a short life, we observe that forts which were abandoned still in provinces' time are not quite few: Sighişoara, Schela Cladovei, Vărădia, Surducul Mare, *Bersobis*, *Samum* (early fort). Of their number, the surface of more than half was further inhabited by a civilian population. But the amount of archaeological information on these forts is so reduced, that any reusing of their former military inner constructions remains a probability or just a possibility (in some cases), to be confirmed. Concerning Vărădia, Surducul Mare and *Bersobis*, abandoned very probably sometime at the beginning of Hadrianus' reign[98], we don't know yet if the territory in which they were situated was still a provincial one, *stricto sensu*, after this date. Of course, this territory continued to be supervised, but it is questionable if *provincial* population continued to live there.

Dan Matei
Babeş-Bolyai" University Cluj-Napoca
Cluj-Napoca, RO
danmatei_mail@yahoo.com

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[96] Bogdan-Cătăniciu 2000, 116–121, 127 (the author also advanced the supposition that this fortification was located near the site called "Izvorul Împăratului" ("The Emperor's Spring": Bogdan-Cătăniciu 2000, 1209)); Bogdan-Cătăniciu 2007, 89 *sq*., 75; Ardevan 2000, 99–101.

[97] Piso 2000, 205 *sq*. = Piso 2005, 402 *sq*.; Diaconescu 2004, 109–113; Piso 2008, 304, 306; also invoking the passage from Suetonius, *The lives of the Caesars*, VIII, Domitian, 7.3: "*Geminari legionum castra prohibuit…*" ("*He prohibited the joining of the camps of separate legions…*") (p. 165). The excerpt in question might also refer to actual double *castra* – in this sense, Strobel 2006, 109, n. 20 – such as the one in *Castra Vetera* – Xanten; on the issue see also Benea 1999, 42 *sq*.).

[98] Protase 1967, 67 *sq*. = Protase 1995, 114–116. The hypothesis was until recently regarded with caution, last time by Nemeth 2001, 415; today being accepted: Nemeth 2005b, 49 *sq*., 81, 88; Nemeth 2006; Nemeth 2009, 882, 886; Visy 2009, 115 *sq*., 121, 123.

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Tombs with Jewels in the Byzantine Tradition Discovered on the Present-Day Territory of Romania, North of the Danube (End of the 11th Century–the 14th Century)*

Silviu Oța

Abstract: Through the present study I aimed at selecting tombs with jewelry items of Byzantine influence dated to the 11th–14th centuries, found on the present-day territory of Romania, except Dobrudja, since the latter was included in the Empire during several periods. Overall, such jewels were discovered in 116 complexes published to a larger or lesser extent. As for the number of discovery sites, to the present state of research one knows of 54 possible necropolises (see Pl. 1).

I also wanted to see if such finds are concentrated in certain regions and if they are connected to certain peculiarities of funerary rite and ritual. I thus analyzed the funerary rite, the location of the necropolises, the presence or absence of religious monuments and the main aspects of the funerary rituals (single burials, orientation of funerary complexes, position of the bodies and members inside the tombs and the location of inventory items).

From the perspective of the items' chronology and spread, one can note that the earliest items of jewelry and dress accessories are mainly located in the mountain area of Banat and in Oltenia, thus in the close proximity of the Byzantine-Hungarian border, in an area that neither of the two states clearly controlled. In Walachia and Moldavia the earliest items are concentrated on certain sites, but theybare few in numbers and often later than those in Oltenia and Banat. As an exception one can note the items concentrated in the area of Dridu-Fierbinți and some of those in the northern half of Moldavia. Considering the presence of Turkic populations there, I suspect that the absence of such items is due to the domination of these populations. In support of this statement one can mention the existence of tombs belonging to nomad populations mainly concentrated in southern Moldavia and Walachia. The situation was preserved until around the first third of the 13th century.

After this period, the number of jewels of Byzantine influence drops significantly in Banat. This does not indicate a decreased influence of art in the Byzantine tradition, but possibly some new legislation in the Kingdom of Hungary that forbade placing such valuable objects in tombs. The phenomenon can be noted in eastern Banat at the time the Banat of Severin was founded. Isolated cases and the typology of the items prove that the production of Balkan items of jewelry continued and even became more diverse during the 13th and 14th centuries. Outside the Carpathians, the number of such objects nevertheless increased significantly, including those areas where they were scarce during the previous chronological interval. This statement is supported by the discovery of jewelry items in settlements and the discovery of treasures and casting molds (in *Coconi* for example).

Another aspect worth mentioning is that in most of the necropolises that included jewelry items of Byzantine tradition, the bodies were placed with arms in position E or its sub-variants. This might indicate that there was a strong connection between population groups wearing Balkan clothes and possibly heretical beliefs.

Keywords: tomb, earring, ring, bracelet, diadem, necropolis.

I will henceforth discuss funerary complexes that contained jewelry items following the Balkan tradition. The study of such items nevertheless represents only a small part of the Byzantine influence in the north-Danubian territory, but it reveals certain elements of costume and funerary practices. A strict analysis of such objects can also face drawbacks; one of them is the fact that ones does not have a complete image of the distribution of the jewelry items and dress accessories under discussion, since a large part of them were discovered in treasures, settlements, or as stray finds, in uncertain locations.

Studies of gold and silver work, especially those published over the last 40 years in South-Eastern Europe, play an important part in the identification of such items. They are mainly the result

* English translation: Ana M. Gruia.

of archaeological research and of systematizing of available data, but also of synthesis analyses of jewelry and dress accessories. In this sense, one must emphasize the activity of researchers from former Yugoslavia (Mirjana Ćorović-Ljubinković, Slavenka Ercegović-Pavlović Gordana Marjanović-Vujović, Dušica Minić, Neboisa Stanojev, Dejan Radičević, Vesna Bikić, Dušan Jelovina, Maja Petrinec, Zdenko Vinski), Hungary (Károly Mesterházy) and Bulgaria (Peio Gatev, Valeri Grigorov). Archaeologists from Romania have also published excavation results and some studies analyzing jewelry items[1].

The Byzantine influence manifested both officially and indirectly in the north Danubian area, since this was a territory outside of the empire. In the first case, in our field of interest, the Byzantine influence is indicated by the presence of jewelry and dress accessories in the area under discussion. They were most probably the result of commercial activities, either bought from tradesmen arriving in the north-Danubian territories, or from those traveling to the Empire, to large production centers, where they acquired jewelry items. Another element of interest here is the official influence of the Church.

Among indirect manifestations, one distinguishes the reproduction of certain jewels after Byzantine models produced in the large centers. These are nevertheless rather difficult to identify, since both official workshops, from large cities and petty itinerant or village craftsmen were active in the Balkans. One must also not ignore the production of certain jewelry items in the north-Danubian area as imitations of Byzantine prototypes. In such conditions, it is almost impossible to differentiate between the jewelry production of petty craftsmen north and south of the Danube. The only differentiating criteria, even if relative, consist in identifying moulds or workshops on the territory of present-day Romania (in our case), but even this is only a partial solution since such molds might have also belonged to craftsmen settled for longer or shorter periods. Another possibility, also encompassing certain interpretative limits, would be the discovery here of models lacking analogies in the south-Danubian territory, that circulated over smaller areas and shorter periods. Another way in which Balkan items might have reached areas north of the Danube would be the settlement of population groups from the south, bringing their own jewels with them.

Among indirect, unofficial manifestations, one must also take into consideration heresies. These complete the topic under discussion. Though part of unofficial influences, they are a significant element of Balkan influence in the north-Danubian territory. By identifying them in necropolises, one can see where they settled or where they were active.

As for the funerary practices, I will now analyze in detail just a few relevant aspects, namely dress accessories and jewelry items and the position of the bodies For the analysis of this subject, I selected the north-Danubian territory since Dobrudja is known to have been included in the Byzantine Empire during certain periods and thus cannot be included in the present discussion.

Overall, such items were discovered in 116 complexes, published to a larger or lesser degree. As to the number of discovery sites, 55 possible necropolises are known so far (see Pl. 1)[2]. Among them, some were discovered by chance, while others even through systematic excavations. The items found in these necropolises were often published without any mentioning of the exact funerary complex[3]. In the case of necropolises in *Broşteni*, *Moldova Veche*-Rât, Caraş-Severin County, *Dubova* – Mehedinți County not all items have been published, just the chronological limits of their use were specified.

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1 I shall not list them here, since most can be found in the annexed bibliography.

2 *Şopotu Vechi*-Mârvilă (M. 2, 8, 10, 12, 16, 17, 18, 20, 23, 25, 27, 28, 30, 33, 37, 46), *Gornea*-Căunița de Sus (M. 5, 12, 40, 44, 48, 59, 65), *Cladova*-Dealu Cetății (M. 2), *Cuptoare*-Sfogea (M. 8, 15, 17, 19, 30, 41, 92, 101, 106, 107, 110, 113, 150, 162, 173, 189, 209, 214, 225, 228, 232, 241, 252, 278, 291, 300, 303, 316, 327, 331, 332, 342, 344, 346), *Pescari* (M. 1), *Reșița*-Ogășele (M. 15-?), *Caransebeș*-Măhala (M. 3) and Center (M. 6), *Ostrovu Mare* (M. 3), *Drobeta Turnu-Severin*-Roman Thermae (M. 6, 32, 60, 92, 104, 114), *Nicolinț*-Râpa Galbenă (M. 4), *Svinița* – fkm 1004 (M. 10), *Trifești* (M. 12, 35), *Hudum*-Necropolis 1 (M. 11, 15, 20, 63, 80, 84, 86, 90, 144), Necropolis 2 (M. 112, 150, 169), *Craiova*-Făcăi (M. 1), *Cetățeni*-Poiana Târgului (M. 32, 35), Sub Cetățuie-Church 1 (M. 7), *Coconi*-Necropolis 1 (M. 3), *Portărești* (M. 4, 9, 13, 27), *Ilidia*-Oblița (M. 34 and indeterminate tombs), Cetate (M. 3), *Ciclova Română*-Morminți (M. 4), *Mehadia*-Ulici (M. 12), *Moldova Veche*-Ogaşul cu Spini (M. 1) and Danube's Shore (M. 1), *Doina*-Girov (M. 33 A), *Dărmănești* (M. 2, 5, 6, 7), *Gura Văii* (M. 1), *Hinova* (M. 1), *Izvoare* (M. 3, 12), *Netezi*-M. 58), *Zăbala* (M. 8, 15, 31, 37, 59a, 165), *Săvinești* etc. For the territory of Banat, see also Oța 2005, 171–215 and Oța 2006c, 229–272.

3 *Drobeta Turnu*-Severin-city territory and the Istrati-Capşa Collection, *Frumoasa*, *Craiova*-Făcăi, *Craiova*-Fântâna Obedeanu, *Dridu*-Metereze and possibly another site, *Orlea*, *Runcu*, *Svinița*-fkm 1004 (items recovered from inside the necropolis) and an indeterminate spot inside the settlement, *Obreja*-Sat Bătrân, *Fierbinți*-Malul Roşu.

There are also sites where significant numbers of jewelry items were recovered and this might suggest that they were destroyed cemeteries, while in other cases one does know that the necropolises were disturbed. Such are the discovered necropolises or jewelry items in: *Fierbinți*-Malul Roşu[4], *Moldova Veche*-Danube's Shore[5], *Svinița*[6], *Piatra Ilişovei*[7], *Dridu*[8], *Broşteni*[9], *Hinova*[10], *Izvoarele*[11], *Vărădia*[12], *Forotic*[13], *Orlea*[14] and *Bucşani*[15].

The **funerary rite** is in all cases inhumation.

The **location of necropolises** does not follow any certain rule. They were mainly positioned as to avoid flooding. Some of them are inside prehistoric fortifications[16] and *Cladova*-Dealul Carierei, the latter also used during the Middle Ages, others on hills. One can note that others are located close to lay medieval buildings (*Ilidia*-Oblița)[17] and Cetate[18], *Caransebeş*-Centru[19], *Reşița*-Ogăşele[20], *Pescari*-Danube's Shore[21], *Coconi*-Cemetery 1[22], *Cetățeni*-Poiana Târgului[23] and Sub Cetățuia[24]. In two cases, the necropolises were placed inside antique constructions, such as in *Caransebeş*-Măhala[25] and *Drobeta Turnu-Severin*-Roman Thermae. In *Ostrovul Mare*, the cemetery was located in a sand dune and in *Gura Văii* in mounds[26].

Necropolises are with and without church. Among those that included a church one can mention *Ilidia*-Oblița and Cetate, *Reşița*-Ogăşele, *Svinița*- fkm 1004-?[27], *Cladova*-Dealu Cetății[28], *Obreja*-Sat Bătrân[29], *Caransebeş*-Centru, *Mehadia*-Ulici[30], while those without church are located in *Şopotu Vechi*-Mârvilă, *Gornea*-Căunița de Sus[31], *Cuptoare*-Sfogea[32], *Pescari*-Malul Dunării, *Caransebeş*-Măhala,

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4 Unpublished item from the research of Bogdan Filipescu, taken over for publication by Silviu Oța.

5 Feher *et al.* 1962, 54; Gohl 1914, 17; Sabău 1958, 290.

6 Dumitriu 2001, 136, Taf. 50/1–2, Taf. 112/1–2; Oța 2006c, 232, 242, 244, 270, 2/B/5; Oța 2007b, 373; Oța 2008, 282–283, pl. 100/7–8.

7 Țeicu 2009, 70, pl. 20/5, 178.

8 Unpublished item provided by Eugenia Zaharia.

9 Velter 2002, 379; Oța 2007 b, 364, 374, 375; Oța 2008, 222.

10 Ioniță 2005, 133–134, 198, fig. 26/7–10.

11 Ioniță 2005, 134.

12 Țeicu 2009, 70, pl. 20/2, 3, 182.

13 Țeicu 2009, 75, pl. 25/3.

14 Ioniță 2005, 137, 220, fig. 48/3–4, 23, 24.

15 I hereby thank my colleague Cătălin Bem for the information provided.

16 *Şopotu Vechi*-Mârvilă – Oța 1998, 116, 117, 118, 123; Țeicu 1991, 307–310; Țeicu 1993, 240–241, 242, 243–244, 246, 247, 248, 249, 250, 258–259, 263–264, 267, 269; Țeicu 1996d, 10, 13, 19, 24, 25; Țeicu 2003a, 23–60; Oța 2008, 287–292; Oța 2009b, 182–184.

17 Oța 1998, 116; Mărghitan 1985, 74–76; Țeicu 1982, 264–269, 271, 273, 274, 276; Țeicu 1987, 320, 327; Țeicu 1993, 237, 238, 247, 252, 258, 272; Țeicu 1998, 132, 140, 141, 144, 147, 171, 172, 175, 187; Uzum 1979, 387–389; Uzum, Lazarovici 1971, 157–162; Uzum 1989, 39–44.

18 Matei, Uzum 1972, 555–559; Mărghitan 1985, 73–74; Oța 1998, 115, 116; Țeicu 1982, 264, 265, 266, 267, 269, 273, 276; Țeicu 1987, 320, 327; Țeicu 1993, 229, 237, 243, 248, 258, 272; Țeicu 1998, 131, 134, 140, 144, 147, 171, 175, 185, 186; Uzum, Lazarovici 1971, 160.

19 Bona 1993, (for the tomb with bracelet see Bona, 93, Țeicu 1993, 233, 2003 b and Oța 2006, 253).

20 Uzum, Țeicu 1983, 397–310; Țeicu 1989, 57–72; 1996a, 5–20; Oța 2008, 277 and 279 with connected bibliography.

21 Țeicu 1993, 239; Țeicu 1996d, 19; Țeicu 1998, 147.

22 Constantinescu 1972, 100, 247, pl. XIII/3.

23 Chițescu 1976, 178–181; Păunescu, Cristocea 1984, 137–141.

24 Chițescu, Păunescu 1992, 52–56+pl. 1.

25 Iaroslavschi 1975, 355–363; Țeicu 1998, 125.

26 Ioniță 2005, 133.

27 Boroneanț 1985, 111–118; Oța 1998, 113, 115, 116, 123; Țeicu 1998, 128.

28 Boroneanț, Hurezan 1987, 67, 69, pl. 2/5.

29 Țeicu, Rancu 2003, 455–467.

30 Țeicu 1993, 238; Țeicu 1998, 131; Țeicu 2003c, 95–105.

31 Lazarovici *et al.* 1993, 295–319; Oța 1998, 80–91, 116, 117, 118, 122, fig. 2; Țeicu 1981, 495, 496, 500; Țeicu 1982, 266–269, 273–274, 276; Țeicu 1993, 235–236, 243, 245, 246, 258, 266, 269; Țeicu 1998, 124, 126, 127, 134, 137, 138, 140, 147–149, 154, 155, 160, 165, 168, 170, 173; Țeicu, Lazarovici 1996, fig. 47, 48, pl. 5, 6, 7, 8, 9, 10, 11, 12, 13, 14; Uzum 1980, 125–139; Uzum 1981, 181–210; Oța 2009 b, 182.

32 Țeicu 1981, 497, fig. 5; Țeicu 1982, 267, 273; Țeicu 1993, 231–235, 242–248, 260–261, 264, 266, 268, 269, 270; Țeicu 1998, 125, 151, 157, 159, 160, 161, 163, 164, 165, 166, 167, 168, 169, 170; Uzum 1977, 220–221; Uzum 1987, 281–312; Oța 2009b, 181–182.

Izâmșa[33], *Ostrovu Mare*[34], *Drobeta Turnu-Severin*-Roman Thermae, *Nicolinț*-Râpa Galbenă[35], *Trifești*[36], *Hudum*[37], *Dridu*-Metereze[38], *Craiova*-Făcăi[39] and Fântâna Obedeanu[40], *Cetățeni*-Sub Cetățuie and Poiana Târgului[41], *Coconi*[42], *Izvoare*[43], *Zăbala*[44], *Portăreşti*[45], *Ciclova Română*-Morminți[46], *Moldova Veche*-Ogaşul cu Spini[47]. The absence of a church in such necropolises is nevertheless uncertain, since most were not fully but only partially researched. One must also add that in many cases the churches were built later than the first burials, such as in *Cladova*, *Obreja*, *Ilidia*-Cetate, *Reşița* etc.

The funerary rituals are rather little known, due to the partial publication of data. A closer analysis of such rituals according to gender is hindered by the lack of anthropological analyses. The necropolis in *Zăbala* is an exception.

One can mainly induce that these were tombs for women, female adolescents and female children. Up to the present state of research, no tombs for male individuals were discovered with specific inventory, except for some of those that contained funerary inventories restricted to finger rings.

Most are **individual burials**. A double burial was identified in Dărmăneşti.

The **orientation of tombs** does not raise special problems. Most of known tombs were oriented V-E with deviations determined by the season when the burial was performed.

The position of the dead inside the grave. In this case, since most of the bodies were placed leaning on their back, I chose to discuss only the position of the arms, since this is probably the most relevant aspect of the issue.

Position of the arms – I established five main variants, labeled from A to E. They also include some sub-variants. In these cases (i.e. the sub-variants), one may note that very few skeletons were noted inside each necropolis and this might suggest these were accidents during burial or due to other causes, difficult to identified at this point.

Position A (arms extended along the body). Was recorded in the case of four tombs, three in Banat (M. 5 in *Gornea*-Căunița de Sus and M. 12 and 16 in *Şopotu Vechi*-Mârvilă) and one in Moldova (M. 33 A in *Doina*-Girov).

Position B (arms extended along the body, palms placed on the pelvis). One sub-variant is that with one arm along the body, probably due to the palm slipping from the pelvis. For now, it was only recorded among tombs discovered in Banat (seven in total), in the necropolises in *Cuptoare*-Sfogea (M. 232, 241, 291, 332), *Şopotu Vechi*-Mârvilă (M. 30, 37) and *Gornea*-Căunița de Sus (M. 65).

Position C (arms bent at the elbow and placed on the abdomen). Were discovered in Moldavia (*Hudum*-Necropolis no. 2, M. 169) and in Banat (*Cuptoare*-Sfogea, M. 342 and *Gornea*-Căunița de Sus-M. 48), but only in three tombs. Sub-variant CB is more frequent, noted in the case of six bodies (*Cuptoare*-Sfogea-M. 92, 106, 316, 327, 331 and *Gornea*-Căunița de Sus-M. 59).

Position D (arms bent at the elbow and placed on the chest). Was identified in necropolises from Banat (*Cuptoare*-Sfogea-M. 8, 150) and Moldavia (*Hudum*-Necropolis 2, M. 150, *Izvoare*, M. 12). Sub-variants DB (*Gornea*-Căunița de Sus, M. 12) and DC (*Caransebeş*-Măhala, M. 3, *Cuptoare*-Sfogea-M. 278, 300, 303, *Izvoare*, M. 58) are almost equally frequent.

There are also other tombs, either benefiting from uncertain descriptions or disturbed, in which the bodies had at least one arm in position C or D (*Cetățeni*-M. 32, *Izvoare*, M. 3, *Svinița*- fkm 1004, M. 10).

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33 Dumitriu 2001, 126–127, Taf. 49/5–6, Taf. 92/1–3.
34 Dumitriu 2001, 132, Taf. 37/27–33; Oța 2007, 122, fig. 2/IV.1.c.
35 Radu, Țeicu 2003, 212–213.
36 Spinei 1994, 464, fig. 30/12–29, 31–33; Oța 2007, 126 and note 36.
37 Spinei 1994, 464, fig. 30/9–11, 24–30, 34; Oța 2007, 125.
38 Ioniță 2005, 127–128, 220, fig. 48/1–2, 7–13, 16, 19, 20.
39 Dumitriu 2001, 118, Taf. 49/1–3, Taf. 50/3.
40 Dumitriu 2001, 118–119, Taf. 89/1–20.
41 Dumitriu 2001, 115–116, Taf. 86/2, 5–8, 10.
42 Dumitriu 2001, 116–117, Taf. 87/3, 6, 7, 8.
43 Vulpe 1957, 50–54, 321, fig. 338, 324, fig. 341/2–4.
44 Székely 1993–1994 (1994), 277, 278.279, 280, 283, 293, 6. ábra/1, 2, 3, 4, 294, 7. ábra/2, 9.
45 Dumitriu 2001, 132–113, Taf. 94/1, 17, 18, 19, 20, 21, 24.
46 Țeicu 1993, 231; Țeicu 1998, 129; Uzum, Țeicu 1983, 211–216.
47 Mărghitan 1985, 92; Țeicu, Bozu 1982, 393–395.

Position E (arms bent at the elbow and palms placed on the clavicles or by the neck). In this case, only one tomb is known, discovered in *Cuptoare*-Sfogea (M. 209). Sub-variants EB (*Şopotu Vechi*-Mârvilă, M. 8), EC (*Ciclova Română*-Morminți, M. 4, *Gornea*-Căunița de Sus, M. 40, *Nicolinț*-Râpa Galbenă, M. 4, *Şopotu Vechi*-Mârvilă, M. 2, *Trifeşti*, M. 12), ED (*Cuptoare*-Sfogea, M. 15, *Portăreşti*-M. 9) and EX (*Şopotu Vechi*-Mârvilă, M. 23) are slightly more frequent. This position is considered in Romanian specialized literature as typical to Bogumil heretics or population elements arrived from areas south of the Danube[48].

Inventory items recovered from cemeteries or groups of tombs consisted of jewels for the head (earrings and diadems), neck (beads, pectoral crosses) and arms (bracelets made of twisted wire, bars with or without flattened ends, flat bars, glass paste and finger rings).

There is also a group of earrings with very limited spread, both chronologically and geographically. After analyzing them, I believe they are of Central-European tradition, but most probably produced west of the Lower and Middle Danube[49].

In necropolises where religious buildings were also discovered, the presence of items in the Byzantine tradition represents, in general, the final manifestation of tomb deposition of Balkan gold and silver work items (*Ilidia*-Obliţa, *Reşiţa*-Ogăşele, *Sviniţa*-fkm 1004 (?) and one uncertain site) at least for the inner-Carpathian area.

Head jewels consist of diadems, temple rings and earrings.

Diadems consist of plaques of various shapes (Pl. 4, 9). In funerary complexes they can be dated to the interval between the 11th and the 14th century[50]. One can also add buttons with similar use, probably sewn on headbands made of textile of leather. Such were recorded in tombs from Banat, Oltenia and Moldavia, during the entire chronological interval under analysis[51].

Temple and ear rings. Are known in multiple variants and were almost all worked in the techniques of granulation, filigree and twisted wire (Pl. 2, 3, 7 and 8). Still, some items also include cast elements or metal leafs on which granules and filigree decorations were applied. Even when they were imitations, fully or partially cast, they still reproduce ornaments created in the same techniques. Their maximum spread is in the outer-Carpathian area and in Banat[52].

Neck jewels consist of glass paste beads. Unfortunately, they are little known and little researched in Romania. Their description is also often faulty and one cannot include them in the present discussion. Such items were probably more frequently used in funerary practices, but their brief publication prevents all systematic mapping attempts.

There are also enkolpion crosses, but very few were discovered in tombs, such as, for example, those in Moldova Veche-Ogaşul cu Spini. The distribution area of various crosses is extremely wide, but very few were found in funerary complexes[53].

Arm jewels consisted of metal bracelets produced according to various techniques (casting, hammering, torsion, filigree and granulation)[54] but there were also bracelets made of glass paste. Most such items were found along the Middle Danube and west of the Lower Danube (Pl. 5/10).

Rings (Pl. 6/11) were made out of metal (through casting, hammering, engraving, filigree and granulation) and glass paste (modeling).

The production techniques and decorative motifs differentiate these jewels from those typical to parallel funerary horizons.

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48 Oța 1998, 113–123; Oța 2006a, 309–321.

49 Article under print (*Observații asupra cerceilor cu pandantive elipsoidale descoperiți pe teritoriul actual al României (sec. XIV-XV*). In the north-Danubian territory they were discovered in the necropolis in Drobeta Turnu-Severin-Roman Thermae and another site in Vărădia. About the latter, one does not know for certain if the item was found in a necropolis, a treasure, or is a stray find. All other jewels were discovered in treasures (Orşova, Olteni, Jiana Mare, Jidosița).

50 Those dated to the 15th century are outside the scope of the present paper and were thus excluded. See also Oța 2007a, 117–156.

51 See Oța 2007, 117–156.

52 For items in the Byzantine tradition on the territory of Romania see also Oța 2007a, 117–156, Oța 2009a, 75–97, Oța *et al*. 2009, 65–82, Oța 2010a, 117–138, Oța 2010b, 403–433, Oța *et al.* 2010, 155–171.

53 Spinei 1975, 227–242.

54 For twisted wire bracelets see Oța 2006b, 251–274 and Oța *et al.* 2010, 155–171.

The presence of the funerary coin offerings is little documented, i.e. in the case of just five tombs. The coins were minted during the reign of kings Bela II (1131–1141) and Bela III (1172–1196), Stephen III (1162–1172), Ladislas I (1077–1095) and Koloman (1095–1116) and prince Petru Muşat (1375–1391). These coins are also good indicators for the absolute chronology of associated items.

Conclusions

Concerning the chronology of these items and their territorial distribution, one can note that the earliest jewels are mainly concentrated in the mountain regions of Banat and Oltenia, thus in close proximity to the Byzantine-Hungarian border, in a territory that neither state clearly controlled. In Walachia and Moldavia, the earliest items seem concentrated in certain spots, but they are few in numbers and often slightly later than those in Oltenia and Banat. One exception consists of items clustered in the area of Dridu-Fierbinți and some of those from the northern half of Moldavia. Considering the presence of Tukic populations there, I suspect that the absence of such items can be due to their local dominion. In support of this statement one may mention the presence of tombs belonging to nomad populations, mainly grouped in southern Moldavia and Walachia[55]. The situation was preserved until around the first third of the 13th century.

After this date, the number of jewels in the Byzantine tradition decreases in Banat. This does not indicate a lesser Byzantine artistic influence, but a possible legislative measure in the Hungarian Kingdom stating that such valuable jewels should not be placed in tombs. The phenomenon can be noted in eastern Banat by the time the Banate of Severin was founded. Isolated cases and the typology of the items prove the fact that the production of Balkan jewels continued and even became more diverse during the 13th and 14th centuries. Outside the Carpathians, they considerably increase in numbers, including in such areas where they were rarely attested during the previous chronological interval. This statement is supported by the discovery of jewels inside settlements and also by discovered treasures and jewelry molds (in *Coconi* for example).

Another aspect that must be noted is the fact that most of the necropolises featuring jewels in the Byzantine tradition include the E arms position or its sub-variants. This might prove that there was a strong connection between groups of population wearing Balkan costumes and possibly heretical beliefs.

Silviu Oța
The National History Museum of Romania Bucharest
Bucharest, RO
silviuota@yahoo.com

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[55] Spinei 1985; 2009, Map. 4.

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ANNEXES

Items

Pl. 7. Earrings discovered in tombs.
A. 1–2. Dridu-La Metereze (taken from Ioniță 2005); 3, 5. Portăreşti (taken from Dumitriu 2001); 4. Hinova (taken from Ioniță 2005).
B.1–3. Şopotu Vechi-Mârvilă (taken from Oța 2008).
C. 1–2. Trifeşti (taken from Spinei 1994); 3. Craiova (taken from Dumitriu 2001).
D.1, 4, 7. Şopotu Vechi-Mârvilă (taken from Oța 2008); 2. Frumoasa (taken from Dumitriu 2001); 3. Izâmşa (taken from Ioniță 2005); 5. Şopotu Vechi-Mârvilă (taken from Țeicu 1993); 6. Cuptoare-Sfogea (adapted from Țeicu 2009).
E. 1. Drobeta-Turnu Severin (taken from Ioniță 2005); 2. Orlea (taken from Ioniță 2005); 3, 8. Dridu-La Metereze (taken from Ioniță 2005); 4. Cetățeni (taken from Dumitriu 2001); 5–6. Trifeşti (taken from Spinei 1994); 7. Hinova (taken from Ioniță 2005); 9. Portăreşti (taken from Dumitriu 2001); 10 Hudum (taken from Spinei 1994).
F. 1. Frumoasa (taken from Dumitriu 2001); 2. Cuptoare-Sfogea (taken from Țeicu 1998).
G. 1. Cuptoare-Sfogea (taken from Țeicu 1998). Illustration without scale.

Pl. 8. Earrings discovered in tombs.
A. 1. Şopotu Vechi-Mârvilă (taken from Oța 2008); 2, 4. Craiova-Făcăi (taken from Dumitriu 2001); 3. Cuptoare-Sfogea (taken from Țeicu 1998); 5–6. Portăreşti (taken from Dumitriu 2001); 7. Svinița (taken from Dumitriu 2001).
B. 1–2. Drobeta-Turnu Severin-Termele Romane (taken from Dumitriu 2001).
C. Drobeta-Turnu Severin (taken from Dumitriu 2001); 2. Coconi (taken from Dumitriu 2001); 3. Reşița-Ogăşele (taken from Oța 2008); 4. Cetățeni (taken from Ioniță 2005); 5. Drobeta-Turnu Severin-The Istrati-Capşa Collection (taken from Dumitriu 2001); 6. Hudum (taken from Spinei 1994); 7. Cuptoare-Sfogea (taken from Țeicu 1998); 8. Drobeta-Turnu Severin-city territory (taken from Dumitriu 2001).
D. 1, 5. Dridu-La Metereze (taken from Ioniță 2005); 2–3, 6. Craiova-Fântîna Obedeanu (taken from Dumitriu 2001); 4. Cetățeni (taken from Dumitriu 2001); 7. Ilidia-Oblița (adapted from Țeicu 2009); 8. Drobeta-Turnu Severin-Termele Romane (taken from Dumitriu 2001); 9–10. Trifeşti (taken from Spinei 1994); 11 Potlogi (taken from Dumitriu 2001); 12. Izvoare (taken from Vulpe 1957).
Illustration without scale.

Pl. 9. Diadem plaques discovered in tombs (taken from Oța 2007a). Illustration without scale.

Pl. 10. Bracelets discovered in tombs.
1. Orlea (taken from Ioniță 2005); 2, 5. Izâmşa (taken from Ioniță 2005); 3, 7. Cuptoare-Sfogea (adapted from Țeicu 2009); 4. Ilidia (adapted from Țeicu 2009); 6. Hinova (taken from Ioniță 2005); 8. Gornea-Căunița de Sus (taken from Țeicu, Lazarovici 1996); 9. Obreja-Sat Bătrân (adapted from Țeicu 2009); 10. Cuptoare-Sfogea (taken from Țeicu 1998); 11. Svinița-Km. Fluvial 1004 (taken from Dumitriu 2001); 12. Cuptoare-Sfogea (taken from Țeicu 1998); 13 Runcu (taken from Ioniță 2005); 14 Cuptoare-Sfogea (taken from Țeicu 1998). Illustration without scale.

Pl. 11. Rings discovered in tombs or probably from destroyed funerary complexes.
1, 4, 8, 11. Şopotu Vechi-Mârvilă (taken from Țeicu 2003a); 2, 5. Svinița-Km. Fluvial 1004 (taken from Dumitriu 2001); 3. Ilidia-Oblița (taken from Țeicu 1998); 6–7, 10. Gornea-Căunița de Sus (taken from Țeicu 1998); 9. Şopotu Vechi-Mârvilă (taken from Oța 2008); 12. Mehadia-Ulici (taken from Țeicu 2003c); 13, 16, 18, 19, 20. Cuptoare-Sfogea (taken from Țeicu 1998); 14, 22. Cetățeni (taken from Dumitriu 2001); 15. Ilidia-Cetate (taken from Țeicu 1998); 17, 21. Hudum-Necropola 1 (taken from Spinei 1994); 23–25, 27. Craiova-Fântâna Obedeanu (taken from Dumitriu 2001); 26. Drobeta-Turnu Severin-Termele Romane (taken from Dumitriu 2001).
Illustration without scale.

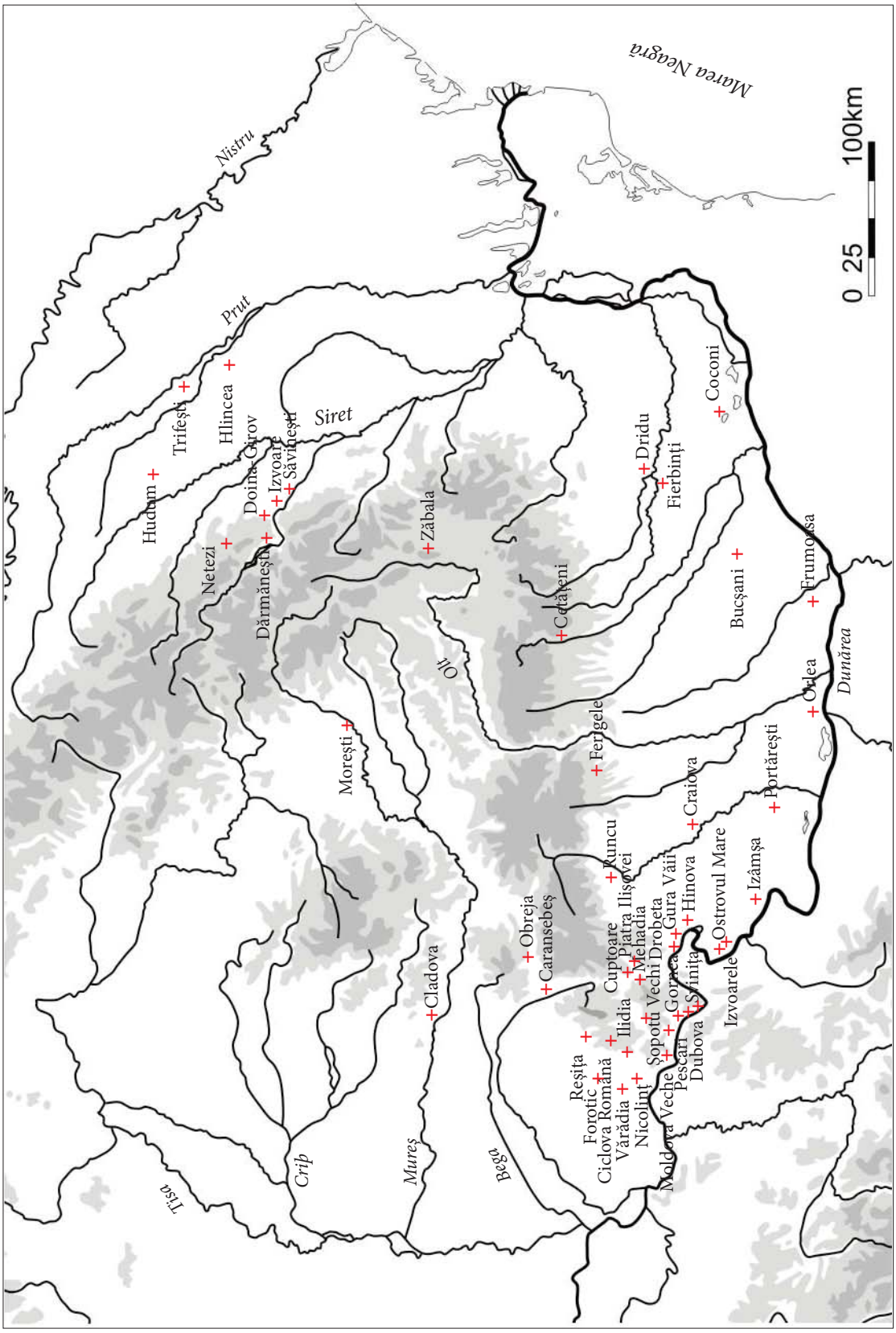

Plate 1. Jewels of Byzantine tradition from necropolises dated from the second half of the 11th century until the end of the 14th century.

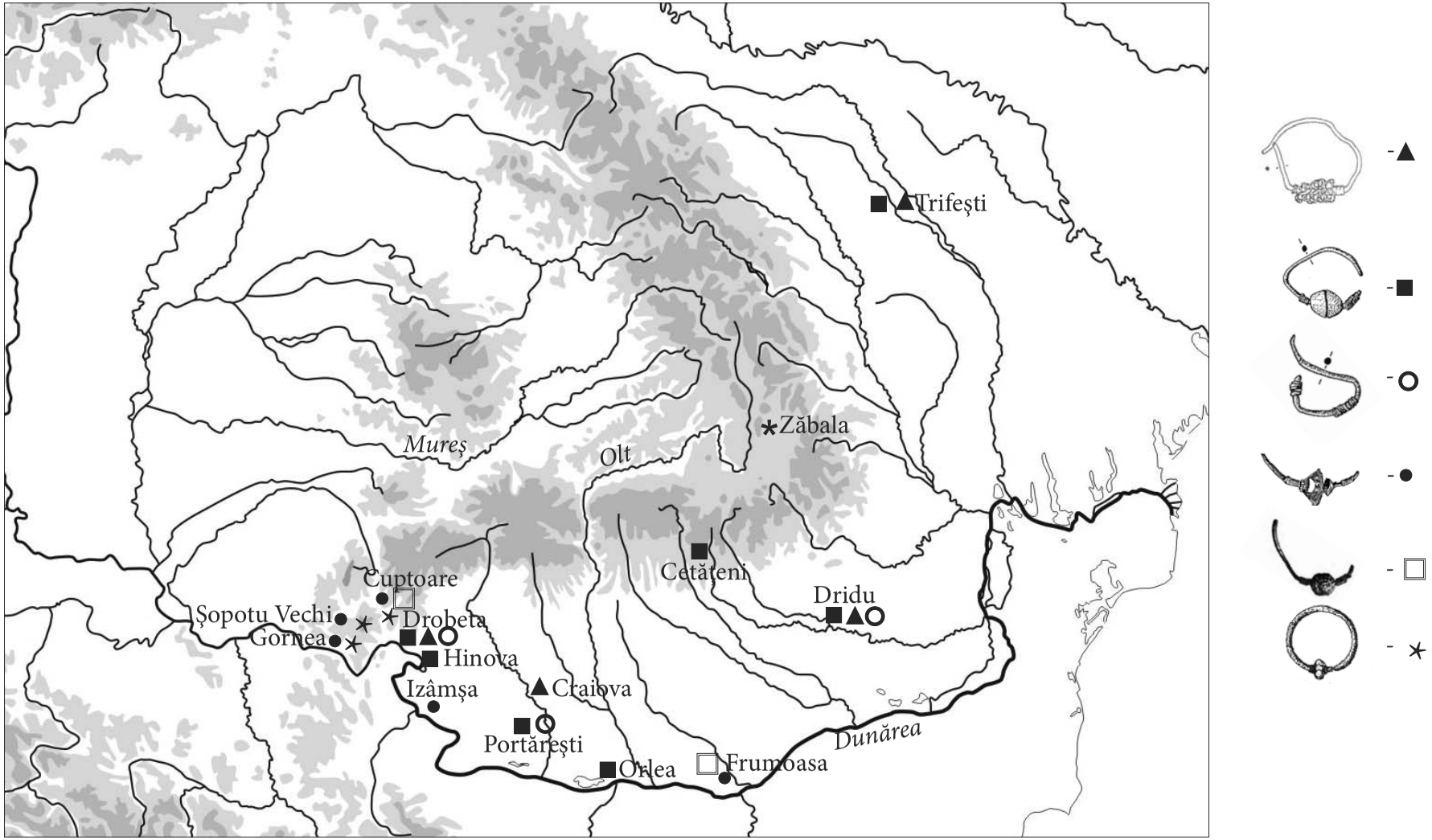

Plate 2. Earrings of Byzantine tradition in funerary complexes from the north-Danubian area.

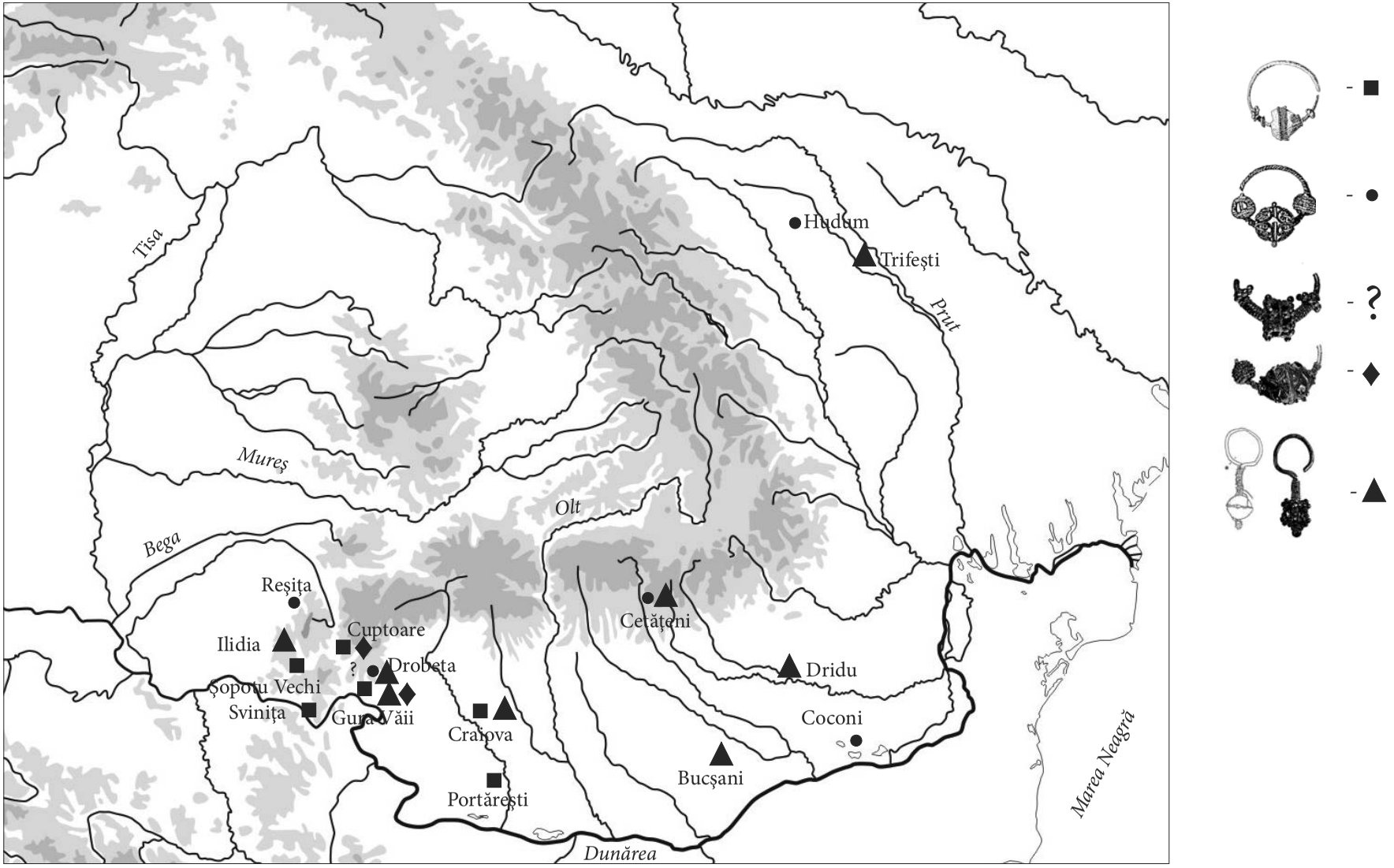

Plate 3. Earrings of Byzantine tradition in funerary complexes from the north-Danubian area.

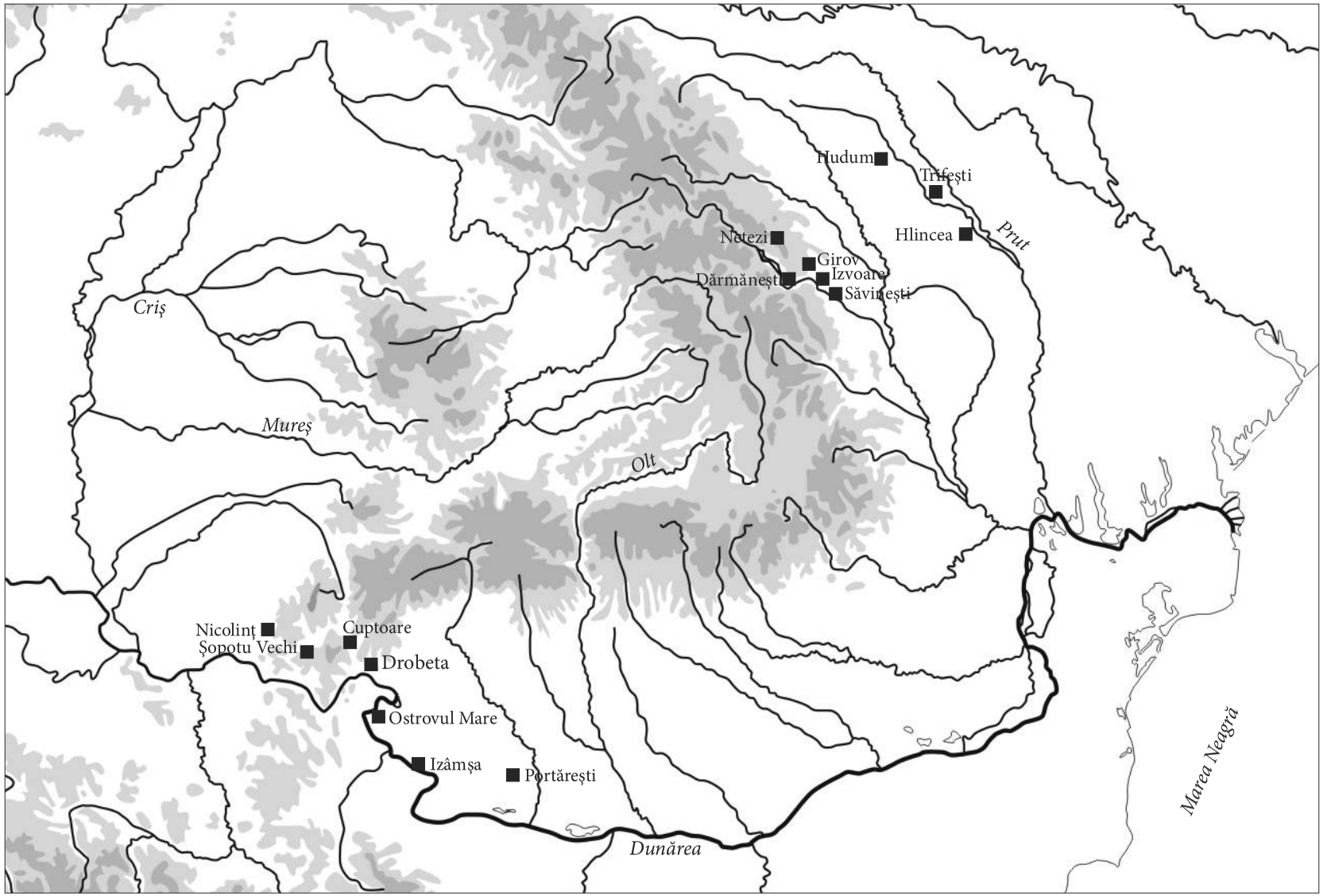

Plate 4. Diadem plaques in funerary complexes from the north-Danubian area.

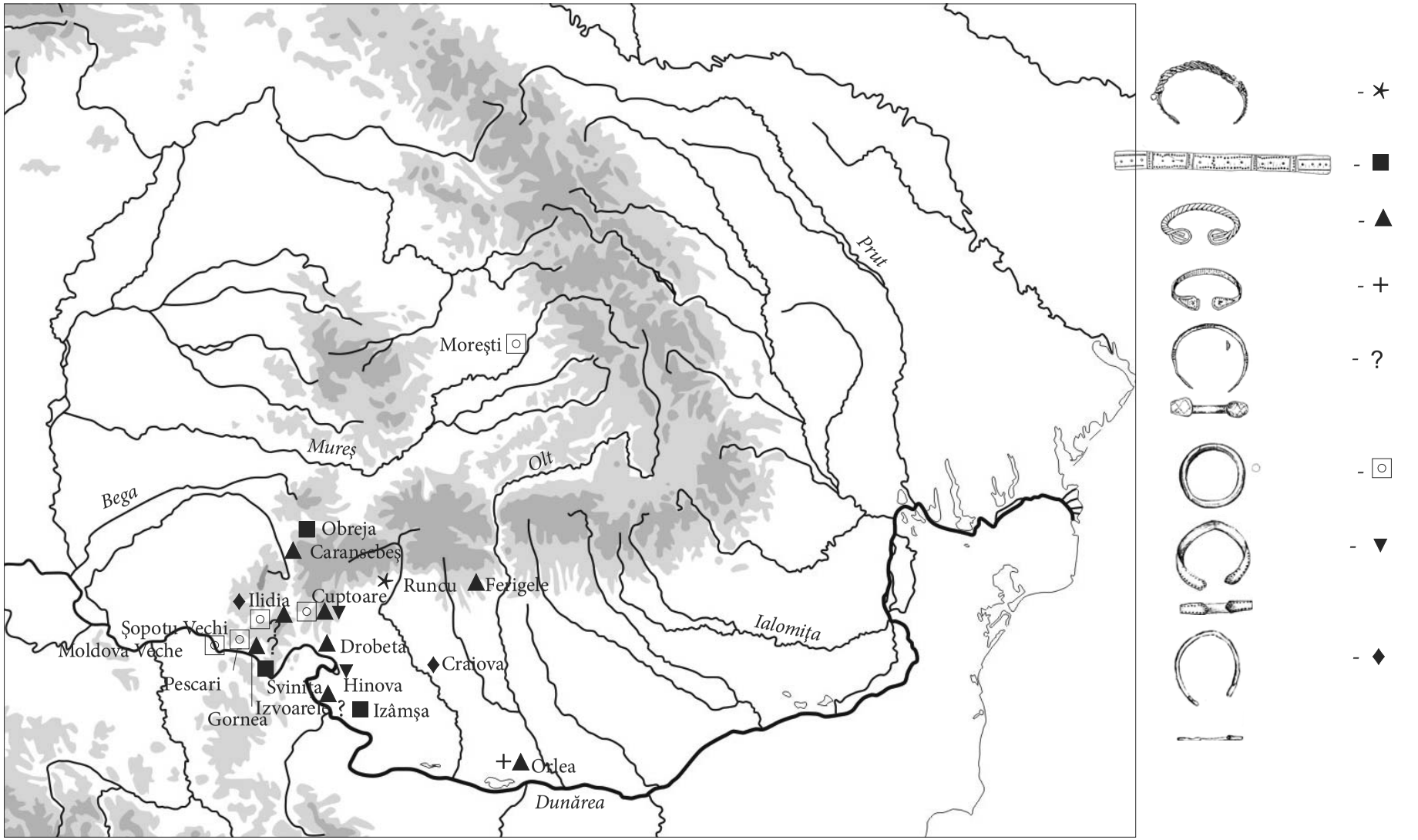

Plate 5. Bracelets of Byzantine tradition in funerary complexes from the north-Danubian area.

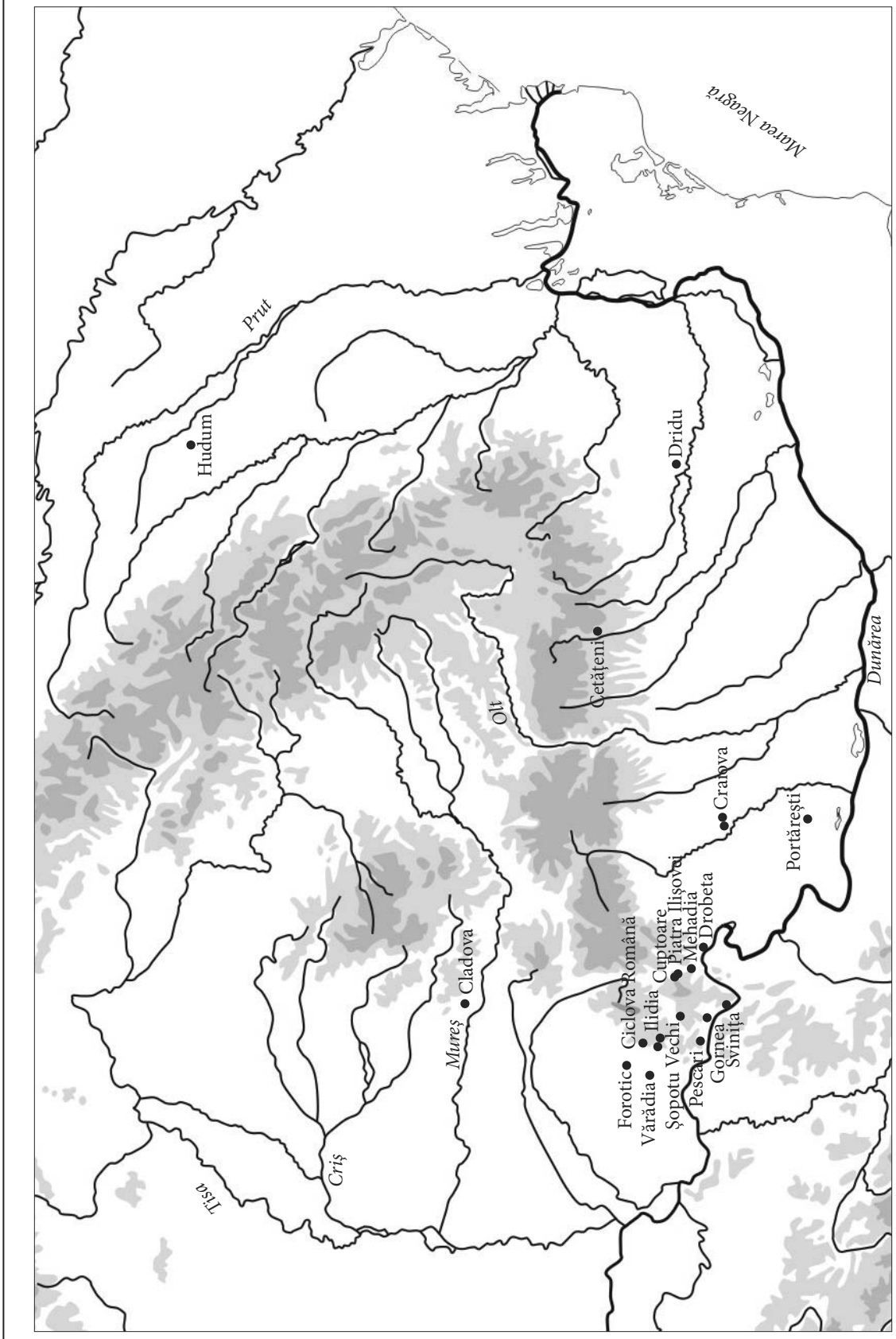

Plate 6. Rings of Byzantine tradition in funerary complexes from the north-Danubian area.

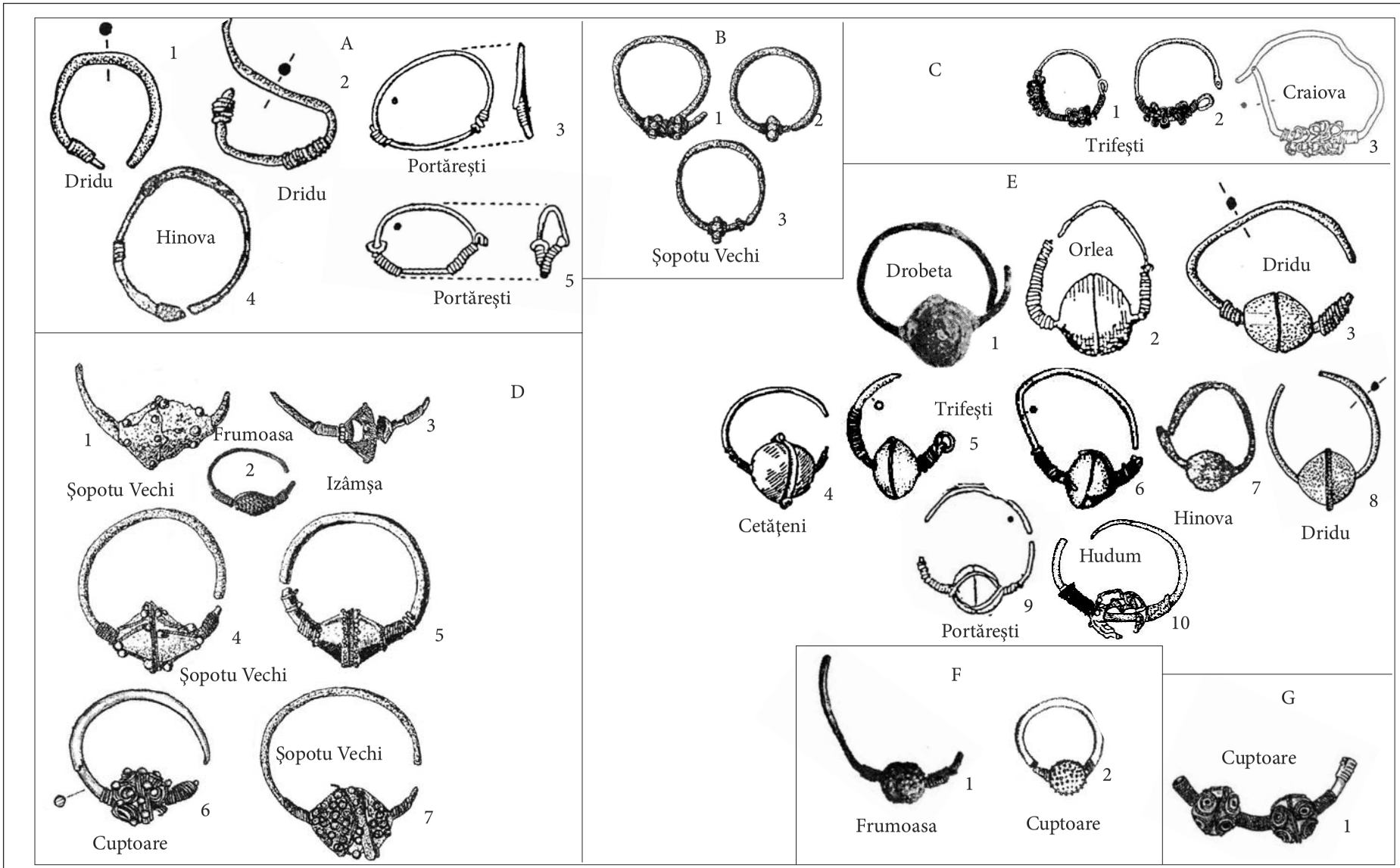

Plate 7. Earrings discovered in tombs.

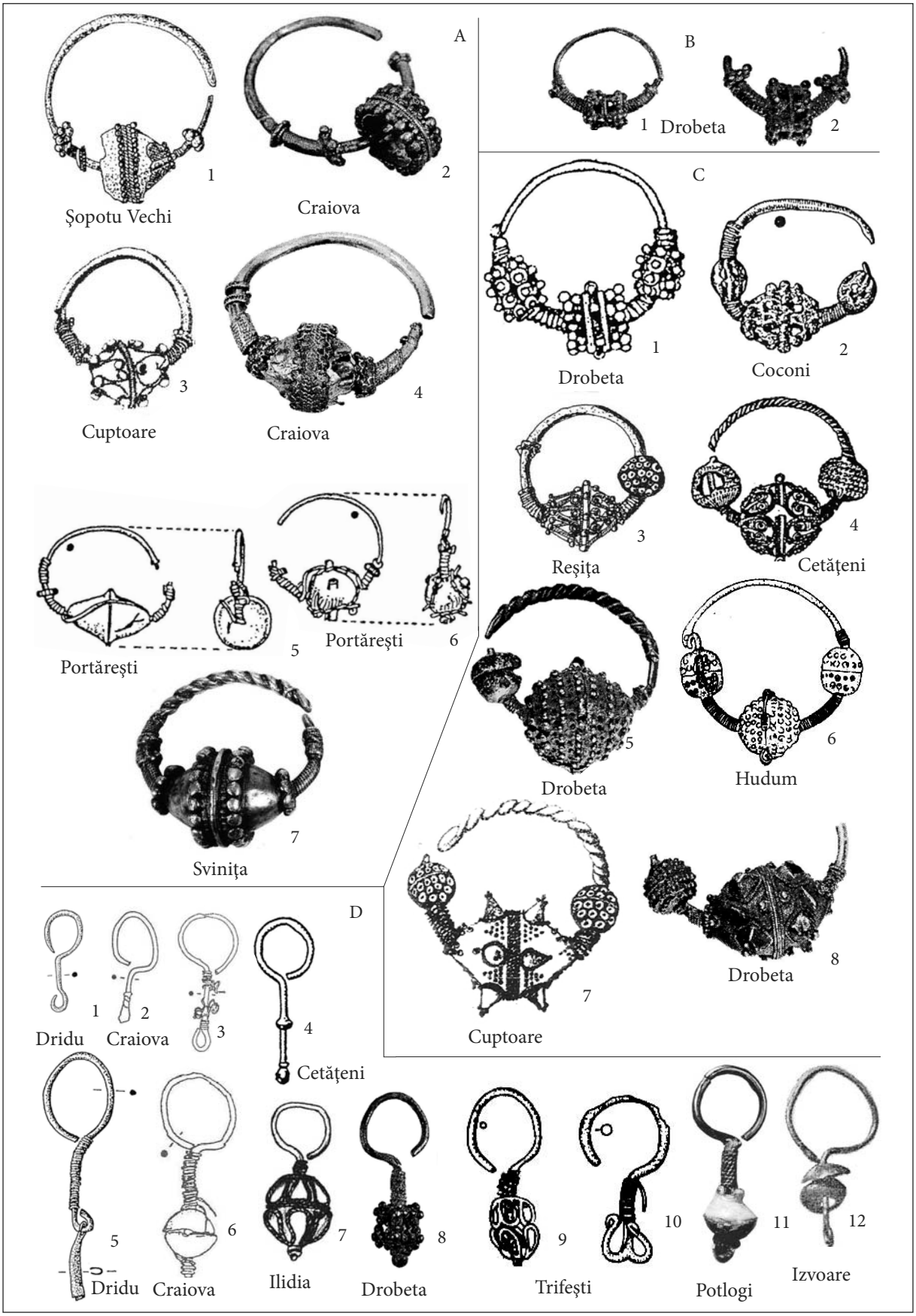

Plate 8. Earrings discovered in tombs.

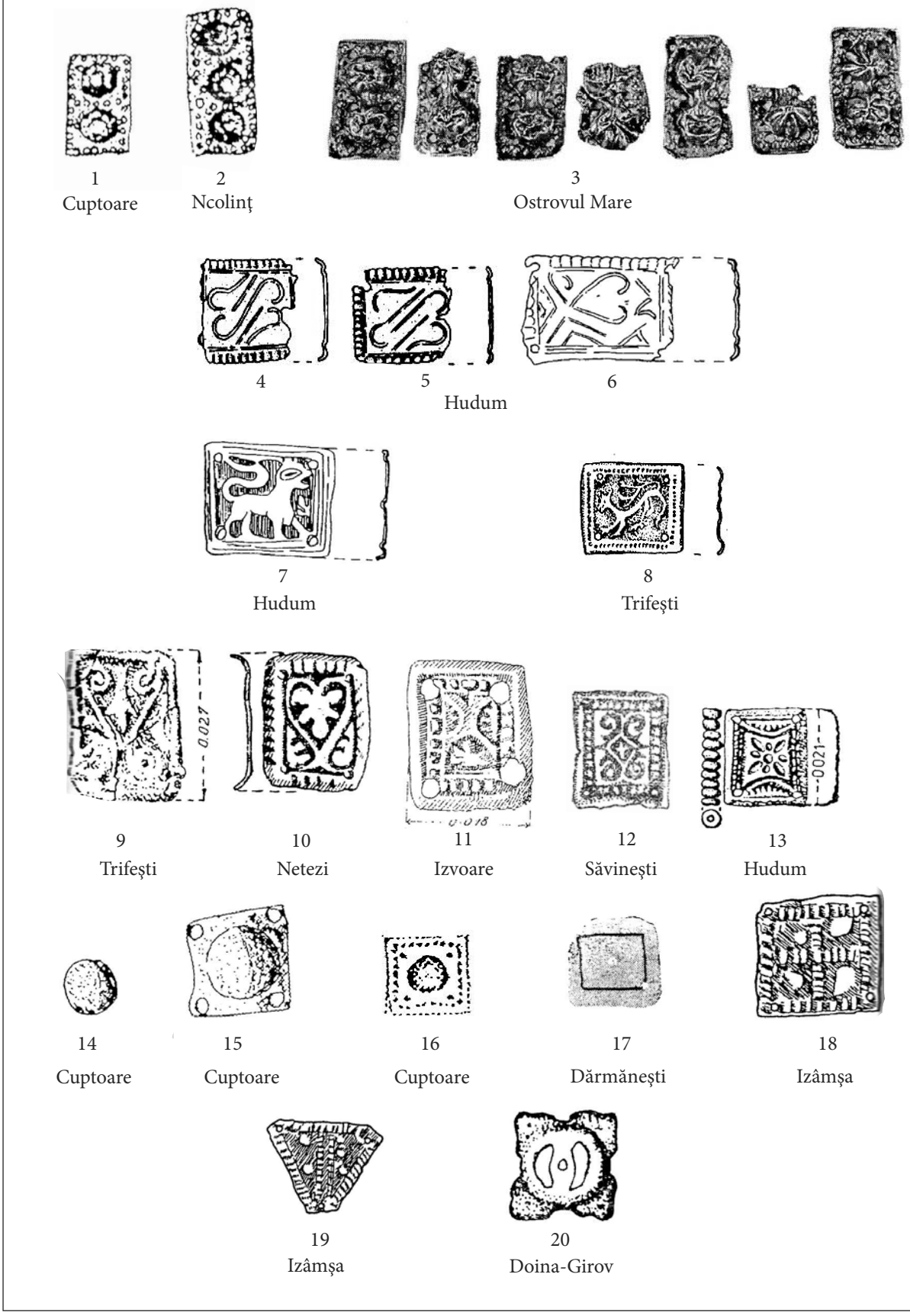

Plate 9. Diadem plaques discovered in tombs (taken from Oța 2007a). Illustration without scale.

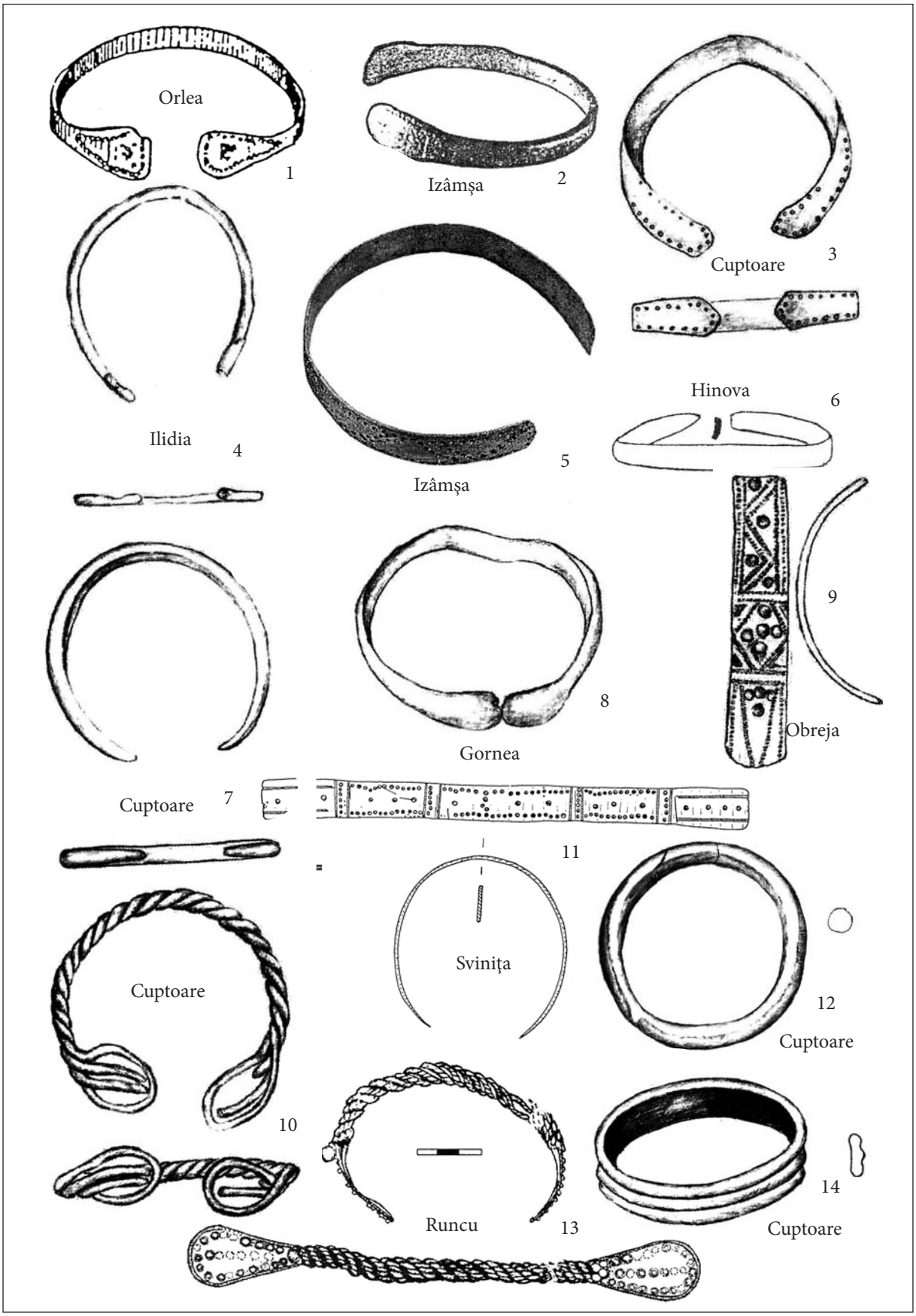

Plate 10. Bracelets discovered in tombs.

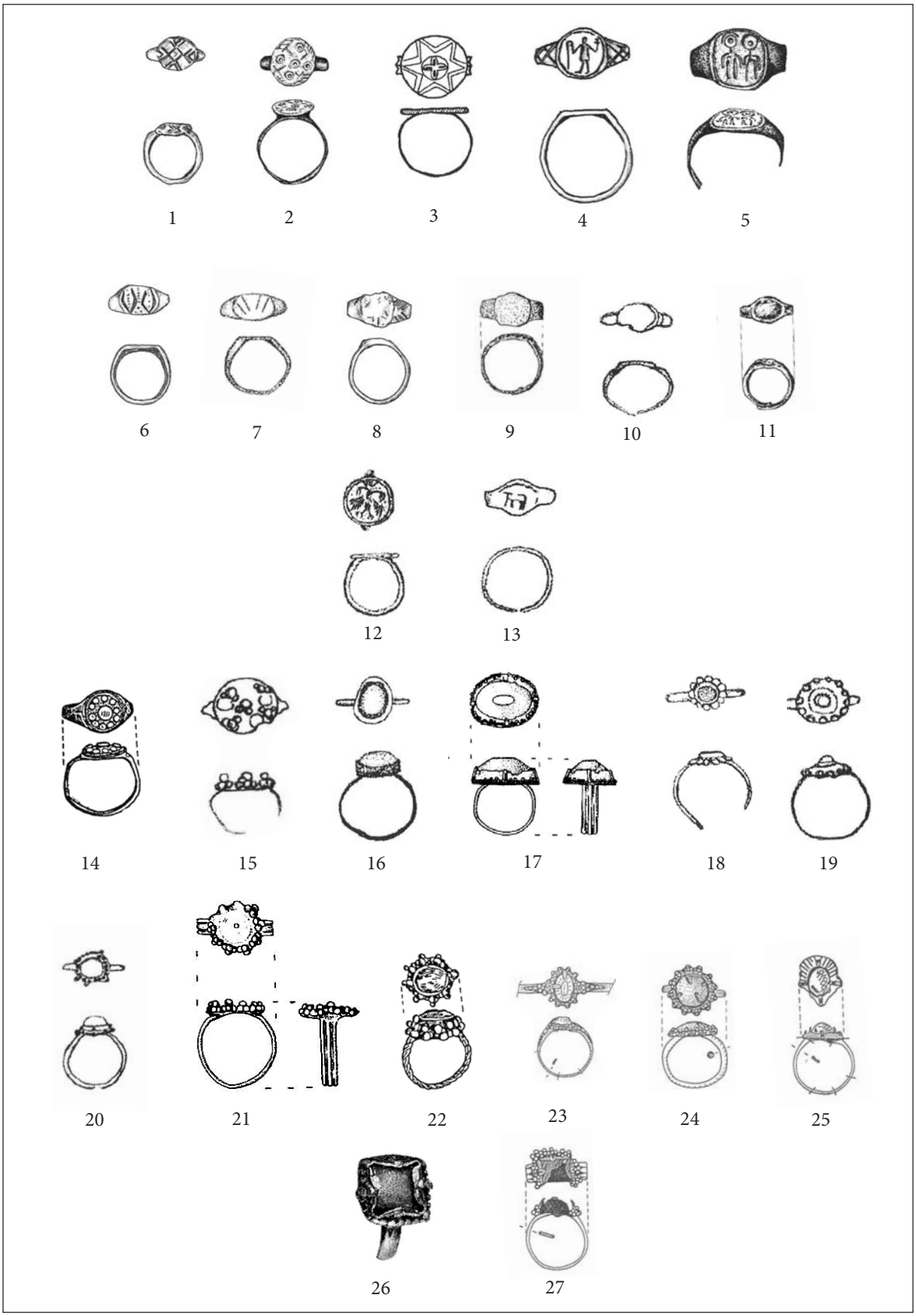

Plate 11. Rings discovered in tombs or probably from destroyed funerary complexes.

Dental Indicators of Stress and Diet Habits of Individuals Discovered in the Ossuary of the Medieval Church in Tauţ (Arad County)*

Luminița Andreica

Abstract: The present study presents the analysis of certain bio-cultural factors on bone fragments. The skeletons were recovered from a medieval ossuary in Tauț (Arad County). Some pathological afflictions, such as the large number of teeth lost antemortem, tooth cup-shape wear and the large number of interproximal cavities led to the conclusion that the diet of these individuals mainly consisted of cereals.

Keywords: ossuary, cavities, *cribra orbitalia*, diet, agricultural system.

Introduction

The human remains under analysis were discovered during archaeological excavations performed in 2006 in the northern area of the Gothic church researched in Tauț "La cetate" (Arad County). Systematic archaeological research on this site started in 2002, when the area enclosed by ramparts was partially cleared of vegetation. During the 2003 excavations specialists have identified an early medieval necropolis (dated to the 11th–12th centuries) over which two churches were built during different stages. The first church was originally built in the Romanesque style, but during a later stage, when the congregation grew, the Romanesque church was significantly extended and turned into a Gothic monument. The community decided to establish an ossuary in the northern area annexed to the Gothic church, probably because the burial area around the church was used up. One could enter the ossuary from the church's nave[1].

Thus, in the present study we attempt at performing a preliminary anthropological analysis that aims at reconstructing the diet of individuals buried in the church yard.

Materials and methods

The bone materials employed in this study were recovered from an ossuary, thus a collective secondary burial.

In the case of such burials, a large number of skeletal remains are often missing. In the same time, it is obvious that some bones can be easily lost during transportation.

Thus, the following fragments were recovered from the ossuary: 28 skulls, 10 mandibulae, 33 femora, 29 tibia and 20 humeri. Each skull was numbered and, when possible, according to texture and gender, the mandibles were attributed to skulls C 03, C 04, C 05, C 09, C 25 and C 26.

Gender and age diagnosis

In order to identify the gender of the discovered individuals, I analyzed the traits of each skull, such as the prominence of the glabellae, of the nuchal crests, of the *superciliary arches and* of the mastoid bones[2]. W. Bass's recommendations were employed in the identification of gender according to the characteristics of the mandibulae[3]. The synostosis degree of skull sutures[4], the obliteration of the interpalatine suture[5] and dental wear were employed as indicators in establishing age according to methods provided by T. White and P. Folkens[6].

* English translation: Ana M. Gruia.
1 Mărginean, Rusu 2010.
2 Acsádi, Nemeskéri 1970.
3 Bass 1987.
4 Lovejoy, Meindl 1985.
5 Bass 1987.
6 White, Folkens 2005.

As for pathology, analogies were identified from D. Ortner, W. Putschar[7].

Paleo-demographic considerations

7.14 % of the bone material belonged to adolescent individuals. The highest number of deaths was recorded among the young adult category, with a percentage of 28.5 %. From the lot from Tauț, six individuals reached ages between 36–45 years old, while a percentage of 25 % lived beyond 46–55. Five individuals were identified in the adult-senile category (Fig.1).

Age	Men	Women	Unidentified	Total
4 –12	–	–	–	–
13 – 20	1	–	1	2
21 – 35	3	5	–	8
36 – 45	4	2	–	6
46 –55	4	2	1	7
➢ 56	2	3	–	5

Fig. 1. Distribution of individuals found inside the ossuary according to age and gender.

Pathological observations

Data provided by dental elements is highly relevant not only in the study of infectious diseases, but also in the analysis of physiological alterations (destructions) during tooth formation. Through such analyses one can extract pieces of information on the state of oral health of the population under investigation and in some cases such data reflects life details during childhood or adult age.

Oral pathology allows, among other things, for the approximation of an individual's diet, the way his food was prepared and the nutrition and subsistence strategies of human groups in the past. As J. R. Lukacs indicated[8], one must certainly take into account the fact that gender, age and last but not least social status are variables that influence the analysis and interpretation of the distinct pathological manifestations of teeth.

Thus, in the present paper, in order to estimate the degree of oral health and in order to identify the diet of individuals found inside the ossuary, I performed the following analyses: the evaluation of diseases affecting their teeth (cavities, antemortem dental loss), as well as their bone tissue supporting the teeth (abscesses, periodontal diseases).

The percentage of antemortem tooth loss is relatively elevated, representing 35.7% of the minimum number of individuals. The highest incidence is recorded among female individuals. Such lesions are traditionally associated to the cariogenic process, though one must not forget that this process can take place following traumatisms, strong dental abrasion, or the retraction of dental alveoli due to periodontal afflictions[9].

Teeth more likely to suffer from antemortem dental loss are Molar 1, Molar 2 and Molar 3, while incisors and canines are usually less affected (Fig. 2). One of the explanations for this is the fact that molars are more involved in mastication, in the grinding of food, thus they wear out sooner than teeth on the anterior arcade. Another reason might be the potential retention of food particles in the interproximal areas of the molars. This might lead to the formation of the dental salt plaque, a focus of cariogenic bacteria.

The fact that the first molar is the tooth with the highest frequency of antemorten loss in both male and female individuals can be explained by its eruption prior to other molars. Thus, it can be affected sooner by cariogenic factors or other trauma that might lead to its early loss.

The distribution of postmorten dental loss shows higher frequency among anterior teeth. The type of tooth most easily lost is that with a single root, such as incisors, canines and premolars, except

[7] Ortner, Putschar 1981.
[8] Lukacs 1989.
[9] Lukacs 1995.

for the first upper premolar that can have two merged roots. This loss of anterior teeth can be easily explained. "Single-root teeth are less well anchored in the bone tissue and can detach easier, while molars, with their divergent roots and bigger size, are better connected to the alveolar bone and it is thus less likely for them to detach due to taphonomical modifications"[10].

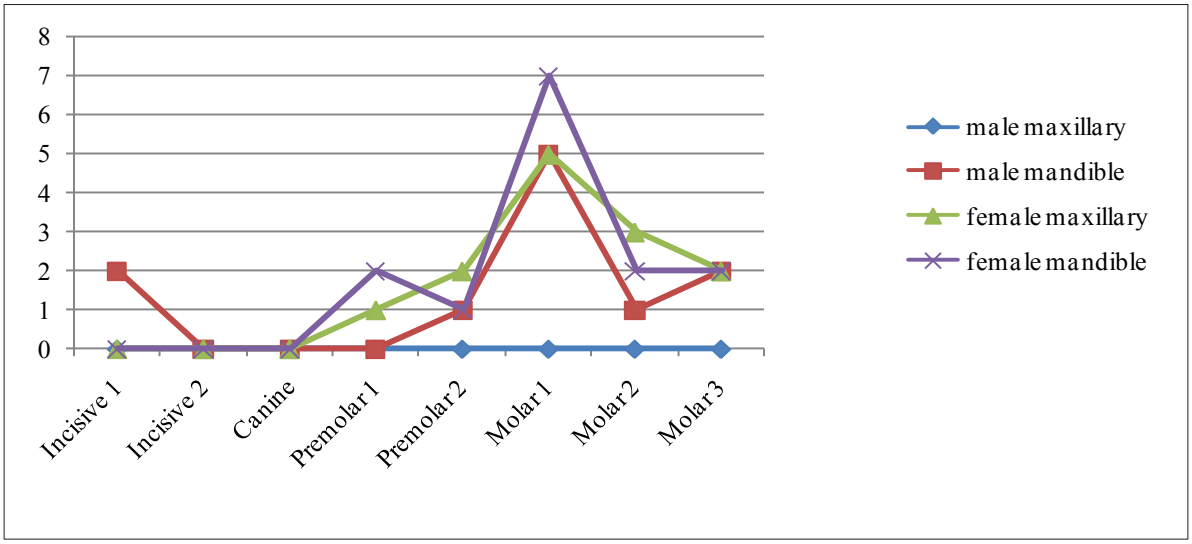

Fig. 2. Antemortem tooth loss frequency according to gender.

Dental caries are pathological afflictions caused by the interaction of several factors, among which the most significant are the following: tooth susceptibility, the presence of cariogenic microorganism and, last but not least, one must mention the buccal environment. This affliction causes the progressive destruction of dental enamel as a consequence of acid demineralization. This demineralization of the enamel is the product of sugar from consumed food fermenting[11]. Populations consuming higher quantities of carbohydrates show a relatively elevated frequency of cariogenic lesions as compared to populations with a smaller intake of carbon hydrate[12]. The present study analyzes the distribution of cavities according to the individuals' gender and age, taking into account also the type of teeth and the location of each lesion.

As for the gender distribution of cavities, I was able to identify the presence of tooth cavities in the case of five individuals, all male, with ages between 30 and 45.

The subsequent step consisted in the analysis of each tooth's different surfaces in order to see which dental items were more affected by the cariogenic phenomenon. I thus analyzed the distribution of lesions located on the grinding surface (occlusal caries) as compared to those on all other dental surfaces (non-occlusal caries). Such observations led to the conclusion that the individuals found in the ossuary from Tauț presented a significant number of non-occlusal caries (Pl. 2/3, Pl. 2/4). This elevated frequency indicates that this population consumed types of foods that easily accumulate between the inter-proximal surfaces of teeth, especially the posterior ones, were access for the removal of remains was more difficult.

As for the main lesions of the buccal apparatus, it has been concluded that a final factor must also be taken into consideration. If one analyzes independently cavity frequency and antemorten dental loss, he/she can easily ignore the connection between the two pathological manifestations. Because of this, the two lesions have been unified into a single indicator labeled as overall dental lesion that allows for the partial abstraction of results on the oral pathology of individuals inside the ossuary. Following the incidence of overall dental lesions according to gender, the following graph (Fig. 3) indicates that female individuals show a higher percentage of pathological afflictions, but that the difference is not significant.

On the basis of these indicators, one can conclude that women were not less affected by the cariogenic process, but that they lost their teeth antemorten earlier and to a larger degree.

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10 Robledo Sanz 1998, 206.
11 Lukacs 1989.
12 Larsen *et al.* 1991.

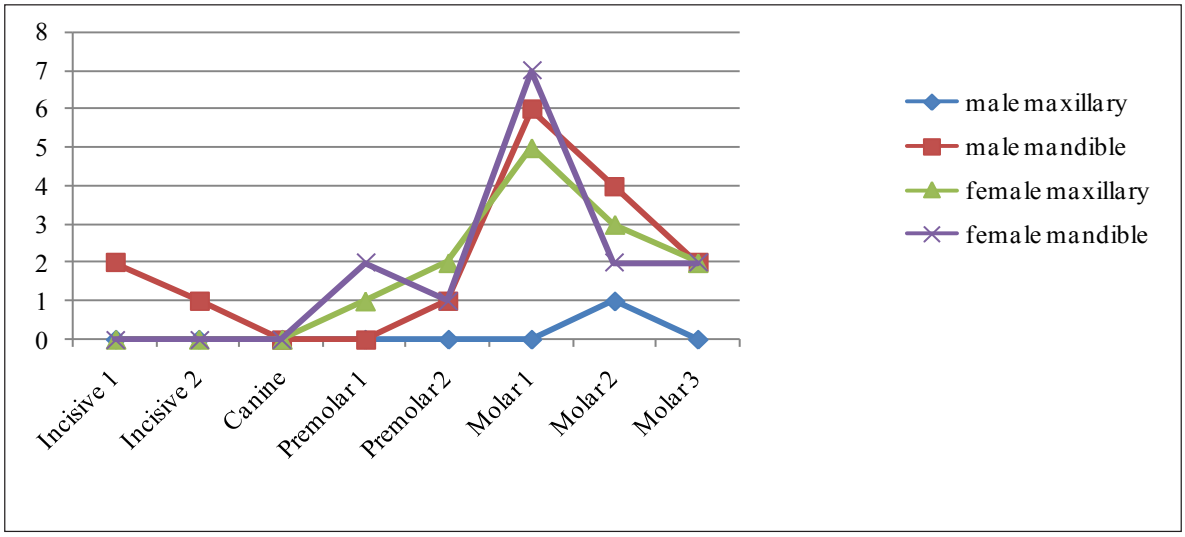

Fig. 3. Overall dental lesions (cavities+antemortem tooth loss) according to gender and dental elements.

There are several hypotheses as to the deteriorating oral health of female individuals: the fact that they consumed smaller quantities of proteins and larger quantities of carbohydrates than men. One can also explain this gender difference by accepting the fact that women also partially chewed food given to children during the weaning period. "On the other hand Walker provides as a significant explanation the early eruption of dental items in women, a fact that suggests that teeth are thus exposed for longer periods to the cariogenic activity"[13].

Among the pathological afflictions that affected the bone tissue supporting dental items, in the present study one can mention abscesses and paradontitis.

"The abscess is a pathological condition characterized by the destruction of the alveolar bone caused by different infectious agents. This pathology can be the result of cavities or the consequence of severe tooth wear, traumatic processes and/or periodontal diseases"[14]. Abscesses are in fact the destruction of the alveolar bone. In general, this destruction can be seen as a circular depression with rounded edges, different than all other postmortem destructions of the bone.

As for the individuals from Tauț, this pathological affliction was only encountered in the case of a single male individual who died between 25 and 30. The abscess is present on the mandible, around Molar 1 right, above the mental foramen. The entire crown of Molar 1 is also destroyed (Pl. 2/1, Pl. 2/2).

Posterior teeth show a higher percentage of abscesses, especially the first molars[15]. This hypothesis is verified by the present study. Since there is only one case of abscess, one cannot draw conclusions on its frequency according to gender and age.

Paradontitis is another pathological affliction encountered among individuals from the lot in Tauț.

The periodontium is a dynamic structure composed of tissue surrounding and supporting dental items, interdependent with them. The tissue includes the gum, the periodontal ligament, the alveolar cement and bone, which are united through blood vessels and allow for the normal function of the periodontal tissue[16].

Studies in paleopathology only note the stages of the alveolar bone, a structure undergoing constant processes of remodeling as a result of its adaptation to functional needs, mainly mastication and the reorientation of teeth following antemortem losses. Undoubtedly, surface alterations can also take place as a consequence of different factors, leading to the degeneration of the dental support[17]. "Some of the risk factors of this advanced periodontal disease can be severe mastication, the consistency of ingested foods, the lack of oral hygiene and a person's gender and age"[18].

[13] Robledo Sanz 1998, 215.
[14] Robledo Sanz 1998, 227.
[15] Robledo Sanz 1998.
[16] Holmstrup 1996.
[17] Molnar, Molnar 1985.
[18] Robledo Sanz 1998, 229–230.

Three such cases were identified in two male individuals with ages between 35–55, while another was encountered in the case of a 40–50 years old woman. If this periodontal disease causes the reduction of dental support and the retreat of the gum, the surface of the dental item remains more exposed to cariogenic agents.

Enamel hypoplasia is another pathological affliction of the dental apparatus encountered in the present study.

Research of dental *hypoplasia is highly significant in the analysis of a certain population's way of life. Hypoplastic alterations take place during the formation of dental crowns and this is why certain nutritional problems that individuals suffered during childhood can be observed.*

"In 1984 Goodman and his collaborators were the first investigators of dental *enamel hypoplasia during weaning. They noted the strong connection between the onset of hypoplastic lesions and the moment of dietary change from maternal milk to solid food. The risk of this alteration appears during this critical time that marks the passage to a more solid diet, with a lower percentage of proteins"*[19].

Two cases of hypoplasia were encountered; one in the case of a mature adult individual, aged 45–55, showing two lines of hypoplasia on the right maxillary canine and another on the isolated mandible 07 that belongs to a woman around the same age as the male individual. Since only two such cases were noted among this group, one cannot follow its incidence according to gender. The only conclusion that can be drawn is that these two individuals survived the above mentioned infantile episode.

Cribra orbitalia is the last pathology to be analyzed here in the attempt to identify the type of diet of individuals recovered from the ossuary in Tauț. It manifests itself at the level of orbital palates. "This pathological element can be the result of nutritional anemia, following iron deficiency caused by a diet based on millet and wheat" (Campillo 2004, 230). Cereals contain iron but also fibers, phytates, phosphorous and tannins that inhibit iron absorption[20].

Four cases of *cribra orbitalia* were identified, located on both orbital palates (Pl. 1/1; Pl. 1/2). Such pathological cases was encountered in a young male adult, a female senile adult, an adolescent and a 35–45 years-old woman.

Conclusions

The stage of dental stress indicators and the pathological affliction caused by iron deficiency in the body contributed to the reconstruction of the subsistence mode of a number of individuals re-inhumed in the ossuary of the church in Tauț.

Recorded data on dental items allowed for the observation that there was a rather elevated percentage of antemortem tooth loss but also a high number of interproximal cavities associated to the loss of tooth crowns, i.e. the most serious affliction among dental lesions.

Undoubtedly, an economy most probably based on agriculture led to an increased percentage of carbon hydrate in the diet and on food easily remaining in the interproximal spaces between dental items and thus generating the cariogenic process[21]. A diet based on cereal intake also causes cup-shaped tooth wear[22]. This type of dental wear was encountered in certain individuals from the ossuary in Tauț (Pl. 1/3; Pl. 1/4).

In the case of this population, this type of diet is also supported by the presence of *cribra orbitalia* that can be the result of nutritional anemia following a deficit of iron in the organism. These results are not surprising since during the medieval period agriculture and animal husbandry probably held preponderance among the economical activities of this community.

Luminița Andreica
"Francisc Rainer" Anthropological Institute Bucharest
Bucharest, RO
hera_suzuki@yahoo.com

[19] Robledo Sanz 1998, 234.
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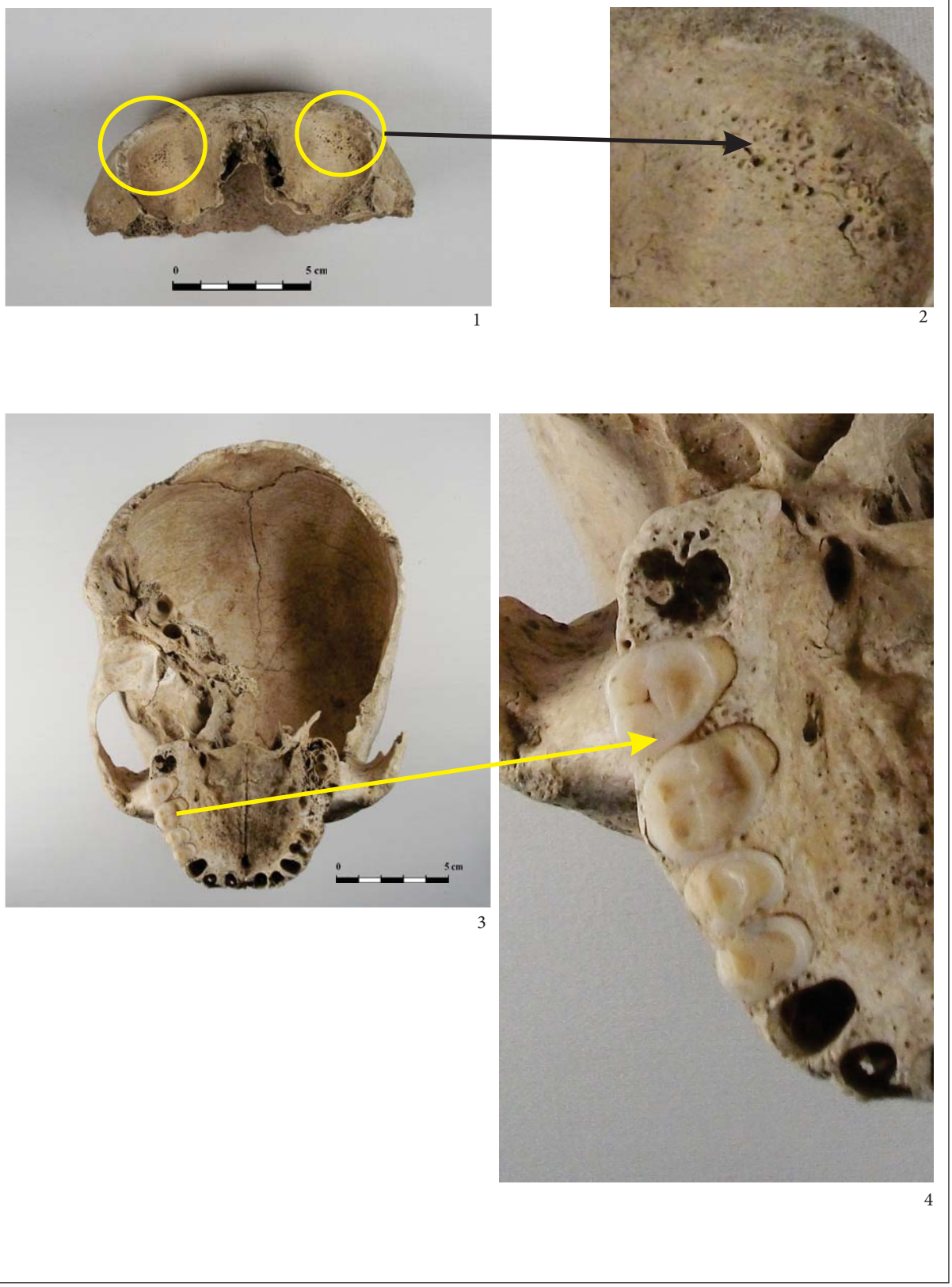
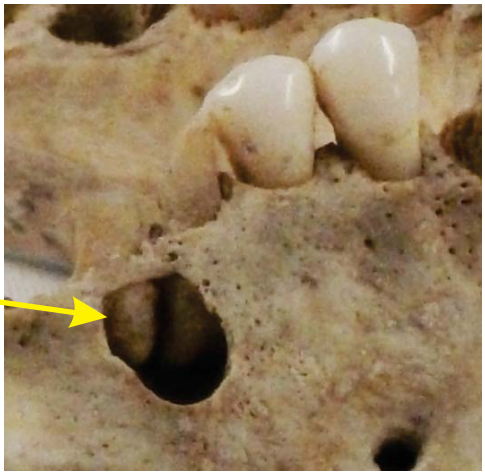


Plate 1. 1–2. *Cribra orbitalia*; 3. the skull-inferior view; 4. left arch of the maxilla-dental wear in cup.

1



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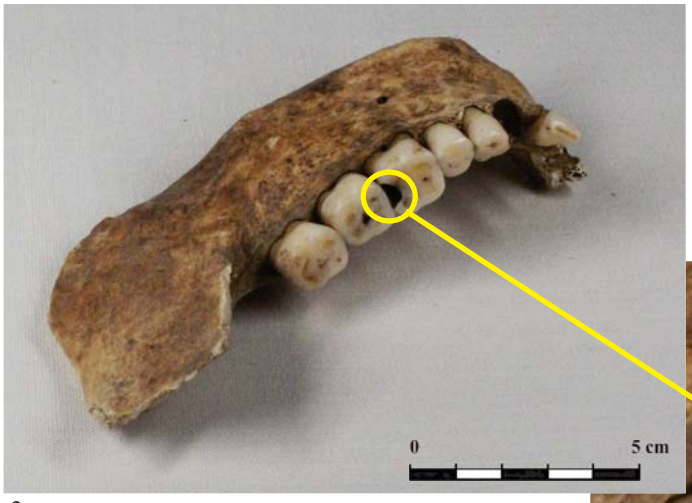

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Plate 2. 1. Mandible-lateral view; 2. the arrow shows the abscess; 3. left mandibular body with an nonocclusal carie at M1, M2; 4. nonocclusal carie in detail.

Medieval and Early Modern Military Items Discovered in the Village of Tauţ (Arad County, Western Romania)*

Anca Niţoi, Florin Mărginean, George P. Hurezan

Abstract: The article presents the military items discovered during the systematic archaeological excavation conducted on the site of Tauț during several campaigns. Together with data from written sources, these objects provide valuable information for the history of Zarand County during the medieval and early modern period.

Keywords: Middle Ages, Early Modern Period, military items, Turkish garrison.

Starting with 2002, after an initial 1999 investigation, several archaeological excavation campaigns were conducted on the medieval and early modern site of Tauț in western Romania[1]. The publication of the volume entitled *Medieval churches from Arad county*[2] was the opening for researches conducted in Tauț[3], the excavation lasting from 2002 until 2009.

The village is situated in the eastern half of Zarand County, in the western part of Romania at the bottom of Zarand Mountains, on the plain of Cigher. The archaeological excavations were conducted on the peak of a hill, 500 m west to Cigher River.

The earliest reference to this place can be traced in a papal document dated 1187, where a house belonging to the Order of the Hospitallers is mentioned in Tauț. Thus, members of this order are mentioned helping to build a ship for salt transportation on Mureş River[4]. In 1272 the church in Tauț, called Feltót in Hungarian[5] is mentioned belonging to the bishopric of Várad (today Oradea, Romania). In 1334, the settlement is mentioned in the Register of papal tithes[6]. Still, their presence in this area is not yet sustained by any archaeological data.

The archaeological excavations were conducted in the place called by the locals the *Turkish fortress* or just the Fortress. We can state that such a name is only accurate starting with the 16th century, but the place was inhabited much sooner than this period. The researches revealed that the first inhumations along with both fazes of the medieval church were located inside the earth fortification which had an approximately circular shape. The fortification ramparts and ditches are doubled on the south, west and north and even tripled on the eastern part.

Based on researches conducted so far one can state that the earth fortification was erected prior to all others ensembles, namely the churches or the Turkish garrison.

The archaeological context and the material excavated until 2009 allowed for the setting of a relative chronology of the site between the 12th and the 17th centuries. Prior to the church, erected most probably in 12th century or earlier, the existence of an earlier cemetery was established here. This cemetery continued to function after the first phase of the church and even extended inside and around the church.

Initially, the building was constructed in the Romanesque style and was probably enlarged, since the first Gothic church was placed on its ruins. Parts of the Romanesque church, namely the nave, were included in the structure of the new Gothic building.

The local community which survived here for more than four centuries was more likely devastated or moved away after 1552. The remains of medieval Tauț were also destroyed and abandoned and the church along with it.

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* The present paper was presented during the international conference *Weapons Bring Peace? Warfare in Medieval and Early Modern Europe*, Wroclaw, Poland, 2–4 December 2010.

1 Mărginean 2007, 95–105.

2 Rusu, Hurezean 2000.

3 Rusu, Hurezean 2000, 142, fig. 22.

4 Kovács 1980, 198.

5 Kovács 2005, 24.

6 DIR, C, XIV, III, 249.

A Turkish garrison is attested here between 1552 and 1595; its existence is now confirmed by archaeological data as well. Later documents from the 17th century mention the settlement without military troops. Archaeological researches conducted until now revealed the fact that a new settlement was build in the perimeter of the church and of the earth fortification (the southern area).

In her book The Ottoman Empire in Europe, Hungarian historian Hegyi Klára pointed out that a number of 39 persons without the officers are mentioned here in 1544. The actual number of persons could be even higher, i.e. 42 counting also the superior officers. Eight of the names were of Balkan origin. The same number remained until 1567[7]. In 1579 the fortification seems to have been a part of the Sangeac of Ineu.

Based on the analysis of a twelve-year period (1579–1591), the Hungarian author estimates a number of 70 soldiers stationed here. They were divided into three different categories: the *mustafizi* as the guardians of the garrison, the artillery men (mostly cannon men) as a separate part of the Kapikulu Corps[8] of the Turkish army and the *martalocs* mainly mercenaries, spies and Balkan voluntaries. The spies are mentioned between April and October 1591 and out of 29 persons, 24 were Christians.

In the mid–16th century political context, the garrison in Tauț was included in the line of Turkish defense fortresses along those in Gyula[9], Ineu, Pâncota, Şoimoş, Vărădia de Mureş, Făget and Bocşa. There were more likely control rather than defense fortresses, like the ones placed by the Ottomans on the border with the Habsburg Empire. This situation was mainly caused by the political situation of the Transylvanian principality. In fact, one cannot speak about a proper defense system, rather of a control of the main water courses like Mureş and Criş. The above mentioned situation was to change later on.

It seems that the new political context made Tauț a part of the defense system of the Ottoman Empire towards the vassal Transylvanian principality. A violent destruction of this Turkish "fortification" at the end of the 16th century or the beginning of the next one was mentioned in the written sources; it can also be traced in an archaeological context. The excavations conducted here within the last years support the written sources, through the discovery of a substantial burnt level throughout the entire researched area.

Although the first researches were mainly focused on the perimeter of the medieval church with its two Romanesque and Gothic stages, the corroboration of the entire archaeological material allowed for a more complex general picture of the situation after the abandonment of the sacred space.

The Turkish settlement brought about several changes, such as the partition of the former church into living areas. Several heating systems were uncovered and researched, including stove tiles and hearths, besides floors and all other elements of material culture: pottery, iron tools, even toys. A similar situation was encountered outside the sacred space; houses made of wood and covered with mud were traced during archeological excavations. Corroborating the fact that several leveling works were conducted on the southern part, it is highly possible that the entire area was organized systematically. Although in the inner part such works were not necessary, outside these works were mandatory. This is when the land surrounding the church was equalized; additional terraces were built on the south – eastern, southern and south-western parts. The northern part of the former fortification system remains intact. A house placed east of the church was fully researched during one of the several archaeological campaigns. It followed a square ground plan, was placed on a rock foundation, had adobe walls and was probably covered with grain or reed. The entrance was also discovered, since a brick floor was uncovered outside the house. A tile stove was placed inside the house. Two provision pits and several grinding mills were traced nearby. Several objects were found: plates, iron and bronze or bone objects, animal bones and two spurs.

Along with archeological data, the presence of weapons and harness items, placed all over the site, could become a further evidence of the rush in which the Turkish garrison was abandoned.

The military items, as part of the archaeological material, are mainly dated to the 15th and 16th centuries, ranging from maces to spears and even fire arms.

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7 Hegyi 1995.
8 Nicollle, McBride 1983, 15.
9 Hegyi 2000, 169.

The most interesting item was a Turkish saber of the *şimşîr* type.

The saber is partially preserved, having a curved blade wider on the lower part. Even this part is unfortunately preserved in a peculiar state. The edge is missing along with the grip and the cross – guard. The cross-guard is straight and formed a cross with two endings on a blade and on the grip. Due to its precarious state of preservation, specialists were unable to restore the item.

This type of saber was among the four most used oriental types of cutting–thrusting weapons, along the *kiliç* saber (which was shorter, broader and less curved), the *palyoş* (still shorter sometimes double-edged) and the famous *yatangan,* a short sword with reverse blade. The saber was often associated with a mace, a popular weapon itself. It was quite used by the troops stationed in Hungary[10]. The same type of weapon was found in several Hungarian sites of the Turkish period[11].

This situation is fully confirmed by the data from Tauț where two types of maces were discovered in different parts of the perimeter of the Turkish garrison.

One of the items is a classical example of a 16th century four flanges mace. It was discovered outside the sacred space in the southern part of the Turkish settlement. This type of flange mace had between four, six, even up to twelve flanges positioned vertically[12]. The earlier types had the iron head inserted in a wooden haft. In the case of later items, the haft was also made of metal. The ceremonial maces developed from this type of weapon and were used from the second half of the 16th century, throughout the 17th and until the 18th century. Similar items were uncovered in Timişoara[13].

The other mace head was discovered inside the sacred space, more precisely in the sacristy of the church. It is a club mace with 4 main knobs[14] in the middle register and other smaller ones placed on the lower and upper registers. It is mould-made, similar to the ones discovered not very far, in Frumuşeni, on the Mureş valley. This last mace dates back in the 15th century, of a type widely spread all over Eastern Europe. Bronze types are dated earlier, in the 13th or the 14th century.

Other two items pertaining to the weapon category are the two spear heads excavated in different parts of the 16th-century settlement, one of them in the church and the other one outside one of the houses. The first one has a circular socket placed in a circular haft. The form appears to be one of a leaf, but due to its deterioration one cannot state this firmly.

The other spear, discovered outside the sacred space is a typical "spear or lance with a hook" type which first appeared in Central Europe sometime in the end of the 14th – beginning of the 15th century. It has a similar form to the other one and the hook placed in the lower part, closer to the socket than the edge. The measurements confirm the idea that such types of weapons were used by foot soldiers or members of the light cavalry. It was used even later, in the 16th century.

The other major category of military objects consists of harness elements. These comprise two rowel spurs, a stirrup and several harness distributors.

The rowel spurs are both preserved fragmentarily. The first preserves the rowel and the stick but not the arms for fixing the feet. The size of the kept part allows us to date to the 16th century.

The other is more complete, only lacking the rowel. Similar items were discovered during excavations conducted in the fortress of Bajcsa[15]. Based on the archaeological context, Hungarian archaeologists also date such items within the 16th century. Comparative material, consisting of depictions of Balkan soldiers from the Ottoman army stationed in Hungary, corroborates the dating of these items.

The pear-shaped stirrup with the seating part slightly curved to the inside indicates that such items were used by the light cavalry, by soldiers who wore softer footwear.

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10 Nicollle McBride, 1983, 21.

11 Several colleagues of mine argued that this is actually a Hungarian saber with the same characteristics. The bibliography referring to such items of the 16th century can give many reasons for such motivation, still the existence of a Turkish garrison in that place along with the other military items discovered there support the argument that this might be an actual oriental weapon.

12 Kálmar 1971, 174.

13 Draşovean *et al*. 2007, 149–150.

14 Kovács 1971, 168.

15 Kovacs 2002, 147.

Conclusions

The analysis of military objects discovered in Tauț supports their division in two categories, one from an earlier period, left on site by chance and the other from the military environment of the Turkish garrison. The presence of the latter corroborates the written evidence about the network of fortified garrison established by the Turks on the border with the Transylvanian territories.

Catalogue of weapons and harness items. The catalogue includes all military items discovered in Tauț during the seven archaeological campaigns conducted here between 2002 and 2009**.** The items are arranged and described according to their functionality, taking into consideration the following criteria: 1. Name; 2. Place of discovery, year and archaeological context; 3. Size: **L** length, **l** width, **h** height, **gr.** thickness, **g** weight, **Ø** diameter; 4. Material and manufacturing techniques; 5. Description; 6. Chronology; 7. Storing place / inventory no; 8. Illustration/plate/no.

Weaponry

1. **Saber**; Tauț *La Cetate*, 2007, discovered in the NE corner of the sacristy built during the gothic phase of the church; L= 94.5 cm, L_{grip}= 8.5 cm, $l_{blade=}$ 3.4 cm, l_{edge}= 4 cm, gr.= 0.5 cm; Iron, forging; Curved blade, Hussar saber with one cutting edge. Larger towards the edge. The edge is missing, along with the grip and the cross – guard. The cross-guard is straight and formed a cross with two endings, on the blade and on the grip. Due to its precarious state of preservation, it could not be restored. From the grip, three channels can be seen on the blade. Part of the iron rivet was also preserved; Second half of the 16th century; Complexul Muzeal Arad (henceforth C. M. A.), Inv. No. 17449; Plate 4.
2. **Mace**; Tauț *La Cetate,* 2009, S34, –1.50 m; $L_{preserved}$= 27.5cm, $Ø_{sleeve}$=1.9 cm, L_{blade}= 15 cm, l_{blade}= 5.5 cm; Iron, forging, welding; Partially preserved mace with four flanges. The iron sleeve was destroyed to a certain degree and from the four original flanges just one was preserved. The bronze flanges were initially vertically welded. The top of the mace ends with a spherical bulge; Second half of the 16th century; C. M. A., Inv. No. 17450; Plate 5. 1.
3. **Fragment of mace head**; Tauț *La Cetate,* 2006, S26, ▼ 1–2, –1.60 m; L = 8.5 cm, $Ø_{socket}$= 2.3 cm; Alloy?; Partially preserved mace head with three from the four big knobs and other eight smaller knobs placed in two registers above and subjacent the main register. Only four of them were preserved, two with marks indicating prolonged use; Second half of the 16th century; C. M. A., Inv. No. 17451; Plate 5/2.
4. **Lance head**; Tauț *La Cetate*, 2007, S30, –0.70 m; L= 29.3 cm, $Ø_{socket}$= 3.1 cm; Iron, forging; Spear head probably of the leaf-shaped type, with a hook and a circular socket; Second half of the 16th century; C. M. A., Inv. No. 17452; Plate 6/1.
5. **Spear head**; Tauț *La Cetate*, 2009, S31, ▼ 2, –1.13 m; L_{total}= 18.5 cm, L_{socket}= 7 cm, $Ø_{socket}$= 2.1 cm; Iron, forging; Spear head fragment. It has a long spike of a square profile and another smaller one. It has a conically shaped socket; Second half of the 16th century; C. M. A., Inv. No. 17453; Plate 6/2.
6. **Arrow head**; Tauț *La Cetate,* 2003; L_t= 4.2 cm, L_{socket}= 1.2 cm, $l_{preserved}$= 1.2 cm, $l_{estimated=}$ 1.7 cm, $Ø_{socket}$= 0.6 cm; Iron, forging; Arrow head that has a *rhomboidal* shape ending in a conically shaped socket; Second half of the 16th century; C. M. A., Inv. No. 17454; Plate 6/3.
7. **Arrow head**; Tauț *La Cetate*, 2002, S2, ▼2, –1 m; L= 4.3 cm, L_{socket}= 2.2 cm, l= 2.3 cm, gr= 0.1 cm, $Ø_{socket}$= 0.7 cm; Iron, forging; Arrow head with two extensions and a flattened blade. It has a conically shaped socket; Second half of the 16th century; C. M. A., Inv. No. 16.933; Plate 6/4.

Harness items

8. **Stirrup**; Tauț *La Cetate*, 2006, S26, m 4, –1.60 m; h= 15.2 cm, $l_{maximum}$= 14.6 cm, l= 3.5 cm; Iron, forging; The pear-shaped stirrup has the seating part slightly curved to the inside; Second half of the 16th century; C. M. A., Inv. No. 17456; Plate 7/2.
9. **Spur**; Tauț *La Cetate*, 2007, S28, m 3, –0.60 m; L_{total}= 24 cm, L_{bar}= 15.3 cm, $Ø_{estimated}$= 10.5 cm, $Ø_{rowel}$= 8.8 cm; Iron, forging; Rowel spur with straight arms continued with a prolongation ending in a rowel; Second half of the 16th century; C. M. A., Inv. No. 17457; Plate 7/3.

10. **Rowel spur**; Tauț *La Cetate*, 2007, S28, ▼3, –0.40 –0, 50 m; L_{total}= 16, 4 cm, L_{bar}= 10, 4 cm, Ø= 8, 5 cm, l_{arms}= 1, 9 cm, $gr._{arms}$= 0, 15 cm; Iron, forging; Rowel spur, partially preserved without the rowel. It has straight arms and a prolongation ending in a rowel which is missing; Second half of the 16th century; C. M. A., Inv. No. 17458; Plate 7/4.
11. **Bit** – partially preserved; Tauț *La Cetate*, 2003, S11, –1.15 m; L= 8.8 cm; Iron, forging; The preserved fragment is the bar intended to fix the horse bridle. It has a conical shape, hollow on the inside; Second half of the 16th century; C. M. A., Inv. No. 17459; Plate 7/1.
12. **Harness distributor**; Tauț *La Cetate*, 2007, S28, ▼2, –1 m; L= 8.9 cm, $gr._{bar}$= 0.8 × 0.6 cm; Iron forging; Harness distributor made of a square profile bar, partially preserved. It has a semicircular loop; Second half of the 16th century; C. M. A., Inv. No. 17460; Plate 8/1.
13. **Harness distributor**; Tauț *La Cetate*, 2009, S31, ▼5, –0.43 m; L= 8.6 cm, $gr._{bar}$= 0.7 × 0.5 cm; Iron, forging; Harness distributor made of a square profile bar, partially preserved. It has a semicircular loop for fitting; Second half of the 16th century; C. M. A., Inv. No. 17461; Plate 8/2.
14. **Harness distributor**; Tauț *La Cetate*, 2003, S15, ▼1, –1.90 m; L= 9 cm, $gr._{bar}$= 0.8 × 0.6 cm; Iron, forging; Harness distributor made of a square profile bar, partially preserved. It has a semicircular loop for fitting; Second half of the 16th century; C. M. A., Inv. No. 17462; Plate 8, 3.
15. **Harness distributor**; Tauț *La Cetate*, 2003, S4, –0.95–1 m; L= 6.8 cm, $gr._{bar}$= 0.6 × 0.35 cm; Iron, forging; Harness distributor made of a square profile bar, partially preserved. It has a semicircular loop for fitting; Second half of the 16th century; C. M. A., Inv. No. 17463; Plate 8/4.
16. **Harness distributor**; Tauț *La Cetate*, 2007, –0.70 m; L= 10.1 cm, $gr._{bar}$= 0.6 × 0.6 cm; Iron, forging; Harness distributor made of a square profile bar, partially preserved. It has a loop closed at a 90^0 angle; Second half of the 16th century; C. M. A., Inv. No. 17464; Plate 8, 5.
17. **Harness distributor**; Tauț *La Cetate*, 2003, ▼5–6, –0.65 m; L= 9.6 cm, $gr._{bar}$= 0.7 × 0.4 cm; Iron, forging; Harness distributor made of a square profile bar, partially preserved. It has a loop closed at a 90^0 angle. It was made like this in order to fit; Second half of the 16th century; C. M. A., Inv. No. 17465; Plate 8/6.
18. **Harness distributor**; Tauț *La Cetate*, 2009, m 3, –1 m; L= 8.5 cm, $gr._{bar}$= 0.5 × 0.5 cm; Iron, forging; Harness distributor made of a square profile bar, partially preserved. It has a loop closed at a 90^0 angle. It was made like this in order to fit; Second half of the 16th century; C. M. A., Inv. No. 17466; Plate 8/7.
19. **Harness distributor**; Tauț *La Cetate*, 2009, m 3, –1 m; L= 7.5 cm, $gr._{bar}$= 0.3 × 0.3 cm; Iron, forging; Harness distributor made of a square profile bar, partially preserved. It has a loop closed at a 90^0 angle. It was made like this in order to fit. The tube to which a tag was fixed was preserved too; Second half of the 16th century; C. M. A., Inv. No. 17467; Plate 8/8.

Tools

20. **Bullet die**; Tauț *La Cetate*, 2009, S31, 1, –0.60 m; L_{total}= 11 cm, L_{arms}= 7 cm, $Ø_c$= 1.6 cm, l= 1.2 cm; Iron; Bullet die that has two curved arms. These are crossing in a mid point and end up with a cavity (an empty space) shaped like the bullet without the back end; Second half of the 16th century; C. M. A., Inv. No. 17455; Plate 6/5.

Anca Nițoi
Brukenthal National Museum Sibiu
Sibiu, RO
ancanitoi@yahoo.com

Florin Mărginean
Museum Arad
Arad, RO
finnlands@yahoo.com

George P. Hurezan
Museum Arad
Arad, RO
gphurezan@yahoo.com

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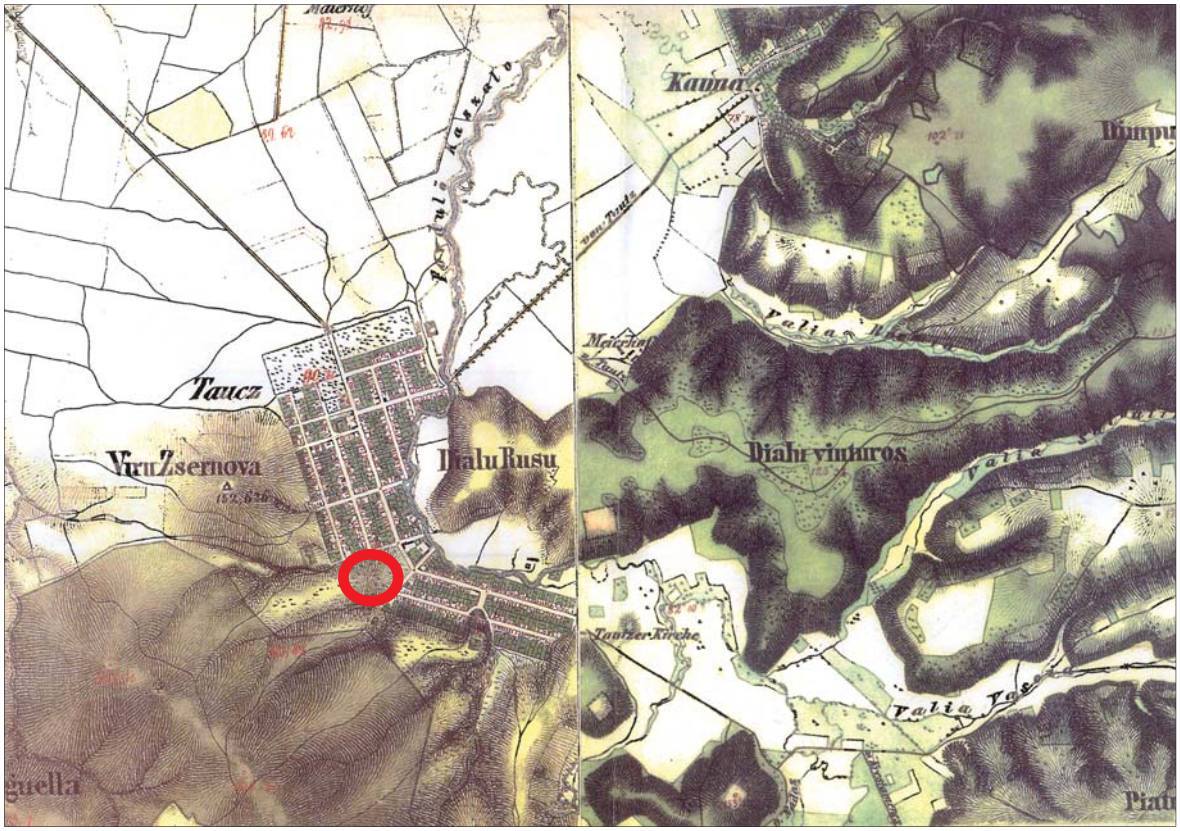
Kovacs 2005	G. Kovách, *Eltűnt települések Arad megyében*. Arad 2005.
Kovács 1971	L. Kovács, *A Magyar Nemzeti Múzeum Fegyvertárának XI-XIV, Századi Csillag Alakú Buzogányai*. FA 22, 1971, 165 –190.
Mărginean 2007	F. Mărginean, *Biserica romanică de la Tauț*. Arhitectura religioasă din Transilvania IV, 2007, 95–105.
Nicollle, McBride 1983	D. C. Nicollle, A. McBride, *Armies of the Ottoman Turks. 1300–1774, Osprey Military,* Men–at-arms, series 140. London.
Rusu, Hurezan 2000	A. A. Rusu, G. P. Hurezan, *Biserici medievale din județul Arad*. Arad 2000.
Vlădescu, König, Popa 1973	C. Vlădescu, C. König, D. Popa, *Arme în muzeele din România*. Bucureşti 1973.



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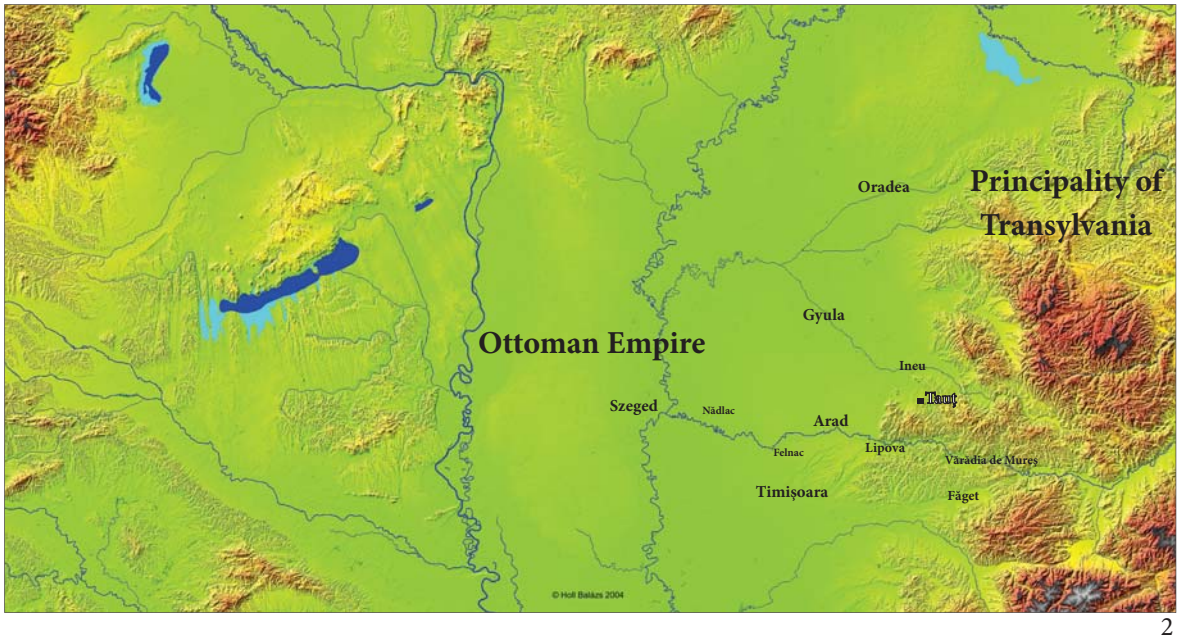

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Plate 1. 1. Localization of Tauț *The fortress* on a Habsburg military map from the 19th century. 2. Tauț in the political context of the 16th century.

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Plate 2. 1. Aerial view of *The Fortress* from North; 2. Aerial view of *The Fortress* from west.

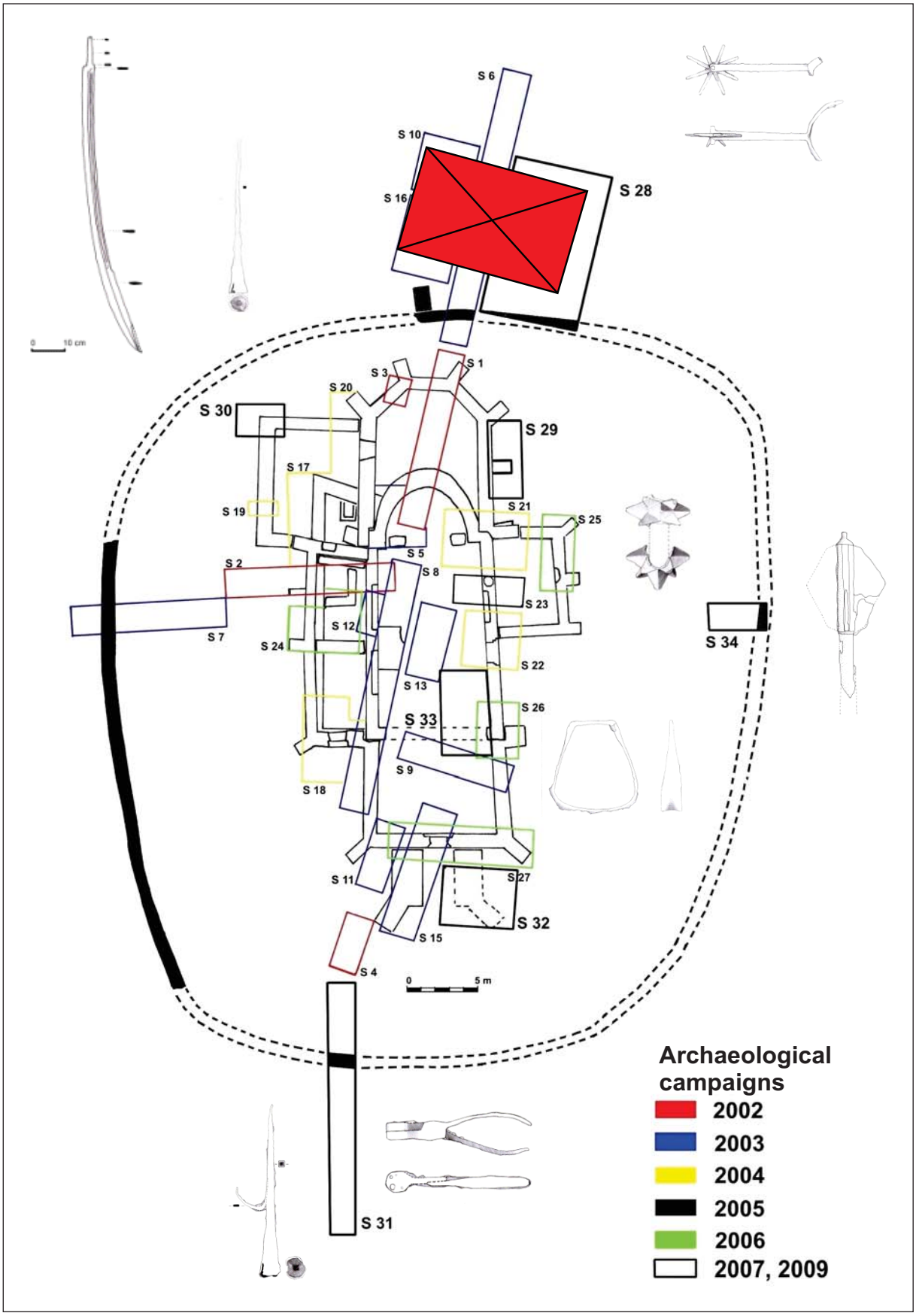

Plate 3. Presentation of the archaeological campaigns conducted in Taut along with the disposal of the discoveries of the weaponry items.

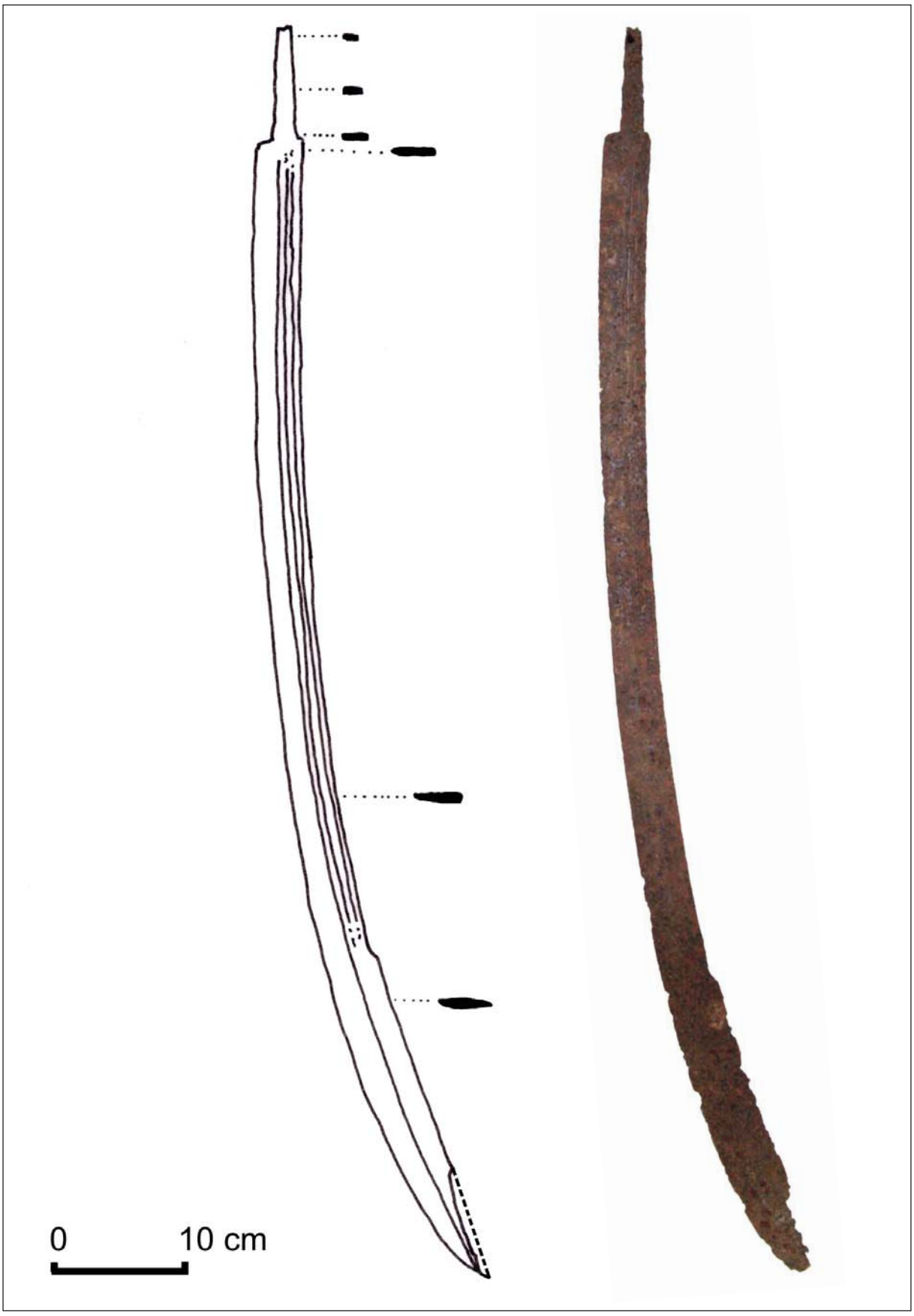

Plate 4. Weaponry item: sabre.

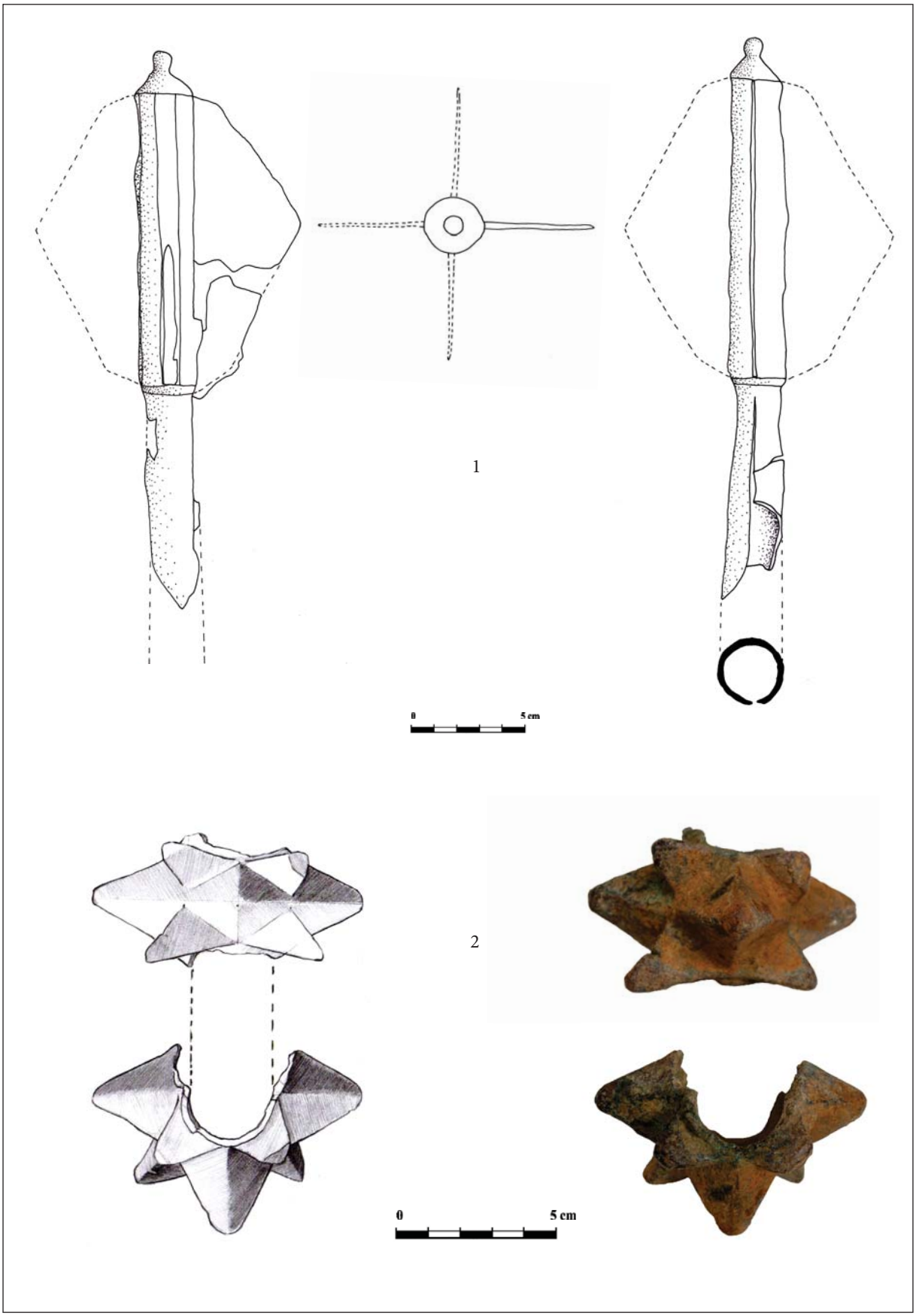

Plate 5. Weaponry items: 1. Mace- fragment; 2. Mace head – fragment.

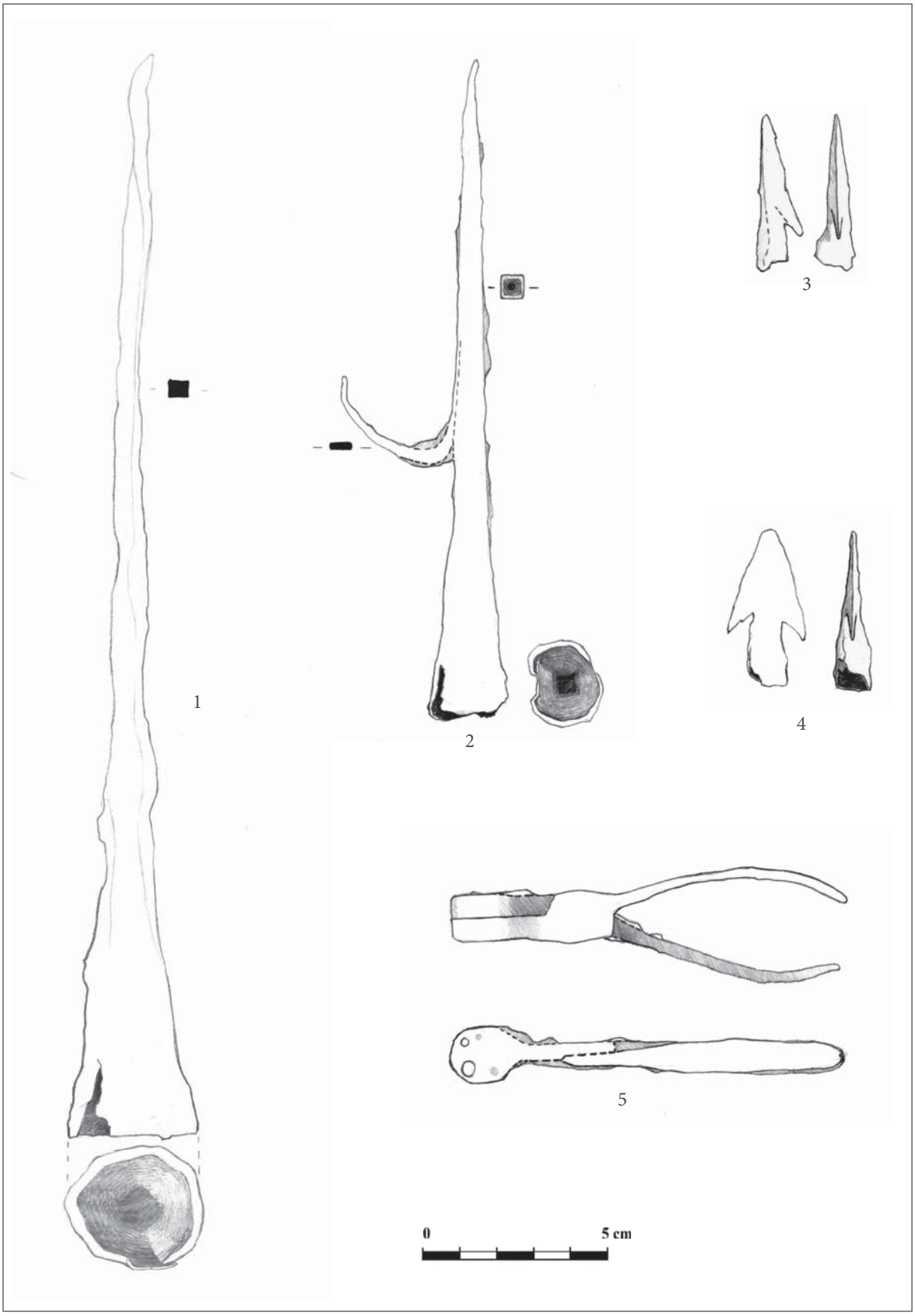

Plate 6. Weaponry and tools: 1. Lance; 2. Spearhead; 3. Arrow head; 4. Arrow head; 5. Bullet die.

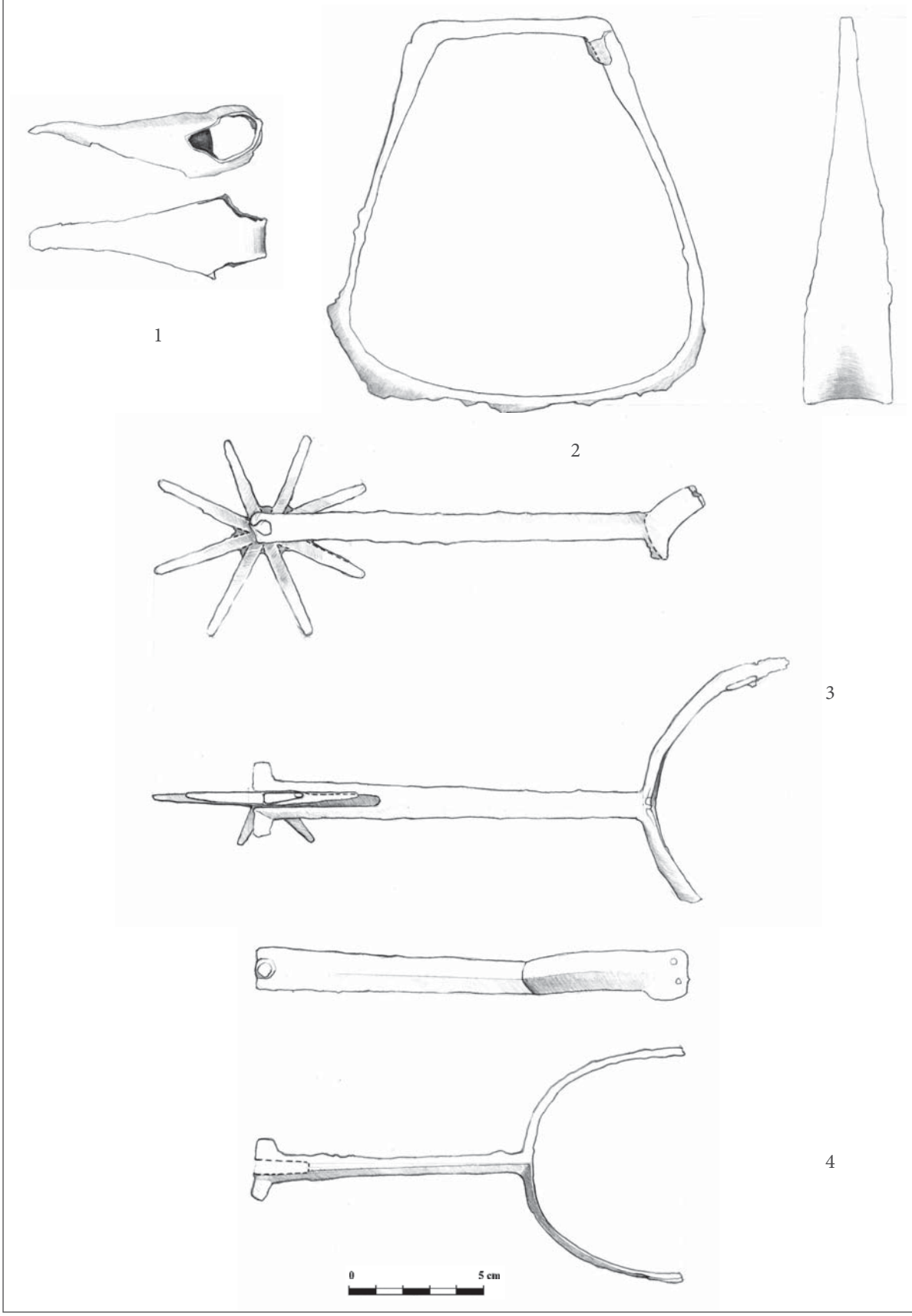

Plate 7. Harness items: 1. Bit – fragment; 2. Stirrup; 3. Rowel spur; 4. Rowel spur.

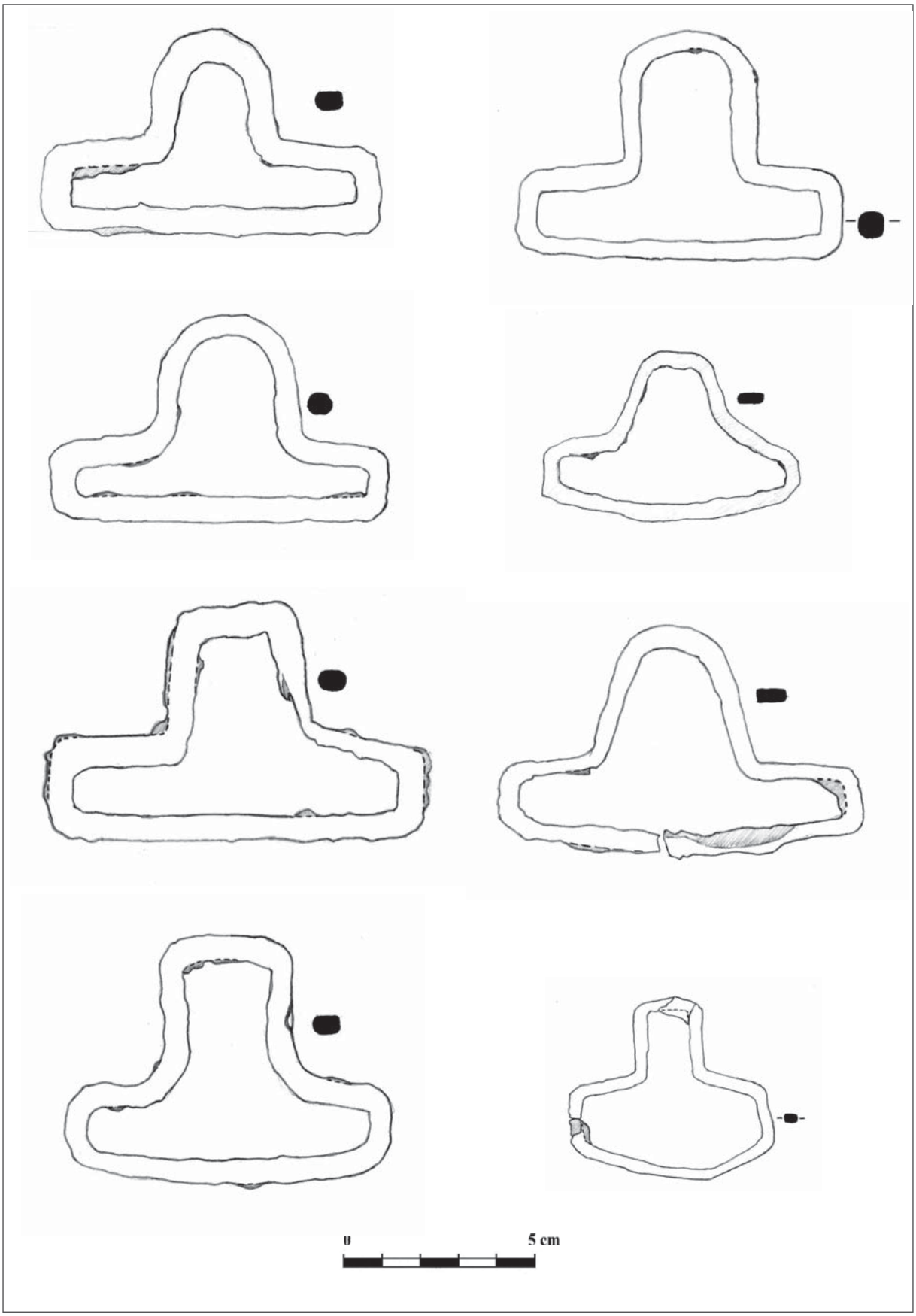

Plate 8. Harness: 1- 8. Harness distributors.

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Plate 9. General views of the excavations: 1.Dwelling on the eastern part of the medieval fortification; 2. Aspects of excavations on the Western part of the medieval fortification.

Tobacco Clay Pipes Discovered in the Historical Center of Timişoara*

Zsuzsanna Kopeczny, Remus Dincă

Abstract: On the occasion of rescue archaeological excavations carried out in the historical centre of Timişoara, one of the most important medieval and early modern towns of the Banat region, researches have been made in the "core" of the late medieval and then Ottoman-period settlement. A rich and diverse archaeological inventory has been recovered on this occasion; however only a part of it has been studied and thus published in a first monograph. The present study aims at presenting a small category of ceramic artefacts dated to the Ottoman period (16th–17th centuries), namely the tobacco pipes. The habit of smoking and the use of tobacco pipes have been introduced to this region by the Ottoman and Balkan populations settled here after the Ottoman conquest of Timişoara and of the northern part of Banat in 1552. Based on already existent typologies we have placed the items into categories; however, due to the diversity of their shapes and ornaments, there still are individual and yet unique pipes. As for the workshops that produced them, we could conclude that some of the pipes come from the Balkans (one even bears a craftsman or workshop mark) or even as far as the Orient, while others can be labeled as local products.

Keywords: clay tobacco pipes, Ottoman conquest, historical center, Timişoara.

Introduction

In 2006, the first preventive archaeological researches in the historical center of Timişoara have revealed a rich archaeological material dated to the medieval period (13th–16th centuries) and the early modern period that in this area overlaps that of the Ottoman occupation (1552–1716)[1].

When the results of these excavations were published, the archaeological material was not exhaustively presented, due to more or less objective considerations. For this reason, in order to complete the publication of the material, the present paper aims at discussing one of the yet unpublished lots of artifacts, i.e. the clay tobacco pipes.

Tobacco pipes or chibouks are, among other several categories of artifacts, among the objects that spread to our region along the Turkish-Osman incursions and especially their rule established throughout the 15th and 16th centuries over a large part of Central-Eastern Europe. Tobacco and the habit of smoking were introduced to Europe after the expeditions organized by the European kingdoms of Spain and Holland and the British Empire, reaching Byzantium and the Orient through commercial relations, the Turks in general and then, further on, the Japanese and the Chinese[2]. The first tobacco plantations were established in 1615 in Holland and in 1658 in Portugal[3]. In the beginning of the 17th century, the Portuguese introduced tobacco in Persia as well. In the early years of the 17th century or maybe even sooner, tobacco entered the Ottoman Empire[4]. The first prohibitive measures were instated by King James I of England, ever since 1604[5] and then by Sultan Murad IV who forbade not only the consumption of opium, but also that of tobacco in 1633[6]. In order to punish the habit of smoking, a Turk was confiscated his pipe for example and then it was forced up his nose[7]. The punishments were drastic, even leading to executions[8]. Besides the "euphoric" effects of

* English translation: Ana M. Gruia.

1 The monograph of this research was published shortly, in the following year: Drașovean *et al*. 2007.

2 Robinson 1985, 151, see also n. 5.

3 Billings 2008, 77.

4 Robinson 1985, 151.

5 Robinson 1985, 151, n. 8.

6 Costea *et al*. 2007, 335.

7 Billings 2008, 88.

8 Feneşan 2004, 131, n. 276.

smoking, that triggered the vehement opposition of Muslim religious leaders, another argument in support of its prohibition was the danger of fire[9]. Despite the opponents of the habits and of punishments for those who consumed or dwelled in the commerce of tobacco, it spread extremely fast since it was a significant source of income.

The new habit of smoking, mainly practiced in the military environment but soon having become a widely spread vice, even among women, was opposed in Europe as well due to its negative effect on health and the precautions taken to avoid fires that had a devastating impact on cities during that era.

As for the area under discussion, the new commodity from the New World was grounded through Turkish mediation relatively late compared to Western Europe. After the large Ottoman military campaign of 1551/1552 aimed at conquering Timişoara, the entire region became a province of the Ottoman Empire. The significant Ottoman and Balkan populations settled there (especially soldiers, but also merchants) and the long occupation (of 167 years) have certainly left their mark on local cultural traditions. The first measures against the new habit of smoking date to the second half of the 17th century.

In Transylvania, the first prohibition was decreed in 1662 by prince Mihai Apaffy after having experienced a nicotine intoxication episode himself[10]. Regulations on tobacco commerce and consumption became frequent; the 1670 decisions of the Diet in Alba Iulia included the value of penalties according to the social standing of the individual caught smoking[11]. Legislative measures against smoking seemed, nevertheless, ineffective. Another law, passed in 1683, indicates that smoking was also popular among women who had to pay a fine of 12 forints if caught doing so[12]. During the last decades of the 17th century, the official opposition diminished and tobacco started to be cultivated in Transylvania in the first decades of the 18th century[13]. According to D. Gačić the first tobacco plantations appeared in the area under discussion already around the middle of the 17th century; one knows about those in Transylvania, but also, closer to our area of interest, of those around Szeged[14]. We consider it unlikely, since at the end of the 17th century in Transylvania, but also in towns in Hungary laws banning smoking and trade were still being issued.

Aspects related to pipe production technology, typology and dating

According to their shape and type, all pipes under analysis are chibouks. Unlike Western-type pipes, made of a single clay piece, chibouks consisted of three elements: the clay item, the wooden shaft and the mouthpiece (Pl. 1.1).

Pipes were pressed in molds, then finished and decorated. In order to create the smoke channel and the firing chamber, two wooden elements were inserted in the clay while it was pressed inside the mold: one was a stick, the other a cone or a cylinder; the connection between the two hollow areas thus obtained was made later, after the item was taken out of the mold[15]. In some cases, the decoration was provided in negative, on the surface of the mold; pipes with relief decoration were thus obtained (Cat. 38, 78). The clay employed was very fine, with inclusions of fine sand and sometimes mica. Both common gray clay and kaolin were employed in pipe production. The decorative repertoire contains simple incised elements or more complex models created with stamps or cogwheels and also relief models created since the first stage of pipe modeling in molds (Pl. 2). Some types of pipes were polished and even covered with engobe. The following step in the technological process consisted of firing and/or glazing. Specialists have also published pipes modeled by hand or at the potter's wheel, the latter being typical to the Venetian area. No such pipes were identified in the lot under discussion here.

Specialists who have studies this category of artifacts acknowledge their scientific value[16]. Pipe lots, mainly those discovered inside fortifications with clear periods of use, attested in written sources,

[9] Takáts 1898, 60. Murad IV decreed smokers should be punished by death after a fire devastated Constantinople.
[10] Takáts 1898, 53.
[11] Makkai-Szász 1988, 829 (nobles were to pay a fine of 12–50 forints, while serfs had to pay 6 forints).
[12] Takáts 1898, 54.
[13] Takáts 1898, 58.
[14] Gačić 2011, 19, see also footnote 17.
[15] Kovács 1963, 237.
[16] Davis-Davis 2007, 84.

can provide good elements of dating for other materials or archaeological complexes. In Hungary for example, several earlier pipes were discovered in Bajcsavár, dated on the basis of the short period when the fortification was in use during the final third of the 16th century, before being destroyed[17].

Taking into consideration the fact that pipes were produced in molds, they are serial products. If the identification of series is easier in the case of pipes with simpler shape and decoration and the suggested typology seems to have been generally accepted by specialists in the field, in the case of Turkish lule or pipes of Oriental influence, the identification of series faces certain difficulties, mainly caused by the endless variation of their decorative motifs. There are also contradictions among the different typologies. Kovács Béla's article[18] published in 1963 contains one of the first published pipe lots from the neighboring area and the first typology. The author has grouped pipes in four main categories: "Netherlandish' pipes, "Turkish" pipes, mix-shaped pipes[19] and "Hungarian" pipes. Bulgarian and Croatian authors have also published studies focusing on pipes even since the early 70s of the previous century[20]. More recently, the research of this category of artifacts has gained momentum, as part of a larger context of research focused on the Ottoman period and the material culture that the "conquering" Ottomans have brought and established. Besides works mentioning such discoveries, ample studies and catalogues have been published by specialists who show a special interest in such artifacts[21]. The same trend can be noted for the Orient. In Romania, the archaeology of the Ottoman era is only taking its first steps; for a long period, artifacts of this period were not recognized, ignored, or in the best case believed to be of ethnographic interest. Turkish materials, including pipes, were published in wider monograph works[22]. There are very few such studies available for the area of Banat[23]. Due to the state of research in our country, we had to turn to analogies from closer or farther areas and to employ the results of foreign specialists.

Pipe description

I. Reddish, undecorated pipes

Both the bowl and leg of these pipes are polygonal in section. The common trait of all sub-variants consists of the thin leg and decorative strip around the mid-length of the leg. The pipes were made exclusively of gray clay and their outer surface was covered with a layer of reddish, shiny[24] slip (engobe) and black marble-like decoration (Cat. 14, 17–18, 22, 27–28, 32). As for the quality of the fabric and of the execution, one can state that these are the most modest pipes. They must have been produced for general use, probably employed by common soldiers part of military troops and, why not, by civilians of lesser means.

According to Béla Kovács's typology, these pipes belong to the so-called "mix" type, variant II, i.e. made according to Ottoman models[25]. They rather share common traits with Western-type pipes, typical for their lack of molding; the idea was formulated earlier by R. Robinson[26] and taken up more recently by Sz. Kondorosy as well, in his publication of pipes discovered in the fortification of Szeged[27].

In the case of the first three variants we will subsequently present, certain peculiarities are visible in the modeling of the ring. The fourth variant, due to the peculiarity of the disk-bowl, shows evident

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17 Kovács 2004, 121, n. 3.

18 Kovács 1963.

19 Inside this category, the author distinguished between pipes imitating Turkish shapes and pipes following western models.

20 Bekić 1999–2000, Bekić 2010, Stoyanova.

21 Haider-Ridovics 2000, Gačić 2011. The richest bibliography available on the topic can be found in the end of this study.

22 Rusu *et al.*2002.

23 N. Dinu analyzed the Oriental pottery discovered in the historical center of Timişoara; v. Draşovean *et al.* 2007. More recently, Z. Markov published a study of Balkan pistols in the collection of the Museum of Banat in Timişoara (Markov 2011), followed by another material focusing on the collection of yataghans preserved by the same institution (Markov 2012), thus opening the way to the study of weapons typical to the period under discussion.

24 Kondorosy 2008, 338. In our case, the existence of polish can no longer be determined duet o an unfortunate conservation procedure, when the item was impregnated with gloss. Nevertheless, in the case of a few items that were not thus treated, one can notice the absence of polish, most probably the result of prolonged use.

25 Kovács 1963, 247–248.

26 Robinson 1985, 173.

27 Kondorosy 2008, 338.

Ottoman influence. Except for this element, according to its shape, material and finishing (reddish engobe), the item clearly belongs to this type of pipes.

Analogies can be found in most fortifications in present-day Hungary that were at some point under Ottoman rule (Buda[28], Eger[29], Ónod[30], Szekszárd[31] and Szeged[32]) and were of a shape popular for a long period, from the second half of the 17th century until the middle of the 18th century[33]. They were produced in the Balkan area where they were found in large quantities, especially in Kyustendil[34]; the center of their spread was in the workshops of Sofia, active since the early years of the 17th century[35]. The presence of Balkan populations in the Ottoman troops stationed for the defense of the fortifications and territories under the rule of the Crescent[36] is well documented, thus it is possible that such pipes were brought from the above mentioned production centers. According to the large number of reddish pipes discovered in Szeged as compared to the very few such items noted in other settlements, Sz. Kondorosy also expressed the possible existence of a workshop in Szeged. Gaál Attila also believes that these are local products of lower quality, dated to an early spread of pipe when craftsmen painted gray pipes with iron oxide in order to "correct" the error during firing and in order to give gray pipes a nicer color[37]. One must note the large number of pipes of this type in our lot: 34 items out of all 78 (representing 43.5 %); this supports the hypothetic existence of a production center in the area.

I. 1. *Pipes with star-shaped-section rings*

A lot of 17 items belong to this sub-category (Cat. 1–18). The shape of the ring, assembling a star in its section, is due to transversal impressions made with a rounded stick or even by finger. These impressions (made with the stick on the ring) can be more or less stressed.

I. 2. *Pipes with notched rings*

The grooves on the ring, present on pipes of the first sub-type, are replaced by thick notches. Out of all pipes under discussion, seven were identified as sharing this peculiarity (Cat. 19–23).

I. 3. *Pipes with simple rings*

This is the less represented variant, only consisting of three items (Cat. 24–26).

I. 4. *Pipes with simple ring and disk*

As noted above, despite the fact that this item (Cat. 27) has an extra formal element in shape of a flat disk placed on the lower part of the bowl and should thus be placed among disk pipes, its other characteristics are common to pipes presented here: fabric quality, the use of reddish engobe and the simple ring have made us include the item in a fourth variant. No analogies are available to the present state of research.

I. 5. *Undetermined pipes*

Due to their fragmentary state of preservation upon discovery and thus lacking precisely those elements with characteristics that would determine the sub-type they belong to, nine pipes cannot be said to belong to any variant in particular.

II. Pipes with accented ring, decorated with the cogwheel and with relief "grape bunches"

According to Gábor Tomka's observations, this type of pipes appeared in the last two decades of the 17th century and is believed to be the first variant of the "Hungarian" pipes[38]. The general characteristics of this type of pipes consist of the wide and convex ring bearing cogwheel decoration, cylindrical leg, usually undecorated and the bowl consisting of two parts: the lower, semi-spherical part, surmounted by a cylindrical "chimney". In the lower part, the leg continues over the bowl in the shape of a pointy "tongue"; its contour is stressed by a cogwheel-made stripe. Cogwheel decoration also

[28] Kondorosy 2007, 277, Pl. 5/B119–121.
[29] Kovács 1963, 260, Pl. III/14–15.
[30] Tomka 2005, 613, Pl. 2/7–11.
[31] Gaál 2004, no. Cat. 34–70.
[32] Kondorosy 2008, 359–360, Pl. III/Sz43–51; Pl. IV/Sz53–96.
[33] Tomka 2005, 612.
[34] Robinson 1985, 173.
[35] Kondorosy 2008, 340, n. 31.
[36] These populations have also brought archaic-shaped pots, made on the slow wheel or even by hand (discoveries of such Balkan pottery, yet unpublished, were made in Timişoara, during archaeological excavations in the Huniade Castle).
[37] Gaál 2004, 261.
[38] Tomka 2005, 610, see also note 16.

features on the bowl's rim. In the present lot, in the case of all items with preserved leg, it is flanked by molded grape bunch decorative patterns, consisting of small protuberances. The sub-variants display differences in decoration, but the shape of the pipes remains the same.

II. 1. *Pipes with decoration consisting of "grape bunches"*

According to their decoration, size and shape, two pipes in this sub-category seem to have been created in the same mold, by the same workshop (Cat. 40, 42).

Analogies for this type of pipe can be found mainly on the territory of the Kingdom of Hungary: in Buda[39], Eger[40] and the fortification of Szeged[41]. Sz. Kondorosy dated pipes discovered in the vilayet center of Buda to the period between the last decades of the 17th century and the beginning of the 18th century[42]. Similar pipes were also found in Vršac, dated to the second half of the 17th century and believed to have been produced in the Habsburg Empire[43]. The decoration seems to have been typical to southern Germany during the end of the 17th century[44]. B. Kovács stressed the functional role of this relief decoration on the upper part of the bowl, stating the fact that it allowed for the smoker to hold the pipe better[45]. More recently, Sz. Kondorosy argued against this theory on the basis of the fact that, in general, the decoration is only located on one half of the bowl[46], namely on its right side.

II. 2. *Pipes with grape bunch decoration on the bowl and leg*

The grape bunch motif features on two sides of the bowl, while on the left it is slightly different: the protuberances are grouped around a threefold "branch" (Cat. 37).

II. 3. One variant of this type consists of one pipe that has a third, central girdle, instead of the three cogwheel girdles that border the leg and the bowl (Cat. 43). Due to the fragmentary state of preservation of the item, one cannot know if this pipe as well had the grape bunch motif on the bowl. An analogy has been found in Budapest[47].

II. 4. *Pipe with cogwheel decoration on the ring and leg*

Since it is a leg fragment, one cannot reconstruct the decoration of the bowl (Cat. 44), but taking into consideration the presence of cogwheel decoration on the ring and the body of the leg as well, we chose to include the item in a sub-category of this pipe type[48].

II. 5. Taking into consideration the fact that in several cases the pipes were only preserved in fragments, namely only the leg, one cannot estimate their precise inclusion in the above-mentioned sub-types; most probably, these items also belong to the variant with grape bunch decoration on the bowl (Cat. 45–47).

III. Turkish pipes

For this type of pipes, the typical decorations are made by cogwheel and revolving shutter; the combination of such decorations is extremely significant for analogies and dating[49]. In the case of pipes from Timişoara, the most frequent revolving shutter decoration is toothed, created with a disk with thicker or more distanced arms, thus producing a series of rectangles, triangles, or zigzags and fir tree needles (Pl. 2, Cat. 55, 54, 57, 51 and 50). Stamped decorative motifs have the shape of leafs, rosettes, or lozenges (Pl. 2, Cat. 55, 56, 48, 54, 66 and 50). The same ornaments can be found on pipes discovered on the territory of Hungary[50] and Serbia[51]. Some of the decorative motifs seem to have a long tradition, preferred by craftsmen until de 19th century[52].

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39 Kondorosy 2007, Pl. 6/B127–132.
40 Kovács 1963, Pl II/4, 609.
41 Kondorosy 2008, Pl. VI/Sz121, Sz122, Sz124.
42 Kondorosy 2008, 342–343.
43 Gačić 2011, 114, Cat. 128–129.
44 Kondorosy 2008, 343.
45 Kovács 1963, 240, 242.
46 Kondorosy 2007, 343, see also note 42.
47 Kondorosy 2007, Pl.6/B135–137.
48 One cannot exclude its possible inclusion in another pipe type.
49 Kondorosy 2008, 332.
50 Kondorosy 2007, 273, Pl. 1.
51 Gačić 2011. For the time being, we could not find analogies of Turkish pipes with stamped decoration in the few archaeological reports that we have consulted focusing on sites from the Orient (Sinai, Khirbat Burin, Zir'in etc.). See Saidel 2008, Burin 2006, Simpson 2002, Bouzigard-Saidel 2012.
52 Gačić 2011, 30, Cat. 106.

Our lot does not include any Turkish pipes with craftsmen marks and this makes the identification of their production area more difficult. In the same time, one can note a combination of Western and Easter-style elements in the production of these pipes. This makes us presume that some of them were probably produced in local or Balkan workshops. Besides the well-known central workshops of Istanbul and Burgas, the conquered provinces also had known production centers, such as the above mentioned ones of Varna and Sofia in Bulgaria and Thebes and Athens in Greece, where Turkish masters often worked[53]. The absence of workshop or craftsmen marks can nevertheless be an indication in the dating of such items since the practice of marking pipes only spread during the 18th century[54]. The primary material used in the production of the pipes is also relevant for the dating of Turkish pipes: kaolin, mainly used during the 16th–17th centuries, was slowly replaced by common clay; reddish items were preferred and the color was obtained through firing or covering the pipes with a layer of engobe[55]. The size of the bowl, more precisely its volume, can also be helpful in the chronological framing of the items, since it grew larger as tobacco became cheaper.

We must note that some of the pipes in our lot (Cat. 66, 67) show no traces of secondary firing inside the bowl and were thus probably never used. Pipes reached distant areas through commerce or as personal possessions and, as previously noted, soldiers played a significant role in their spread.

In the subsequent paragraphs we will group the pipes in major categories, according to their primary material and decoration. Almost each item is unique in shape or overall decoration, thus representing a sub-type.

III. 1. *Kaolin pipes with stamped and/or cogwheel decoration*

The bowls of the first three items are similar in structure: spherical bowl, surmounted by a cylindrical and slightly flared chimney. The decoration of the bowls is also similar. Some authors have suggested such pipes could also be of the "Greek type"[56].

a. The cogwheel decoration starts near the stamped rosette placed on the bottom of the bowl, from which radial incisions extend towards the middle of the bowl and continues on the leg and bowl (Cat. 48). Due to the fragmentary state of preservation, we can no longer note the shape of ring.

b. The lower part of the bowl, strongly accented through radial grooves that also start by the rosette on the bottom of the bowl, is shell-shaped (Cat. 49). The ring imitates a turban and is delimited by a cogwheel-decorated stripe. The chimney is broken. Similar, even identical pipes were discovered in Jeni Palánk[57] and Buda[58], but also further away, in Corinth[59]. Less elaborated variants were also discovered in Babadag[60].

c. This item is a more elaborated variant of the first two (Cat. 50). The bowl's rim has the shape of petals with stamped rosettes. The grooves are marked by decoration in the shape of grain ear or fishbone. For this item, we are aware of analogies in Buda[61] and Corinth[62].

d. One notes the very fine fabric of the item (Cat. 51). The connection area between leg and bowl has the shape of a triangle marked with an incision; stamped lozenges, placed in several rows, decorated the bowl. This type of decoration is very frequent, noted on items from the fortification of Szeged[63] and from Corinth[64]. Taking into consideration the quality of the primary material, one cannot exclude its possible production in a central workshop.

e. Pipe of relatively large size, with strong ring resembling a turban, with cogwheel decoration forming oblique notches (Cat. 52). Fir-tree shaped decoration was stamped on the bowl. Similar items were published from Buda[65] and Jeni Palánk[66].

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53 Gačić 2011, 29, Robinson 1985, 152.
54 Robinson 1985, 161.
55 Robinson 1985, 153, 161.
56 http://philippe.gosse.pagesperso-orange.fr/Chioggia/intro.pdf (accessed 15.10.2012).
57 Gaál 2004, no. cat. 51, 72, 78.
58 Kondorosy 2007, Pl. 2/B11–12.
59 Robinson 1985, Pl. 61, A1, 13–14.
60 Costea *et al.* 2007, pl. IV/5, 7–8.
61 Kondorosy 2007, Pl. 2/B19.
62 Robinson 1985, Pl. 47, C2.
63 Kondorosy 2008, 333, Pl. III/Sz39.
64 Robinson 1985, Pl. 50.
65 Kondorosy 2007, Pl. 2/B3.
66 Gaál 2004, no. Cat. 79, 81.

f. The shape of this pipe cannot be reconstructed because of its fragmentary state of preservation (Cat. 53). The bowl, with simple, flattened ring, is only decorated with stamped rosettes and leafs. There are also decorative motifs made with the cogwheel. A perfect analogy of the item, but made of gray clay and through oxidant firing, of brick-red color, was discovered on the territory of Serbia[67] and dated to the 17th century.

g. The item is fragmentary; only the bowl has been preserved (Cat. 54). As a peculiarity, one can mention the almond-shaped ring, with ends pulled on the sides and decoration consisting of small stamped rosettes; cogwheel decoration also features on the leg.

h. Leg fragment, with cogwheel decoration on the ring (Cat. 55). An analogous decoration of the ring with three rows of cogwheel decoration can be mentioned in the case of pipes discovered in Oradea[68] and also in Smederevo (Serbia), dated to the 17th century[69].

h. Ring with cogwheel decoration consisting of oblique notches in shape of a turban; the same decoration can be noted on the leg as well (56). A similar item, dated to the 18th century, was discovered on the territory of Serbia, in the fortification of Smederevo[70].

III. 2. *Kaolin pipes decorated with Arab writing*

A single item is decorated with Arab writing (Cat. 57). One notes the fine fabric and good quality decoration. The lower part of the bowl extends into a disk; the latter's rim bears cogwheel decoration. The upper part is in the shape of a chimney. Items of similar shape were found in Babadag[71] and Corinth[72].

III. 3. *Pipes made of gray clay, with cogwheel decoration and incisions*

We included in this category three items made of gray clay and fired in an oxidant atmosphere, thus reaching shades of brick-red and reddish.

a. The first item, fragmentarily preserved, has the ring in shape of a turban, with oblique cogwheel-made notches (Cat. 58). The clay employed in its making is very fine and the color after firing is bright reddish. An analogy can be found among the pipes in Fort Čanjevo[73].

b. The second item also has the ring in shape of a turban with simple oblique notches (Cat. 59). On the fragmentarily preserved bowl one can note floral/geometric (?) decoration created with the cogwheel.

c. The final item in this category is part of the group of pipes with spherical bowl and chimney (Cat. 60). The lower part is decorated with grooves. We were able to identify a similar item, with an entirely-preserved bowl, among the pipes from Athens[74].

III. 4. *Pipes made of gray clay, with disk, sole and stamped decoration*

Unfortunately, we only have a fragmentary item of this type, with just the lower disk-shaped part of the bowl preserved (Cat. 61). The lower part of the disk is decorated with grooves and the upper part with stamped rosettes. On the bottom, the pipe has a sole for increased stability, also decorated with rosettes and shaded triangles. Such items are very frequent in 19th-century visual sources[75]. Discovered analogies are also dated rather late, to the 18th–19th centuries[76]. An analogy in pipe shape and bowl decoration has been found in Castle Hill[77].

IV. Glazed pipes

Glazed decoration is not typical to Turkish pipes. In Greece, such items only represent 0.3–2% of all finds, while in Bulgaria the percentage is slightly higher, reaching 0.9–3.8%[78]. One notes the high number of such discoveries in the area of Hungary and Romania, probably due to the spread of glazing in the field of pottery. Glazing was mainly employed in the case of kaolin artifacts. Among the pipes

67 Gačić 2011, 81, Cat. 25.
68 Rusu *et al*. 2002, Pl. LXXXVII/11.
69 Gačić 2011, 75, Cat. 1.
70 Gačić 2011, 85, Cat. 36.
71 Costea *et al*.2007, Pl. VI/7.
72 Robinson 1985, Pl. 57.
73 Bekić 2010, Fig. 2/3.
74 Robinson 1985, Pl. 61, A9.
75 Robinson 1985, Pl. 43.
76 Gačić 2011, 110; cat. 106, 114.
77 Petruzelli 2002, Fig. 10.4.
78 Kondorosy 2008, 334; see also note 10.

discovered in Timişoara-*Cetate*, there are 11 glazed items, representing 13.9% of all items and 45% of the 24 Turkish-type pipes.

The typical decoration of such pipes is made with the cogwheel, having various shapes, but there are also stamped decorations, incisions, even relief floral motifs already impressed in the mold. One must also note that most glazed items are made of fine clay fabric. From the point of view of their shape, one can note as a common trait the fact that the bowl is bell-shaped, with flared rim. The color of glaze employed in the decoration of pipes discovered in Timişoara combines green and yellowish, dark brown and green. One also notes a play of nuances, especially in the case of yellow and brown glazes, in order to stress the relief decoration.

One immediately notes the small size of glazed pipes, which suggests that they can be dated earlier, in the end of the 16th century and the 17th century. This dating is also supported by discovered analogies.

We could identify six types of glazed pipes, usually consisting of a single item.

a. Bell or tulip-shaped bowl, with molded relief zigzag decoration and yellowish glaze (Cat. 62). An analogy can be identified in Eger[79], similar only in the shape of the bowl and the decoration of its upper part.

b. Leg fragment, with almond-shaped ring and relief floral decoration (Cat. 63). Covered with yellowish, greenish and dark brown glazes.

c. Entirely preserved item with bell-shaped bowl; on the lower part of the bowl one can note radial grooves starting from the base (Cat. 64). The ring with oblique notches suggests the shape of a turban. Analogies can be found among the pipes discovered in Eger[80], while an identical item has been mentioned in Buda[81]. Despite having a slightly different ring, a pipe discovered in the fortification of Belgrade is also similar and dated to the 17th century[82].

d. This variant includes two items, one fragmentarily and one entirely preserved, both covered with greenish glaze (Cat. 65–66). In both cases, the leg is decorated with grooves or rather stylized leafs and on the bowl one can note two flowers in relief, placed on opposite sides. This type of pipes is often discovered during archaeological excavations and is generally dated to the 17th century. Analogies have been discovered in Eger[83], Jeni Palánk[84], Ónod[85], but also in the Orient[86]. An identical, though unglazed pipe was found in Serbia[87].

e. The pipe is made of gray clay and its decoration consists of stamped rosettes and cogwheel-made motifs (Cat. 67).

f. The final item in the category of glazed pipes is simple and without decoration (Cat. 68). The glaze is dark green.

V. Undecorated pipes

Ten pipes, of various simpler or more complex shapes, were included in this group characterized by the lack of decorative motifs. Some of these items can nevertheless be included in clearly defined series.

a. Two items, one fragmentarily and the entire entirely preserved, are similar in shape to Western-type pipes: simple tubular leg, accented cylindrical ring, prolonged bowl with a rim indicating the outer fitting of the mold and tear-drop-shaped in section. What makes the entirely preserved item particular is the motif stamped on the right side of the bowl, in its upper part, most probably a craftsman mark (Cat. 70, Pl. 2). Identical pipes were also discovered in Szeged, one having the same mark stamped on the bowl[88]. Both the items in Szeged and Timişoara display the same black marble-like decoration, noted in the case of pipes in the first category. The spread and origin of this type of pipes are similar to those of reddish pipes; they were mostly discovered in the

79 Kovács 1963, Pl. I/10.
80 Kovács 1963, Pl. II/5.
81 Kondorosy 2007, Pl. 5/B106.
82 Gačić 2011, 78, cat. 13.
83 Kovács 1963, Pl. III/6–7.
84 Gaál 2004, 277, no. cat. 45 a.
85 Tomka 2005, Pl. 5/1.
86 Saidel 2008, Fig. 3/9.
87 Gačić 2011, 77, Cat. 8.
88 Kondorosy 2008, 361, Pl. I./Sz102; V/Sz100–102.

Balkan region and were produced in the workshops of Northern Bulgaria, i.e. in Varna[89]. The dating is also similar to that of reddish pipes: the 17th–18th centuries.

b. Two other pipes (Cat. 73–74), made of kaolin and gray in color, are typical due to their tulip-shaped bowl[90], simple cylindrical bowl and bi-trunk-shaped ring. The V-shaped connection line between leg and bowl is marked by a slightly grooved line. Similar items were noted in Szeged[91] and Buda[92]. Pipes no. 68 and 77 might belong to this type, but due to the fragmentary state of the bowls, this identification is not certain. The ring is slightly different than that of the other two pipes.

c. One of the widely spread pipe types is only represented in Timişoara by a single item (Cat. 72). They were also found in Buda[93], Eger[94], but even closer, in Szeged[95]. One could also mention here the leg fragment with slightly flattened end and brick-red color (Cat. 71), but its extreme fragmentary state of preservations prevents all certain identification of the category it might belong to.

d. From the point of view of their shape, pipes no. 75 and 76 resemble those with cogwheel decoration and grape bunches, but they lack all decoration. The ring is more accented and is preceded by a girdle in relief. The large size of these items is another of their peculiarities, indicating they were used in a later period when the price of tobacco had decreased.

VI. Pipes with relief decoration and sole

There is just one such item, modeled in kaolin clay, molded with floral or wheel-and-spikes motifs placed on the two lateral sides of the bowl (Cat. 78). A simple circular sole can be noted on the bottom of the bowl and on the front side there is another flattened rectangular surface decorated with horizontal lines or rather prolonged stamped triangles, placed in two columns. Unfortunately, we cannot decide on the shape of the ring or the bowl's rim, since these elements are broken. This type of pipes with relief decoration is dated to the 17th century; the dating is also supported by their discovery in upper layers. Similar pipes, with slightly different floral decoration, were discovered in Szeged[96], Buda[97] and Nagykanizsa[98] and are considered a late local variant of Turkish pipes.

Conclusions

Through their number and especially the diversity of their shape and decoration, the pipes discovered in Timişoara allow for the creation of a first typology based on the characteristics of the item and the available research results.

The items were found in all researched sites: Libertății square, 9 Mai Street and Sfântu Gheorghe square. In most cases, the items were discovered in the upper layers, unfortunately disturbed by town planning works that required archaeological investigations; they thus lack clear context and cannot be dated very well through stratigraphic methods. This is also valid for the inverse method of dating the "complexes" with the help their inventory. The relative chronological framing of "complexes", such as the houses, has been made merely based on the stratigraphy.

A small number of items were discovered in the area of the necropolis identified in St. Gheorghe square (Cat. 14, 32, 53). Among them, the first was recorded in the filling of tomb M6. Several tombs, part of an inhumation horizon dated to the Ottoman occupation period according to coins discovered inside them, were discovered around the former medieval parish church that the Turks turned into a mosque[99].

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89 Kondorosy 2008, 341.
90 The shape of the second pipe is less molded and the bowl's rim is missing.
91 Kondorosy 2008, 345, Pl. VII/Sz156.
92 Kondorosy 2007, Pl. 5/B110.
93 Kondorosy 2007, Pl. 3–4.
94 Kovács 1963, Pl. II.
95 Kondorosy 2008, Pl. II/Sz15–23.
96 Kondorosy 2007, 346, Pl. VII/Sz160. The author believes that this type of pipe reveals oriental influences, since the flared rim, in shape of a collar, is a trait of Turkish pipes. This element can also be noted in the case of pipe no. 73.
97 It is also provided with a ring between the bowl and the leg that allowed for the pipe to be connected to a cord. Kondorosy 2007, Pl. 7/B196–197.
98 Kovács 2004, Pl. 3/17.
99 Draşovean *et al*. 2007, 48.

Some of the items were found inside the culture layer at the surface of streets paved with timber, dated to the Ottoman period, but lacking more precise chronological identification (Cat. 5).

One of the items in the grape-bunch variant was found in a layer corresponding to a layer of Austrian leveling, which coincides with the dating of these pipes in the 18th century.

The conclusions one can formulate after analyzing this lot of pipes are general in character.

The items are part of the material culture typical to the Ottoman era; they are dated between the end of the 16th century and the 18th century. Early, 17th century pipes are of the Turkish-type, with stamped decoration, made of kaolin and small glazed pipes. The absence of craftsmen marks indicates the same period of production with difficult-to-set upper and lower chronological limits. We can still state that they were not produced later than the first decades of the 18th century when a new type appeared: pipes made in large series, of bigger size, with prolonged cylindrical bowls or bowls polygonal in section, bearing master marks, typical to the Habsburg period.

As for their shape and decoration, we were able to identify both pipes of the types known in the specialized literature as "Western", "Hungarian", or "Habsburg" (type I and II), produced in local workshops and pipes of Balkan or even oriental origin. The first were nevertheless more numerous (ca. 58 items, representing 73, 4 %). The large number of pipes of a certain type (type I, 36 items) might indicate the possible existence of a workshop in the area, as it has already been suggested for the pipes in Szeged. The relatively large number of glazed pipes can be explained by the wide spread character of glazing, reaching a peak during this period.

Regarding the quality of the items, one can note both the more modest pipes, most probably used by soldiers and the finer pipes, with complex and refined decoration, probably brought in from the renowned production centers in order to meet the taste of wealthier people, as is probably the case of the pipe with Arab writing.

Zsuzsanna Kopeczny
Museum of Banat Timişoara
Timişoara, RO
e-mail: zsuzsakopeczny@gmail.com.

Remus Dincă
Western University Timişoara
Timişoara, RO
e-mail: remusdincă@gmail.com

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CATALOG

Abreviations:

D. l.= diameter leg; D. b.= diameter bowl; D. r.= diameter ring; H.= hight; L.= length; M = grave.

1. Fragmentarily preserved pipe, made of clay, fine fabric with inclusions of fine sand, oxidant firing, with engobe, no decoration, bowl and leg polygonal in section, ring with grooves.

D. b.: 2.9 cm, H.: 4.1 cm, D. r.: 1.9 cm.

Sfântu Gheorghe square, S2, upper layer.

2. Fragmentarily preserved pipe, made of clay, fine fabric with inclusions of fine sand, oxidant firing, with engobe, no decoration, bowl and leg polygonal in section, ring with grooves.

D. b.: 2.7 cm, H.: 3.8 cm, D. r.: 1.9 cm.

Sfântu Gheorghe square, S2 upper layer.

3. Fragmentarily preserved pipe, made of clay, fine fabric with inclusions of fine sand, oxidant firing, with engobe, no decoration, bowl and leg polygonal in section, ring with grooves.

D. b.: 2.5 cm, D. r.: 1.6 cm.

Sfântu Gheorghe square, S2, upper layer.

4. Fragmentarily preserved pipe, made of clay, fine fabric with inclusions of fine sand, with engobe, no decoration, ring with grooves.

D. r.: 1.7 cm.

Sfântu Gheorghe square, S2, eastern area, near the channel and brick foundation.

5. Fragmentarily preserved pipe, made of clay, fine fabric with inclusions of fine sand, oxidant firing, with engobe, no decoration, bowl polygonal in section, ring with grooves in the upper part.

D. b.: 2.5 cm, D. r.: 1.7 cm.

9 mai Street, S 1, leveling layer of the Turkish street.

6. Fragmentarily preserved pipe, made of clay, fine fabric with inclusions of fine sand, oxidant firing, with engobe, no decoration, leg and bowl polygonal in section, ring with grooves.

D. b.: 2.7 cm, H.: 3.9 cm, D. r.: 1.9 cm.

Sfântu Gheorghe square, S2, upper layer.

7. Fragmentarily preserved pipe, made of clay, fine fabric with inclusions of fine sand, oxidant firing, with engobe, no decoration, bowl and leg polygonal in section, ring with grooves.

D. b.: 2.6 cm, D. r.: 1.9 cm.

Sfântu Gheorghe square, S2, upper layer.

8. Fragmentarily preserved pipe, made of clay, fine fabric with inclusions of fine sand, oxidant firing, with engobe, no decoration, leg polygonal in section, ring with grooves.

D. r.:1.8 cm, H.: 3.8 cm.

Sfântu Gheorghe square, S2 upper layer.

9. Fragmentarily preserved pipe, made of clay, fine fabric with inclusions of fine sand, oxidant firing, with engobe, no decoration, leg polygonal in section, ring with grooves.

D. l.: 2.6 cm, D. r.: 1.9 cm.

Sfântu Gheorghe square, upper layer.

10. Fragmentarily preserved pipe, made of clay, fine fabric with inclusions of fine sand, oxidant firing, with engobe, no decoration, leg and bowl polygonal in section, ring with grooves.

D. b.: 2.5 cm, D. r.: 1.8 cm.

Sfântu Gheorghe square, S2, upper part layer.

11. Fragmentarily preserved pipe, made of clay, fine fabric with inclusions of fine sand, oxidant firing, with engobe, no decoration, leg and bowl polygonal in section, ring with grooves.

D. b.: 2.6 cm, D. r.: 1.9 cm, H.: 3.7 cm.

Sfântu Gheorghe square, S2, area of building C1.

12. Fragmentarily preserved pipe, made of clay, fine fabric with inclusions of fine sand, oxidant firing, with engobe, no decoration, leg polygonal in section, ring with grooves.

D. r.: 1.9 cm.

Sfântu Gheorghe square, S2, area of the house C2.

13. Fragmentarily preserved pipe, made of clay, fine fabric with inclusions of fine sand, oxidant firing, with engobe, no decoration, leg and bowl polygonal in section, ring with grooves.

D. b.: 2.5 cm, D. r.: 1.9 cm.

Sfântu Gheorghe square, upper layer.

14. Fragmentarily preserved pipe, made of clay, fine fabric with inclusions of fine sand, oxidant firing, with engobe, no decoration, leg polygonal in section, ring with grooves.

D. r.: 1.7 cm.

Sfântu Gheorghe square, S2, filling of M 6.

15. Fragmentarily preserved pipe, made of clay, fine fabric with inclusions of fine sand, oxidant firing, with engobe, no decoration, leg polygonal in section, ring with grooves.

D. r.: 1, 9 cm.

Sfântul Gheorghe square, upper layer.

16. Fragmentarily preserved pipe, made of clay, fine fabric with inclusions of fine sand, oxidant firing, with engobe, no decoration, leg polygonal in section.

D. r.: 1.8 cm.

Sfântu Gheorghe square, S2, upper layer.

17. Fragmentarily preserved pipe, made of clay, fine fabric with inclusions of fine sand, oxidant firing, with engobe, no decoration, ring with grooves.

D. r.: 1.7 cm.

9 mai Street, S2, first layer.

18. Fragmentarily preserved pipe, made of clay, fine fabric with inclusions of fine sand, oxidant firing, with engobe, no decoration, leg polygonal in section, ring with grooves.

D. r.: 1.9 cm.

Sfântu Gheorghe square, upper layer.

19. Fragmentarily preserved pipe, made of clay, fine fabric with inclusions of fine sand, oxidant firing, with engobe, no decoration, leg and bowl polygonal in section, ring with grooves.

D. b.: 2.6 cm, D. r.: 1.9 cm.

Sfântu Gheorghe square, S2, upper layer.

20. Fragmentarily preserved pipe, made of clay, fine fabric with inclusions of fine sand, oxidant firing, with engobe, no decoration, leg polygonal in section, ring with grooves.

D. r.: 1.7 cm.

Sfântu Gheorghe square, S2, layer under the level of horizontal beams, area of the house C3.

21. Fragmentarily preserved pipe, made of clay, fine fabric with inclusions of fine sand, oxidant firing, with engobe, no decoration, leg and bowl polygonal in section, ring with grooves.

D. r.: 1.6 cm.

Sfântu Gheorghe square, S2, upper layer.

22. Fragmentarily preserved pipe, made of clay, fine fabric with inclusions of fine sand, oxidant firing, with engobe, no decoration, leg and bowl polygonal in section, ring with grooves.

D. b.: 2.5 cm, D. r.: 1.6 cm.

Sfântu Gheorghe square, S2 upper layer.

23. Fragmentarily preserved pipe, made of clay, fine fabric with inclusions of fine sand, oxidant firing, with engobe, no decoration, bowl polygonal in section, ring with notches.

D. b.: 2.3 cm, D. r.: 1.6 cm.

Sfântu Gheorghe square, –1 m from the walking level.

24. Fragmentarily preserved pipe, made of clay, fine fabric with inclusions of fine sand, oxidant firing, with engobe, no decoration, leg and bowl polygonal in section, simple ring.

D. b.: 2.8 cm, D. r.: 1.9 cm, H.: 3.7 cm.

Sfântu Gheorghe square, S2, material from the layers in the upper half.

25. Fragmentarily preserved pipe, made of clay, fine fabric with inclusions of fine sand, oxidant firing, with engobe, no decoration, leg polygonal in section, simple ring.

D. r.: 1.7 cm.

Sfântu Gheorghe square, upper layer.

26. Fragmentarily preserved pipe, made of clay, fine fabric with inclusions of fine sand, oxidant firing, with engobe, no decoration, simple flattened ring.

D. r.: 2.1 cm.

Sfântu Gheorghe square, S2, layer in the upper part.

27. Fragmentarily preserved pipe, made of clay, fine fabric with inclusions of fine sand with mica content, lower part of the bowl disk-shaped, incomplete oxidant firing, simple leg and bowl, no decoration. Outer layer of red engobe.

D. b.: 2.4 cm; D. d.: 4 cm; D. r.: 2.1 cm.

Sfântu Gheorghe square, S2.

28. Fragmentarily preserved pipe, made of clay, fine fabric with inclusions of fine sand, oxidant firing, with engobe, no decoration, bowl polygonal in section, ring with grooves.

D. b.: 2.7 cm, H.: 3.9 cm.

Sfântu Gheorghe square, upper layer.

29. Fragmentarily preserved pipe, made of clay, fine fabric with inclusions of fine sand, oxidant firing, with engobe, no decoration, bowl polygonal in section, ring with grooves.

D. b.: 2.7 cm, H.: 3.9 cm.

Sfântu Gheorghe square, S2, upper layer.

30. Fragmentarily preserved pipe, made of clay, fine fabric with inclusions of fine sand, oxidant firing, with engobe, no decoration, bowl polygonal in section, ring with grooves.

D. b.: 2.6 cm, H.: 4 cm.

Sfântu Gheorghe square, S2, the first layer.

31. Fragmentarily preserved pipe, made of clay, fine fabric with inclusions of fine sand, oxidant firing, with engobe, no decoration, bowl polygonal in section, ring with grooves.

D. b.: 2.8 cm, H.: 3.8 cm.

Sfântu Gheorghe square, –1m from the walking level.

32. Fragmentarily preserved pipe, made of clay, fine fabric with inclusions of fine sand, oxidant firing, with engobe, no decoration, bowl polygonal in section.

D. b.: 2.7 cm, H.: 3.7 cm.

Sfântu Gheorghe square, S2, area M11 and M13.

33. Fragmentarily preserved pipe, made of clay, fine fabric with inclusions of fine sand, oxidant firing, with engobe, no decoration, bowl polygonal in section.
D. b.: 2.4 cm, H.: 3.9 cm.
Sfântu Gheorghe square, S2, upper layer.

34. Fragmentarily preserved pipe, made of clay, fine fabric with inclusions of fine sand, oxidant firing, with engobe, no decoration, bowl polygonal in section.
D. b.: 2.3 cm, H.: 4.2 cm.
9 mai Street, S2, the first layer.

35. Fragmentarily preserved pipe, made of clay, fine fabric with inclusions of fine sand, oxidant firing, with engobe, no decoration, bowl polygonal in section.
D. b.: 2.5 cm, H.: 4.2 cm.
Sfântu Gheorghe square, upper layer.

36. Fragmentarily preserved pipe, made of clay, fine fabric with inclusions of fine sand, oxidant firing, with engobe, no decoration, bowl polygonal in section.
D. b.: 2.7 cm, H.: 4 cm.
Sfântu Gheorghe square, S2, upper layer.

37. Fragmentarily preserved pipe, made of clay, fine fabric with inclusions of fine sand, oxidant firing, with engobe, bowl with grape bunch decoration, lower part, cogwheel decoration, rim decorated with the cogwheel. Threefold branch decorative motif on the leg. Simple ring with cogwheel decoration.
D. b.: 2.4 cm; D. r.: 2.2 cm; H.: 4 cm.
Sfântu Gheorghe square, S2, area of building C1.

38. Fragmentarily preserved pipe, made of clay, fine fabric with inclusions of fine sand, oxidant firing, with engobe, grape bunch decoration on the bowl, lower part, cogwheel decoration, rim decorated with the cogwheel.
D. b.: 2.5 cm; H.: 4.3 cm.
Sfântu Gheorghe square, upper layer.

39. Fragmentarily preserved pipe, made of clay, fine fabric with inclusions of fine sand, oxidant firing, with engobe, grape bunch decoration on the bowl, lower part, cogwheel decoration, rim decorated with the cogwheel.
D. b.: 2.4 cm; H.: 4.3 cm.
9 mai Street, the first layer.

40. Fragmentarily preserved pipe, made of clay, fine fabric with inclusions of fine sand, oxidant firing, with engobe, grape bunch decoration on the bowl, lower part, cogwheel decoration, rim decorated with the cogwheel.

D. b.: 2.5 cm; H.: 4.3 cm.

9 mai Street, the first layer.

41. Fragmentarily preserved pipe, made of clay, fine fabric with inclusions of fine sand, oxidant firing, with engobe, grape bunch decoration on the bowl, lower part, cogwheel decoration, rim decorated with the cogwheel.

D.b.: 2.6 cm; H.: 4.6 cm.

Sfântu Gheorghe square, S2, upper layer.

42. Fragmentarily preserved pipe, made of clay, fine fabric with inclusions of fine sand, oxidant firing, with engobe, grape bunch decoration on the bowl, lower part, cogwheel decoration, rim decorated with the cogwheel.

D. b.: 2.6 cm; H.: 4.6 cm.

9 mai Street, upper layers.

43. Fragmentarily preserved pipe, made of clay, fine fabric with inclusions of fine sand, oxidant firing, with engobe, cogwheel decoration on the lower part of the bowl. The ring is stressed, simple, with cogwheel decoration.

D. r.: 2.4 cm.

9 mai Street, *passim*.

44. Fragmentarily preserved pipe, made of clay, fine fabric with inclusions of fine sand, oxidant firing, the leg is decorated with two cogwheel-made circles. The ring has a circle in the lower part, also made with the cogwheel.

D. r.: 2.3 cm.

Sfântu Gheorghe square, upper layer.

45. Fragmentarily preserved pipe, made of clay, fine fabric with inclusions of fine sand, oxidant firing, with engobe, the ring is stressed, simple, decorated with the cogwheel. A stain of brown-yellowish glaze on the leg.

D. r.: 2.3 cm.

9 mai Street, the first layer.

46. Fragmentarily preserved pipe, made of clay, fine fabric with inclusions of fine sand, oxidant firing, with engobe. Simple ring decorated with the cogwheel.

D. r.: 2.5 cm.

Sfântu Gheorghe square, *passim*.

47. Fragmentarily preserved pipe, made of clay, fine fabric with inclusions of fine sand, oxidant firing, with engobe. Simple, stressed ring decorated with the cogwheel.

D. r.: 2.5 cm.

9 mai Street, the first layer.

48. Fragmentarily preserved pipe, made of kaolin paste, fine fabric with inclusions of fine sand, oxidant firing, with engobe, bowl decorated with grooves, upper part decorated with the cogwheel and in the lower part a stamped rosette

D. b.: 2.7 cm; H.: 3.9 cm.

Libertății square, *passim*.

49. Fragmentarily preserved pipe, made of kaolin paste, fine fabric with inclusions of fine sand, oxidant firing, gray color, bowl decorated with grooves and a stamp in the lower part. The ring is stressed, decorated with oblique incised lines and cogwheel decoration is placed on the upper part of the leg, near the ring.

D. b.: 2.6 cm; D. r.: 2.1 cm.

Sfântu Gheorghe square, S2, the first layer.

50. Fragmentarily preserved pipe, made of kaolin paste, fine fabric with inclusions of fine sand, oxidant firing, gray color, the bowl's disk is decorated with grooves forming grain ears, the bowl per se decorated in rows, with rosette stamps and cogwheel decoration in the upper part.

D. b.: 1.9 cm; H.: 3.4 cm.

Sfântu Gheorghe square, S2, layer in the upper part.

51. Fragmentarily preserved pipe, made of kaolin paste with gray engobe, fabric with inclusions of fine sand, oxidant firing, lower part of the bowl decorated with triangular stamps placed in three horizontal rows and the bowl per se decorated with vertical incisions forming rows. The connection line between leg and bowl is marked with two parallel incised lines in shape of a „V". the ring is stressed, simple, undecorated.

D. b.: 2.5 cm; D. r.: 2.2 cm.

Sfântu Gheorghe square, upper part.

52. Fragmentarily preserved pipe, made of kaolin paste with inclusions of fine sand, oxidant firing, with engobe, the bowl is decorated with fir-tree-shaped stamps and cogwheel decoration in both the upper and lower parts. The ring is stressed, decorated with lines incised with the cogwheel, oblique, while the upper part of the ring and the leg are decorated with the cogwheel.

D. b.: 2.4 cm; D. r.: 2.3 cm.

9 mai Street, *passim*.

53. Fragmentarily preserved pipe, made of kaolin paste, fine fabric with inclusions of fine sand, oxidant firing, white-gray color, upper part of the ring decorated with leaf-shaped stamps, upper part of the leg decorated with stamped rosettes and the part facing the bowl bears cogwheel decoration.

D. r.: 2.1 cm.

Sfântu Gheorghe square, S3, level of tomb M 11.

54. Fragmentarily preserved pipe, made of kaolin paste, fine fabric with inclusions of fine sand, oxidant firing, with engobe. The ring is decorated with stamped rosettes in groups of three, on both sides and the pipe's leg bear cogwheel decoration.

D. r.: 1.7 cm.

9 mai Street, *passim*.

55. Fragmentarily preserved pipe, made of kaolin paste with engobe, fabric with inclusions of fine sand, oxidant firing. The ring is stressed, with cogwheel decoration in three rows.

D. r.: 1.9 cm.

Sfântu Gheorghe square, S2, upper layer.

56. Fragmentarily preserved pipe, made of kaolin paste with inclusions of fine sand, oxidant firing, with engobe. The ring is stressed, decorated with oblique cogwheel-made lines, while the leg is also decorated with the cogwheel.

D. r.: 1.6 cm.

Sfântu Gheorghe square, *passim*.

57. Fragmentarily preserved pipe, made of kaolin paste, fine fabric with inclusions of fine sand, oxidant firing. On the middle part of the bowl is an Arabic text; the lower part of the bowl is bi-trunk-shaped and its maximum diameter bears cogwheel decoration. One can note traces of secondary firing.

D. r.: 2.4 cm, H.: 3.7 cm.

Sfântu Gheorghe square, S 2, area C3, layer on the level of the horizontal beams.

58. Fragmentarily preserved pipe, made of clay, fine fabric with inclusions of fine sand, oxidant firing, with engobe, the ring is decorated with oblique incised lines, made with the cogwheel.

D. r.: 1.5.

Sfântu Gheorghe square, S2, area C2, house leveling layer and the layer beneath this leveling.

59. Fragmentarily preserved pipe, made of clay, fine fabric with inclusions of fine sand, oxidant firing, circular cogwheel-made decoration on the upper part of the ring and oblique notches on the flat side. The leg is also decorated wit the cogwheel and the bowl displays a rosette-shaped stamp inside a cogwheel-made circle.

D. r.: 2.1 cm.

Sfântu Gheorghe square, S2, upper layer.

60. Fragmentarily preserved pipe, made of clay, fine fabric with inclusions of fine sand, oxidant firing, the bowl decorated with geometric shapes and the disk with grooves. The lower part of the disk is decorated with the toothed cogwheel.

D. b.: 2. cm; D. d.: 3 cm.

Sfântu Gheorghe square, S2, upper layer.

61. Fragmentarily preserved pipe, made of clay, fine fabric with inclusions of fine sand, oxidant firing, the bowl decorated with incisions, rosette-shaped stamps on the upper part of the disk, disk decorated with grooves. Between the grooves and the stamped rosettes one notes a decoration consisting of groups of three triangles. The lower part of the disk ends in as rectangular sole, decorated with four rosette stamps, while the contour of the sole is decorated with the toothed cogwheel.

D. b.: 2.5 cm; D. d.: 3.9 cm.

Sfântu Gheorghe square, S2, upper layer.

62. Fragmentarily preserved pipe, made of kaolin clay, fine fabric with inclusions of fine sand, oxidant firing, glazed, yellow color with random brown spots. The bowl is decorated with petal-shaped grooves.

D. b.: 2 cm; H.: 3.9 cm.

Sfântu Gheorghe square, S2, upper layer.

63. Fragmentarily preserved pipe, made of kaolin clay, fine fabric with inclusions of fine sand, oxidant firing, glazed, yellowish and brown color, leg polygonal in section, simple, undecorated ring.

D. r.: 2 cm.

Sfântu Gheorghe square, eastern terminus area.

64. Fragmentarily preserved pipe, made of kaolin clay, fine fabric with inclusions of fine sand, oxidant firing, glazed, yellowish, brown and green color, traces of secondary firing. The bowl is decorated with grooves that start on the bottom of the bowl, near its connection to the leg. Between the bowl and the border there are two simple girdles and the upper part is flared. The ring is stressed, decorated with oblique incised lines preceded by a simple girdle.

D. b.: 2.3 cm; D. r.: 2 cm; H.: 3.3 cm.

9 mai Street, eastern area.

65. Fragmentarily preserved pipe, made of kaolin clay, fine fabric with inclusions of fine sand, oxidant firing, glazed, light green color, leg with stressed grooves and a circular incision can be noted on the ring.

D. r.: 1.7 cm.

Sfântu Gheorghe square, S2, area C2, house building leveling layer and the layer beneath this leveling.

66. Fragmentarily preserved pipe, made of kaolin clay, fine fabric with inclusions of fine sand, oxidant firing, glazed, yellowish brown color. The bowl is decorated on the sides with floral motifs with 5 petals, the leg has stressed grooves and the ring has a circular incision.

D. b.: 2.2 cm; D. r.: 1.6 cm; H.: 3.4 cm.

Sfântu Gheorghe square, S2, layer in the upper part.

67. Fragmentarily preserved pipe, made of gray clay, fine fabric with inclusions of fine sand, oxidant firing, glazed, olive green color with darker spots. The ring is decorated with a circular incision, the lower part of the bowl with two V-shaped stripes, decorated with the cogwheel and framed by two incisions.

D. b.: 2.4 cm; D. r.: 2.1 cm.

Sfântu Gheorghe square, –1m from the walking level.

68. Fragmentarily preserved pipe, made of kaolin clay, fine fabric with inclusions of fine sand, oxidant firing. The ring is decorated with a circular incision. The outer surface of the pipe is covered in brown yellowish glaze. There are no traces of secondary firing inside the bowl.

D. b.: 2.4 cm; D. r.: 1.9 cm.

Sfântu Gheorghe square, S2, terminus eastern area.

69. Fragmentarily preserved pipe, made of clay, fine fabric with inclusions of fine sand, oxidant firing, with engobe, simple, undecorated leg and ring.

D. b.: 2.3 cm, D. r.: 2.1 cm.

Sfântu Gheorghe square, S2, upper layer.

70. Fragmentarily preserved pipe, made of clay, fine kaolin-like fabric with inclusions of fine sand, oxidant firing, pink color, simple, undecorated ring.

D. r.: 2.1 cm.

Sfântu Gheorghe square, S2, upper layer.

71. Pipe made of kaolin clay, fine fabric with inclusions of fine sand, oxidant firing, pink color, fan-shaped stamp on the bowl and simple, undecorated ring and leg.

D. b.: 2.2 cm; D. r.: 2.1 cm; H.: 4.8 cm.

Sfântu Gheorghe square, S2, upper layer.

72. Fragmentarily preserved pipe, made of clay, fine fabric with inclusions of fine sand, oxidant firing, with engobe, simple, undecorated ring.

D. r.: 1.9 cm.

9 mai Street, *passim*.

73. Fragmentarily preserved pipe, made of clay, fine fabric with inclusions of fine sand, oxidant firing, simple, undecorated ring and leg.

D. b.: 2.2 cm; D. r.: 2.1 cm.

9 mai Street, *passim*.

74. Fragmentarily preserved pipe, made of kaolin clay, fine fabric with inclusions of fine sand, oxidant firing, gray color. Shows no decoration, in the lower part of the pipe the leg extends on the bowl in shape of a prolonged triangle, simple flattened ring, flared border.

D. b.:2.3 cm; D. r.: 2.1 cm.

9 mai Street, layer 1.

75. Fragmentarily preserved pipe, made of clay, fine fabric with inclusions of fine sand, oxidant firing, shows no decoration, simple, flattened ring.
D. b.: 2.3 cm; D. r.: 1.7 cm.
Sfântu Gheorghe square, S2, upper layer.

76. Fragmentarily preserved pipe, made of clay, fine fabric with inclusions of fine sand, oxidant firing, with engobe, shows no decoration, simple, flattened ring.
D. b.: 2.3 cm; D. r.: 2.1 cm.
Sfântu Gheorghe square, S2, upper layer.

77. Fragmentarily preserved pipe, fine fabric with inclusions of fine sand, oxidant firing, with engobe, undecorated bowl, ring and leg.
D. b.: 2.6 cm; D. r.: 2.8 cm; H.: 4.5 cm.
9 mai Street, upper layers.

78. Fragmentarily preserved pipe, made of clay, fine fabric with inclusions of fine sand, oxidant firing, with engobe, the ring is simple, undecorated.
D. r.: 2.7 cm.
Sfântu Gheorghe square, S2, east terminus area, upper part.

79. Fragmentarily preserved pipe, made of kaolin paste, fabric with inclusions of fine sand, oxidant firing, bowl decorated with floral motifs on both sides and on the front side it displays a rectangular sole with cogwheel decoration placed on two rows.
D. b.: 2.3 cm.
Sfântu Gheorghe square, S2, layer 1.

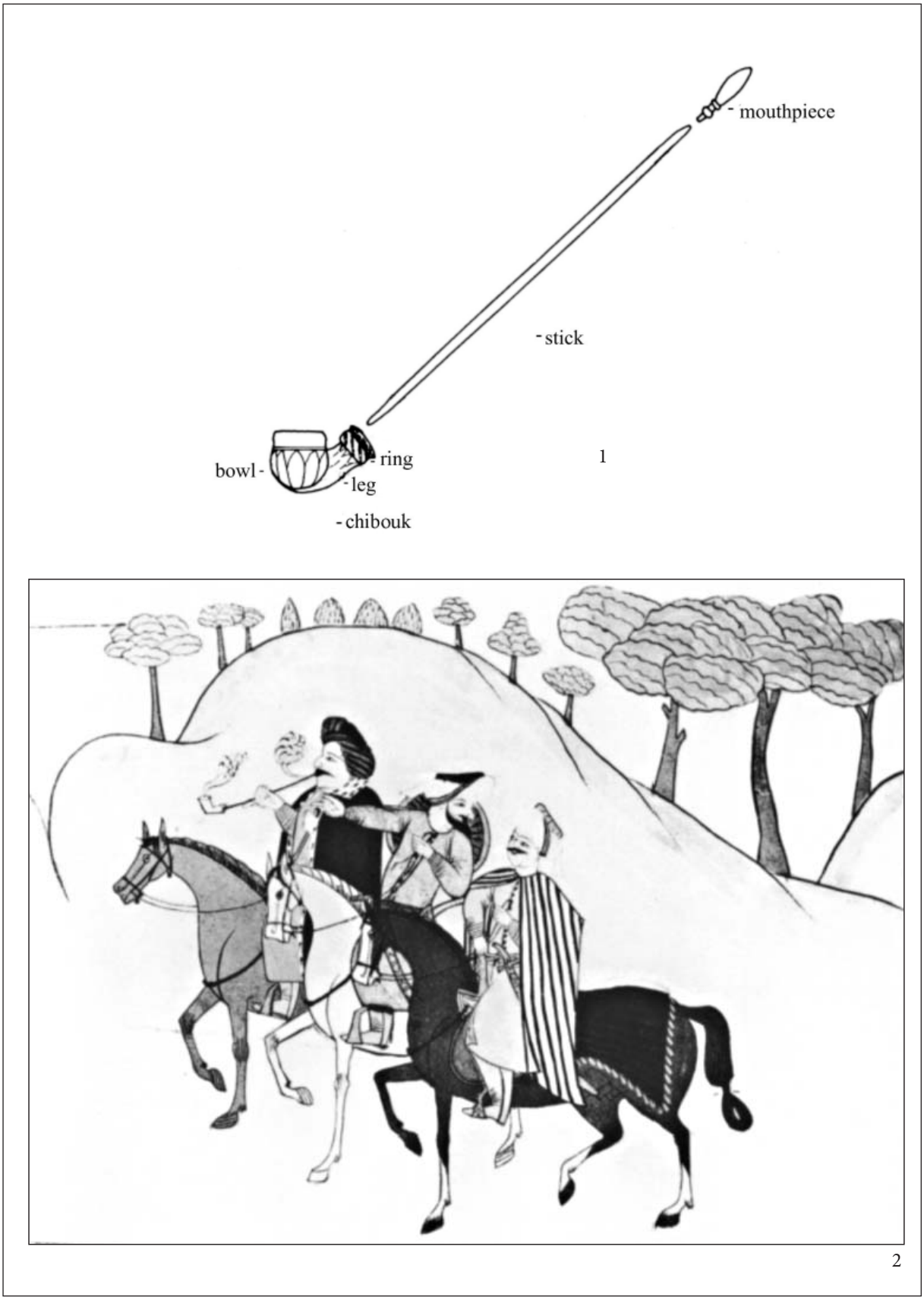

Plate 1. 1. Elements of a chibouk-style pipe; 2. Turkish miniature (17th century) (taken from Robinson 1985, Pl. 34).

Plate 2. Types of decoration and craftsmen's stamps (?) – Cat. 70.

The Siege of the Fortification in Oradea (1692) reflected on Baroque Medals*

„Whether you wish it or not, His Majesty will protect you…"
(A. Dunod)[1]

Călin Ghemiş, Constantin Iosif Zgardan

Abstract: In the context of the revival of the Habsburg Empire encouraged by the victory against the Turks at Vienna, in the time span between October 1691 and June 1692, Oradea was conquered by the imperial troops led by General Donath Heissler. In order to celebrate this victory Leopold I issued three medals of different types, made of bronze, silver, tin and gold. The medals are described and discussed as numismatic documents regarding the history of Oradea, being in this way the first Baroque objects that celebrate the new town of the Habsburg Empire; on the other hand these medals marks the re-birth of this important city of Partium.

Keywords: Baroque, medals, Oradea, siege, 1692, numismatics.

Argument

No doubt, the defeat of the Turks during the siege of Vienna marked the second half of the seventeenth century, the revival of the Habsburg Empire and implicitly that of the Holy League, leading to an unprecedented counter-offensive of the anti-Ottoman league in Europe.

In this political situation, the position of Transylvania was extremely important. Thus Jesuit Antide Dunod's 1685 mission in Transylvania was a remarkable moment in the development of diplomatic relations between the Imperial Court and Transylvania. The treaty suggested by prince Mihai Apafi included the incorporation of Transylvania into the Empire and its active involvement in the military actions of the Holy League; the prince's refuse determined Dunod to reconsider his position and to attract Mihail Teleki, at that time chancellor of Transylvania, on the imperial side[2]. If diplomatic actions did not lead to expected results, military actions performed during the autumn and winter of 1685 under the leadership of General Caraffa, especially in Partium, constrained the prince to sign the treaty from Dumbrăveni. Though this treaty, the prince agreed to pay certain sums and to provision the troops in Partium. The treaty of Vienna was concluded in June 1686, ending the first phase of Transylvania's incorporation into the Empire, i.e. the Haller Treatise. Its direct consequence was the establishment of imperial garrisons in Cluj and Deva, but it also marked the ignition of a policy meant to consolidate the new rule.

In this context, after a 32-year long occupation, Oradea witnessed the siege marking the end of the Turkish domination there and implicitly of the homonym pashalik.

Started in the autumn of 1691, the siege was lifted in June 5th 1692; the city's strategic significance for both the Turkish and imperial forces justifies the actions taken for its preservation and conquest, respectively[3].

The victory of the imperials led by General Donath Heissler was highly regarded by the imperial Court and recorded as such in that period's historical sources.

Among these sources, those pertaining to numismatics (including the study of medals) benefited from little if no attention at all from historians approaching the history of the city on Crişul Repede River[4], despite the fact that they are true examples of Baroque art with direct reference to the history and iconography of the fortification.

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* English translation: Ana M. Gruia.
1 Andea, Andea 2003, 359.
2 Andea, Andea 2003, 356.
3 For a very good presentation of the military action stages around Oradea during the siege, see Georgiță 2001.
4 Borcea, Gorun 1995; Borcea, Gorun 2007.

On the one hand, as I will subsequently indicate, the items were part of a type meant to justify through their selected elements of iconography the policy of the Habsburgs in this part of Europe.

Meant to establish an event in that era's collective mentality, the items taken into consideration here were minted in the year of the siege or the subsequent one; the importance of the military developments and of the newly conquered territory determined the minting of one of the items in gold, thus stressing even more the importance of the historical moment.

Catalogue

Silver medal[5]. The obverse depicts the idealized city, preserving some elements that can also be found on contemporary prints such as the citadel or the borough. The city is depicted in the foreground, surrounded by walls, with a mosque visible in the right hand monetary field. The Olosig palanka can be seen in the left side of the image, connected to the city by a bridge and just partially depicted. The left side of the composition is dominated by the fortification, with three bastions visible, doubled by a wall on the inside. The princely palace is represented in the center of the fortification; its construction was initiated by Gabriel Bethlen, but it was his successor, George Rakoczi I, who saw it completed. The towers of the former cathedral, turned into a mosque after 1660, can be seen inside the palace walls, besides two other edifices with towers. The hills of Oradea dominate the entire composition, surmounted by a banner-like ribbon, ending with tassels, marked with the name of the new imperial city: GROSS.WARDEIN.

The legend, placed in the lower part of the monetary field, reads: AUSPICIIS LEOPOLDI M*(agni)* DEDIT CAPT*(a)* D*(ie)* 5 IUN*(ii)* A*(nno)* 1692.

The reverse of the medal depicts an allegorical scene. In the middle ground one can see a draped female figure, the personification of Dacia, leaning and looking down and left. In her left hand she holds a few laurel leafs and in her right, a cornucopia.

Two genii, depicted as putti, flank the character in the lower part of the composition. Judging after their attributes (the one on the right, shown standing, in a dynamic posture, holds a sickle in his right hand and a sheaf of grain; the one on the left is seated and supports a basket of fruit above his head), they can easily be interpreted as genii of agriculture. The entire artistic composition suggests the bountifulness of the province recovered for the Holy Western Roman Empire. The legend, placed in the upper part of the monetary field, is extremely suggestive: DACIA FELIX. There is another relief inscription along the edge: AUSTRIACIS MAGNAS FERT TRANSSILVANIA GRATES.

The name of the engraver who made this medal is also known: Georg Hautsch. Dimensions: diameter: 37 mm; weight: 16.86 gr. Silver.

2. Wooden medal boasting[6]. The obverse contains the overlapping busts of Leopold I and his son Joseph facing right. The following inscriptions is placed around the rim of the monetary field:

LEOPOLDUS/M*(agnus)*.RO*(manorum)*.IMP.*(erator)*IOSEPHUS/R*(ex)*.ET/H *(eredis)*/ R*(omanorvum)*/AVGVSTI/TURCARUM VICTORES PERPETVI*.

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5 The item is preserved in Constantin Iosif Zgardan's collection in Oradea; an identical item at: http:mcsearch.info/record.html?id=196461.

6 The item was identified at: http:mcsearch.info/record.html?id= 35887.

As in the case of the first medal, the reverse depicts an allegory. In the left foreground, Leopold I, wearing a laurel wreath and sitting on a throne, receives the keys of the city from a kneeling male character. Above, a winged Victory places a laurel wreath on the emperor's head. The idealized image of the city can be distinguished in the background of the allegorical composition.

The following inscription occupies the lower part of the monetary field: VARADINUM RECEPTUM. DIE.V.IUNI MDCXCII

Another inscription is placed on the rim, above the entire composition: ASSVETA TUIS SEMPER VICTORIA CASTRIS.

Engraver: Philipp Heinrich Muller. Dimensions: diameter: 57 mm. Unknown weight. Wood.

3. Obverse of boasting no. 2[7]. Also made of wood. It contains the overlapping busts of Leopold and his son facing right. The same inscription as in the case of the second item is placed on the exergue. Dimensions: diameter: 57 mm.

4. Reverse of the same boasting[8] Described at no. 2, the same allegorical scene with Leopold sitting on the throne receiving the city keys from a character that could be identified with the Roman-Catholic bishop of the time, Augustin Benkovich.

[7] Auction house: Dr. Busso Peus Nachfolger, auction no. 391, lot 2573, May 2nd 2007.

[8] Auction house: iNumis, auction no. 15, lot 2906, March 25th 2011.

5. Silver medal[9]. The obverse reproduces an allegorical scene in which Leopold, sitting on a throne and facing left receives a letter and a shield decorated with the image of the city. The upper half contains the following inscription in the exergue: QVAE FVERANT TVA SVNT, ET ERVNT TUVA; MAXIME CAESAR.

The item's reverse contains another allegory. In the foreground, a female character leaning on a rectangular column or a statue base, holds a staff in her right hand and with her left she holds a laurel wreath above the city depicted in the background of the artistic composition. As in the case of the obverse, the legend is placed in the upper half of the monetary field, reading: COLLIGIT IN CAMPO TALES CONSTANTIA FLORES. The item was created by engravers E. Farber and M. Brunner. Dimensions: diameter: 48 mm; weight: 44.2 gr.

6. Gold medal[10], nominal value 22 ducats. The item is the final product of the wooden boastings described above – nos. 2–4. A unique piece among medals dedicated to the victory of Oradea, this item is of remarkable craftsmanship. Both obverse and reverse are identical to those of item no. 2, except for the inscription on the rim which reads: QVANTVM TVRCA, VALET GALLVS, LEPIDOSQVE GEMELLOS SOL VIDET IN GEMINIS STRAGE PERIRE PARI. Dimensions: diameter 57 mm, weight 76.50 gr.

Discussions

These items are first remarkable through their artistic qualities, i.e. examples of classical Baroque. From a historiographic perspective, the first author to describe the first two items was canon Stephan Schoenvisner[11] in 1801. In his remarkable identification catalogue printed in Buda and reprinted six years later[12], the author included a drawing of item no. 1 that he qualified as elegant (Fig. 1).

[9] Auction house: Gorny & Mosch, auction no. 172, lot 6277, October 15th 2008.
[10] Auction house: UBS Gold & Numismatics, auction no. 71, lot 99, September 5th 2007.
[11] Schoenvisner 1801, 407, pl. XI, nr. 293.
[12] Schoenvisner 1807, 221.

Fig. 1

At that time, the scholarly canon was not aware of the gold variant of the second item, neither was he of the item described at no. 5. I cannot explain the fact that neither item described here seems to have been included in Adolf Resch's identification catalogue printed in Sibiu in exceptional quality 100 years later[13]. It is hard to believe that Resch, a native of Sibiu, despite his fine knowledge of Transylvanian numismatics, never saw these items, but this might be true since these objects are so rare. Besides, Resch's introduction indicates that he was unfamiliar with Schoenvisner's 1801 edition, only mentioning that of 1807[14], but even the latter included the description of the medals.

I do not intend to question or minimize the work of Adolf Resch, which holds real, yet unsurpassed value in the field of Transylvanian numismatics, but only to draw attention to a constant omission. The same medal was reproduced in H. Marczali's volume dedicated to the absolutist period in Europe, from Vilagtortenete[15], volume IX. Among historians from Oradea this time, only Constantin Mălinaş knew the item and published it; still, he did not insist on its significance but took over *mot-a-mot* Schoenvisner's descriptions of 1807[16]. Besides, the late historian from Oradea only mentioned the second item without reproducing it in print and thus without discussing it. Existing historiographic mentions indicate that this item is the best known. The second item under discussion was mentioned by Scheoenvisner[17] and J. Veszerle in an identification catalogue published in Budapest in 1911 (Fig. 2)[18], where item no. 2, made of silver, is depicted.

Fig. 2

Admitting that the medal or at least one of its attributes is proving or showing the power of the state or of a monarch, beyond its economical function[19], then no doubt these products of lepoldine numismatics perfectly fit this interpretation. Further more, a medal's role is to establish a certain

[13] Resch 1901, 216 sqq.
[14] Resch 1901, 2.
[15] Marczali, s.a., 325, the Hungarian scholar reproduces an item in the collection of the National Museum in Budapest.
[16] Mălinaş 2007, 68.
[17] Schoenvisner 1801, 407.
[18] Veszerle 1911, Tab. XIV, nr. 2.
[19] Săşianu 1976, 250.

historical moment, situation, or event for posterity, securing it a place in collective memory; in the context under discussion, the expulsion of the Turks and the dissolution of the pashalik of Oradea were ideal moments for such immortalization.

As previously mentioned, the items under discussion belong to the category of propaganda documents; they are items with special, clear purpose. If personal medals[20] existed during the previous century or even contemporarily to our items, the three medals coined on the occasion of the siege of Oradea are part of the propaganda and justification arsenal of the Court in Vienna in its way to establishing its dominion over Partium and Transylvania.

Beyond the Habsburg monarchs' pretensions to being recognized as Roman emperors, there are several cases of titles among the propaganda instruments that insinuate and make reference to a Roman imperial tradition. I am referring to the legend: *Dacia Felix*, which Maria Theresa used later on a medal coined in 1769 in honor of Agriculture, Mining and Commerce[21].

As it is known, the first coins with this legend were minted by Traianus Decius (249–251 A.D.)[22] and the taking over of the province denomination in Baroque medals is not by chance, as my colleague M. Munteanu has already noted[23].

In all described allegories, the emperor wears the clothes of a Roman emperor, while other employed iconographical elements (the personification of the Province of Dacia, the genii, the use of Latin letters and numerals) are also elements of Latin origin.

One aspect that must be discussed here is the rendering of the city's image. In all cases it is idealized, less connected to reality, since at the time the items were produced the city had been totally destroyed during military operations; in order to encourage the re-population of Olosig and implicitly of the city, Leopold issued a privilege on December 4th 1691 during the blockade[24].

The only elements supporting the certain identification of the image depicted on these medals are: the bastion-type fortification, the mosque inside the fortification, in fact the former cathedral[25]. the Olosig palank and The Lower City, as the settlement around the fortification was called and the ground plan of which can only be guessed today on the basis of historical prints and ground plans[26].

Item analysis indicates that the first medal was more frequent, while the other two are less or completely unknown; the last medal is in the same time a numismatically unique item.

The artistic qualities are clearly superior from the point of view of the composition of the monetary field. The arrangement of iconographic elements and their manner of execution are also clearly superior to Renaissance item coined in the Empire or in Transylvania. In this sense, they perfectly fit the characteristics of lepoldine medals.

As for the number of minted items, a very limited amount of data is known; available pieces of information indicate that items with the legend "Dacia Felix" are the most frequent or common and that those made of gold are extremely rare (a single item of the type is known so far); as for the number of certain personal medals on the other hand, Samuel Koleseri's statement is interesting since it mentions that: "one hundred fifty gold medals of the prince of Walachia were recently produced as a family souvenir"[27], the author referring to medals minted by Constantin Brâncoveanu. The official character of these items makes me believe that many of them were made of bronze or silver and much fewer of gold, for certain personalities.

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[20] Among the best known: Castaldo 1554 (Resch 1901, 217); G. Basta, who coins both gold and silver medals (Resch 1901, 222.)

[21] Resch 1901, 240.

[22] Among the latest interpretation I would like to mention that supported by my colleague and friend Mihai Munteanu (Munteanu 2010, 137, including the older bibliography).

[23] Munteanu 2010, 251.

[24] Georgiță 2001, 86.

[25] The discovery of a pointed arch typical to Islamic architecture built-in above the altar of the Catholic church inside the fortification seems to be the only elements discovered so far that supports the existence of a mosque there (Pușcaș 2010, 76.); besides, the existence of Islamic religious buildings inside the fortification is mentioned by historical sources – among the best known I would like to mention part of the Turkish traveler Evlya Celebi's description of the fortification (1660): *"Praised be Allah, no idol remains inside the churches of Oradea, since all became Muslim places of worship"* (Celebi 1976, 528).

[26] Bubics 1880 pl. 351; Kisari 2007 passim, the author reproduces most of the ground plans preserved in the military archives in Karlsruhe.

[27] Köleséri 1983.

These medals, results of a historical event, mark Oradea's entering a new historical stage, through the inclusion of the city on the shores of Crişul Repede in the imperial structures; the results of this state of facts were long-lasting and the city's development is strictly connected to that of the Empire. Otherwise, the number of these medals, the fact that they were made out of bronze, antimony, silver and gold underline the city's status in the context of imperial administrative structures but in the same time mark the beginning of Oradea's rebirth in a new, European context.

In conclusion, the present study aims at becoming a starting point for future research that will include an analysis of known prints and ground plans of the city, of coins minted inside the city during various historical eras and of books printed in Oradea.

Căli Ghemiş
„Muzeul Țării Crişurilor", Museum Complex
Oradea, RO
ereshu@yahoo.com

Constantin Iosif Zgardan
Oradea, RO

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Plate 1. 1. Zgardan Collection, inscription on the medal's edge; 2. Medal no. 1 enlarged image.

Plate 2. E. Farber, M. Brunner, *Silver medal (enlarged image)*.

Plate 3. P. H. Muller, *Gold medal (enlarged image)*.

Depictions of Smokers on Stove Tiles (17th–19th centuries)*

Ana-Maria Gruia

Abstract: The article presents depictions of tobacco pipe smokers on stove tiles in Central and Eastern Europe. Such depictions are analyzed in the context of the habit's spread and reception in the area, with special interest in who smoked and where. Several analogies and cases of later interventions offer interesting clues on how their viewers might have reacted to and interacted with images of smokers on stove tiles from the seventeenth to the nineteenth century.

Keywords: history of smoking, stove tiles, tobacco pipes, pottery, image reception.

Existing research on the history of tobacco smoking rarely focuses on depictions of smokers and when it does, the context is very precise: either Dutch seventeen-century art or modern advertising[1]. The only existing brief overview of the habit's iconography[2] labels smoking as a good subject for visual depictions due to formal and symbolic reasons and an interest in the habit due to its exotic character. From a visual perspective, the swirls of smoke and its transparent matter allows for displays of artistry and a means of visually connecting depicted characters. Before the eighteenth century smoking was used mostly symbolically in Dutch painting (especially in *vanitas* themes). Due to religious views, such paintings do not generally render glamorous depictions of smoking but seem to convey the foolishness in indulging in sensual pleasures at the expense of the soul's salvation. Abandoned pipes might be symbols of a departed owner or signs of low virtue – neglecting duties, laziness, leaving children unattended. The first glamorous depictions of tobacco consumption (mainly as snuff) appeared in eighteenth-century France, since when performed in public it reflected anti-religious attitudes and was associated to elegant aristocratic habits. The nineteenth century and industrialization brought better delivery of tobacco iconography and mass media for publicity. Smoking became associated to virility and manly activities such as war, but it was also adopted by the "new women". The habit was also connected to artists and writers as last bastions of freedom.

Several more detailed studies focus on smoking in the Dutch art of the Golden Age, but they reach diverging interpretations and it is extremely difficult to be sure how people in the seventeenth century would have viewed such scenes. It seems that in the first half of the century smoking had mostly negative connotations[3], being mainly depicted in feasting scenes (usually in taverns and inns) and especially in association to indecorous behavior, drunkenness and flirting. Pipes were also interpreted as phallic symbols since the beginning of the seventeenth century and gestures such as inserting one's finger in a pipe bowl or blowing smoke at a woman were considered as sexually insulting[4]. Sources indicate that tobacco was offered during various types of celebrations, such as celebrations of office[5] and even funerals (Of an innkeeper)[6]. Smoking and pipes were also visually associated to rethoricians, members of amateur dramatic companies, whose living style and culture met with increasing dissatisfaction throughout the seventeenth century. In paintings depicting such Chambers of Rethoricians, unorthodox members were mostly seen smoking (Jews and Muslims), even if unused pipes were

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1 For example Mitchell 1992.

2 Goodman 2005, vol. 2, s.v. "visual arts", 158–179.

3 Gaskell 1997.

4 Shama 1999, 204–205.

5 Shama 1999, 186.

6 Shama 1999, 151.

placed on tables or kept in hats[7]. The moralistic intent behind images of children smoking, drinking and being idle were also identified in the context of Dutch Republican obsession for education and an admonition for parents not to offer a bad example to their young[8].

Nevertheless, not all depictions of smoking bore negative connotations, since it was also assimilated to homely habits, merry making, socializing and bucolic scenes[9]. The moderate use of tobacco was deemed inoffensive by all except militant clergymen and institutional custodians[10] (forbidden in correction houses for example, as associated to the vicious ways of former communities)[11]. Smoking could even confer honor and status (since there were silver inlaid pipes made for weddings, pipes and paraphernalia made of precious metals, with inscribed mottoes and devices). In the case of still-life genre devoted to tobacco pieces, it is unlikely that all depictions of pipes were in fact moral condemnations[12].

There are also several studies mentioning contemporary English depictions of smokers, especially women that also highlight the ambiguity of such images. In different series of engravings of the five senses, smell was illustrated by smoking women. The impropriety of women smoking is indicated by accompanying inscriptions and their cross-dressing. The famous theater heroine Molly Frith was depicted in engraved covers of the play dressed as a man and smoking a pipe, but the play itself reveals several ambiguities. In her case tobacco consumption was also deemed benefic, since it granted her manly autonomy (by suppressing hunger and lust, thus helping her preserve her chastity)[13].

A number of Turkish miniatures of the seventeenth century depicting smokers were published without any visual interpretation[14]. They show male smokers indulging in the habit both indoors and outside, riding. The latter scene is particularly interesting since two riders seem to point to their companion who is enjoying his pipe, laughing and commenting upon it. Strong debates on the legality and morality of tobacco smoking arose soon after the introduction of the habit in the Ottoman Empire[15]. The miniature does not show a confrontation, but neither does it illustrate a full acceptance of smoking. The practice of the new habit certainly raised interest and triggered various reactions, even if limited to pointing it out and making fun, as the two Turks in the image seem to be doing. Later, during the eighteenth and nineteenth centuries there are mostly travelers' depictions of smokers in the Ottoman Empire and then the Balkan areas and they rather reveal ethnographic interest in national costumes and habits[16].

Tiles depicting smokers

Recreational tobacco smoking spread throughout Europe in the seventeenth century and pipe production developed accordingly, first in England and then in the rest of the continent. At first, it was potters who engaged in pipe production, hence the depiction of smokers on other ceramic products such as floor and wall tiles and tableware[17]. In time, production became specialized and masters dedicated themselves exclusively to pipe production, establishing guilds and, in the nineteenth century, small pipe manufactures. Craftsmanship in pipe-making increasingly resembled that of goldsmiths, considering the various metal implements employed (especially perforated lids), but village potters continued to include pipes among their products.

The earliest depictions of smokers on stove tiles are to be found on a small group of such items produced and used in Transylvania in the seventeenth century. The best preserved among them is an entirely preserved panel tile, unglazed, decorated in relief with the depiction of a man riding a

7 Tummers 2011, 140–147.
8 Dekker 1996, 172.
9 Knaap 1966.
10 Shama 1999, 198.
11 Shama 1999, 21.
12 Shama 1999, 195.
13 Rustici 1999.
14 Robinson 1985, Pl. 33–35. Other examples at http://www.bildindex.de/obj20836758.html#|homec and http://www.historycooperative.org/journals/ahr/111.5/grehan.html.
15 Grehan 2006.
16 Robinson 1985, plates 36–43; other examples, sometimes without mentioned sources, in Oișteanu 2011.
17 See for example smoking men, angels and even sirens and mermen on Dutch tiles produced during the Golden Age, preserved in the collection of the Tabaks Historisch Museum Delft. I thank Mr. Louis Bracco Gartner for allowing me access to his impressive collection.

horse and smoking a large stub-stemmed pipe (Fig. 1). It is preserved in the collection of the National History Museum in Cluj-Napoca, just like a similar smaller fragment archaeologically discovered in the city. The third item was found in Sibiu[18].

Fig.1. Seventeenth-century stove tile from Cluj depicting a soldier smoking on horseback.

This group of Transylvanian tiles is relevant for the fact that the habit was popular or interesting enough to be depicted on home interior objects such as stove tiles and that smoking was at that time associated with the Turkish military. The latter conclusion is based on the rider's costume, with sword, mantle and head dress reminding of Turkish Janissaries. It also worth noting the Turkish-type pipe depicted, made of separate bowl and stem (though pipes of that era were certainly not so large). The creation of a series of tiles depicting smokers in seventeenth-century Transylvania indicates that the new habit was a topic of public interest; the viewers of these tiles recognized its Ottoman origin and maybe appreciated the fact that pipe-smoking could be practiced anywhere. Even in the case of pipes with long stems, they were usually made of several segments and could be easily carried and assembled, thus making horseback smoking a pleasurable pastime while traveling[19].

The only eighteenth-century stove tile known so far to show a smoker was produced in the Bavarian pottery center of Kröning that also made one-piece pipes in the first half of the seventeen hundreds. The green-glazed tile, preserved in the collection of the Heimatmuseum Vilsbiburg, shows a central medallion surrounded by rich vegetal decoration with a standing man in Baroque costume, hands crossed in front of him, but holding a western-type pipe in his mouth. It is inscribed DER GERVCH, the aroma, thus placing the representation in the genre of depictions of the five senses[20]. Series of tiles and even entire thematic stoves depicting allegories of the senses are known to have been produced in the sixteenth century and the first part of the seventeenth century in the German areas[21] but their iconography follows a different graphical tradition, where smell is illustrated by flowers, sometimes held and smelled by various characters. As previously mentioned, English engravings followed a different tradition, by depicting women smokers as illustrations of smell. The tile in Kröning combines the two traditions, by replacing smelling flowers with smoking as illustration for the pleasures of smell.

Smokers were more frequently depicted on stove tiles in the nineteenth century, especially on items produced in the Ukrainian center of Kuty, in Bucovina[22]. One can see different variants of a man in a carriage smoking a large stub-stemmed pipe, while his non-smoking servant drives the two

[18] Gruia 2012.
[19] Grehan 2006, 1356.
[20] Mehler 2009, 266, fig. 7.
[21] Rosmanitz 1993. Another example at http://www.bildindex.de/dokumente/html/obj20448178#|home.
[22] Kolupayeva 2006; A significant lot is preserved in the collection of the Romanian Peasant Museum in Bucharest, published in G. Roşu 2001.

(sometimes four) horses[23] a peasant plowing and smoking in the same time[24]; and a smoking soldier[25]. Another item makes reference to the sense of smell, thus continuing previously discussed depictions: a woman smelling a flower bouquet and a man smoking a large stub-stemmed pipe are sitting on both sides of an oversized vase looking up at grape bunches, birds and flowers[26]. It is interesting to note both the continuation and combination of the traditional depictions of the sense of smell by flower smelling and smoking and the gender division, probably reflecting common associations, with smoking seen primarily as a male habit. There is no indication of an ironic intent, since the couple appears to enjoy resting in a bountiful natural environment.

Fig. 2. Eighteenth-century stove tile from Kröning inscribed "DER GERVCH".

Fig. 3. Nineteenth-century Ukrainian stove tile
with a man smoking a pipe and a woman smelling flowers.

A somewhat more moralistic scene is depicted on another tile from Ukraine that shows a smoking bear, playing music in front of a man holding up a drinking cup[27]. The bear, completely humanized through its posture and activities (smoking and cello-playing), is reduced to a drinking companion.

[23] Kolupayeva 2006, 235, 315.
[24] Kolupayeva 2006, 304.
[25] Roşu 2001, 74, 155, cat. C.1993.
[26] Kolupayeva 2006, 303.
[27] Kolupayeva 2006, 46.

Throughout the centuries, bears have been associated with numerous vices and on this tile the animal is linked with three of them: drinking, smoking and lay music[28]. Nevertheless, the tile might have been perceived just as an amusing depiction of marry-making and entertainment, or maybe an ironic scene of what a drinking man might imagine seeing after a few cups.

Fig. 4. Nineteenth-century Ukrainian stove tile depicting a smoking bear-musician.

Yet another example from Ukraine is relevant for both the connection between smoking and working and that between potters and pipe-makers. The stove tile depicts in the center a potter at work at his wheel while in the same time smoking his pipe. The background illustrates the workshop, with ceramic products and various characters: a man standing under a shelf of pots left to dry, a woman pouring water in a jug and a dog barking under a decorated tile stove[29]. The item also includes an inscription with text (stating the potter master's name and location) and the date of production (1878). All details point to a homey atmosphere, but in the same time carefully include all types of objects that Alexander produced (pots, tiles, jugs, possibly also pipes), making this a commercial-add type stove tile.

Fig. 5. Smoking potter in his workshop on a nineteenth-century Ukrainian stove tile.

[28] For depictions of bears on stove tiles see Gruia 2011.

[29] Kolupayeva 2006, 236.

These objects are interesting for showing both certain social groups associated with pipe smoking at the time (boyars, farmers, soldiers, potters, drinkers) and contexts of smoking (while working, in the company of others, traveling, sitting and enjoying a rest). But there is another trait worth discussing here. Several of the Kuty tiles have been scratched at a later date, probably by their owners or viewers, who felt the need to underline their interest in the habit by adding incised pipes in the mouths of depicted characters, even those already provided with such instruments by the potter masters. Figure 6 shows such a tile, decorated with a military musician on the left and a soldier on the right[30]. The soldier smokes a large pipe with a lid, but someone scratched another pipe, suggested by two lines, that seems to start from the top of his nose.

Fig. 6. Stove tile produced in Kuty (Ukraine), with a soldier smoking a pipe; a second pipe was incised later.

Such later interventions on tiles are an interesting phenomenon, similar to historical graffiti and modern doodles. In most cases, viewers scratched pipes in the mouths of characters originally depicted non-smoking: a hunter (depicted on a tile holding a weapon in each hand)[31] and soldiers[32]. It is interesting that the same automatism, similar to that of drawing moustache and glasses on posters nowadays, was applied to a series of similar tiles. Might they have once been part of the same stove and therefore suffered the same treatment by the hand of the same person? Could the interventions have taken place later on, by someone dismantling the stove or even by persons involved in their transportation, selling, or collecting? And was the scratching of pipes meant to show one's interest in the habit or intent to parody the depicted characters? More in-depth research on this group of tiles and their history of production, use and museum acquisition, might one day clarify such issues.

Other Ukrainian tiles of the nineteenth century depict smokers, either peasant riders (unclear if male or female)[33] or gentlemen[34]. Other, yet unavailable tiles certainly contain similar representations. It is interesting to see how pipes made their way on such images, through cigarette smoking became the preferred form of tobacco consumption since the late nineteenth-early twentieth century[35]. It is possible that tiles discussed here were produced and later altered during a time when in Central and

30 Roşu 2001, 74, 155, cat. C1993.
31 Florescu, Petrescu 1969, 565, cahlă din nordul Moldovei; Roşu 2001, 94, 153, cat. C1980.
32 Roşu 2001, 96, 155, cat. C1989.
33 Kolupayeva 2006, 240.
34 Kolupayeva 2006, 251.
35 Goodman 2005, vol. 1, s.v. "cigarette", 144–150.

Eastern Europe pipe smoking was still the most popular form of enjoying tobacco, by men of various social standing. Further research might extend the discussion to images of smokers decorating other types of ceramic products, mainly tableware.

Conclusions

Research on smoking and its reception in Central and Eastern Europe, gaining new momentum over the last decades, will certainly have to include iconographical analyses of smokers and smoking implements. As tentatively shown here, such images made their way to the most varied mediums, including the so-called minor arts. The evidence of stove tiles indicates that smoking was depicted ever since the habit's introduction in the seventeenth century. According to the different geographical, chronological and cultural contexts of this type of images, researchers can use them as sources for who smoked and where, how was the habit perceived and what were its symbolic associations. The group of tiles from Transylvania shows that stove tile iconography was receptive to changes in everyday customs and habits. Portraying soldiers (probably Turkish) smoking on horseback points to people associating the habit to the military (since everywhere in Europe soldiers played an important role in the spread of tobacco consumption) and the Turks (all pipes discovered so far in the Principality of Transylvania are of the eastern type). The eighteenth century tile from Bavaria, showing the western-type pipe customarily used there, is part of a visual tradition of illustrating the senses. Previous German stove tiles associated smell with flowers, but English engravings soon adapted to illustrating smell by smoking women. The tile from Kröning combines elements of the two traditions. The most numerous group of tiles depicting smokers, sometimes with pipes later incised on their surface, have been produced on the present-day territory of Ukraine in the nineteenth century. They show numerous men smoking while traveling, at work, or simply for leisure and even strange sights such as a smoking bear. Some examples also continue the depiction of smell through characters smelling flowers and smoking.

All these examples are relevant to the persistent interest, even fascination with pipe-smoking reflected by the iconography of decorative objects such as stove tiles. Other types of depictions will certainly enrich and extend the topic, such as smokers and their punishment in Last Judgment scenes[36], other categories of pottery items, engravings etc.

Ana-Maria Gruia
The National History Museum of Transylvania Cluj-Napoca
Cluj-Napoca, RO
ana.gruia@gmail.com

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[36] As pointed out by my colleague Raluca Betea.

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Graffiti Discovered in the Western Tower of the Church in Cincu*

Adrian Stoia

Abstract: In 2010 I discovered several graffiti in the upper levels of the western tower, which will be analyzed in this material. Most of the inscriptions consisted of letters or numbers used for writing the year, all placed inside or outside shields or hearts. All these inscriptions were made during four centuries, between 1531 and 1924.

Keywords: graffiti, inscriptions, German colonists, Cincu, Transylvania.

The settlement established by Saxon colonists in the middle of the 12th century on a plateau between the rivers Olt and Hârtibaciu, an affluent of Cibin, is located along the present-day road connecting Agnita and Voila. It soon became the center of the Seat of Cincu *(Schenk),* since a royal judge resided there. It is first mentioned in 1329, when a certain Renerdus of Cincu (Renerdus de Chenk – Urkundenbuch, I, No. 467) featured in a historical document[1]. The settlement developed fast; in 1474 it was granted the status of a market town – "oppidum" and in 1586 it received the right of holding a weekly market and two fairs at fix dates each year.

The church dedicated to the Virgin is a Romanesque basilica with three naves and a western tower; the side naves also had towers above their eastern ends, but they were later demolished to the level of the roof. The building was started in the first half of the 13th century. It stood on a hill with three steep slopes, thus it only had to be defended on the western side. In 1499 the Virgin was added as patron of the church, besides Apostle Paul. Sources mention the fact that the church was destroyed in 1500 and the choir was rebuilt above the old foundations but it received a polygonal ending during the third decade of the 16th century.

Artistically, just like other monumental buildings in Transylvania dating in the second half of the 13th century, one can note a combination of Late Romanesque and Early Gothic traits[2], a phenomenon also encountered in the case of the basilicas in Cincu, Alba Iulia, Toarcla, Hărman, Hosman and Săcădate.

The main nave measures 27.6 × 8.4 m, the side naves measure 3.66 m in width and 38 m in length, while the choir is 7.4 × 6 m, separated from the nave by a triumphal arch; on the northern wall of the main nave, the wall painting was created by E. Antoni.

Through time, the church underwent several changes due to both natural destruction and the community's increased financial power; the nave and choir ended up receiving Gothic shapes and rich interior decorations. It was surrounded with two walls, with 9 defense towers, five part of the first precinct. Most of the fortification elements of this church were demolished during the 19th century; a single bastion still stands today, SW of the church and the surrounding wall was lowered to 2–3 m on three sides. The gate tower on the western side of the church can still be seen in an 1897 image[3].

The western tower, initially conceived as a bell tower, covers an area of 11 m^2, has a tower on the ground floor, open towards the naves on three sides. The western portal has two flights of steps and two rows of columns with capitals decorated with palmettos. A new tower was built in 1591, renovated by carpenter Georg Zimmermann in 1753. The roof was rebuilt in 1754–1755 above the central and side naves. The big fire of 1789 destroyed the roof, three bells and the tower clock; the tower and the church were covered again in 1791 and since then the monument has preserved the same outlook[4].

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* English translation: Ana M. Gruia.

1 http://germa229.uni-trier.de:3000/catalog/453.

2 Drăguț 1979, 28.

3 Fabini 2010, 202–203.

4 Fabini 2010, 202–203.

In the autumn of 2010 I discovered a number of graffiti in the upper floors of the western tower and I will subsequently discuss them. Most inscriptions consist of letters, sometimes in ligature and numbers noting the year when the graffiti was made, all elements placed inside or outside graphic elements in the shape of shields and hearts. In the case of some inscriptions, the heart-shaped decoration sometimes extends in the middle-upper part with lines or groups of lines probably suggesting the burning flame of faith, a shape often encountered among Christian symbols. Inscriptions of years are sometimes clear on these graffiti, but other times they can only be guessed: possibly starting with 1531 and ending with 1924.

In the first image (Pl. 1/1) one can note in the left side the symbol of a heart containing the inscribed year 1793, placed on two lines. A shallower inscription in the central part depicts a shield with a cross inside and the letters MKIS above the shield, of which M and K are in ligature. Another shield-like shape can be seen, this time in deeper lines, to the right; inside the shield one can distinguish the letters M and W in ligature, followed by a possible letter T. inside the shield; below the letters, there is the year, 1791 and below it, on a smaller scale, possibly the letters DIO ISM.

The following image (Pl.1/2) depicts an inscription of a year, possibly 1531, with the digits separated by pilcrows.

In the third image one can easily note the shape of a heart with indentations in the upper lobes and on the lower part; it contains the letters MB, above there is the year 1797 and in the lower part possibly some poorly visible digits (1819?). Connected to this heart in the upper left part there is another heart, with a cross in the middle and another graphic sign to its right.

The following inscription (Pl.1/4) is made on a reddish stone and reads, clearly, MRD AN(N)O (with an abbreviation mark above N) 1676, in which digit 1 has a double contour line. In the fifth image one can distinguish the letters HB and AF in ligature and to their left a shield with a Latin cross in the center. Image 6 depicts a shield containing the letters GRGS, below them 179 (7?)6 and, possibly the number 949.

Image 7 contains in the central part a heart surmounted by a sketched graphic sign, possibly a flame. The letters RD are placed inside the heart and under them the year 15(6?)95. Image 8 features a more recent inscription, with the name H. Glätzer and the year 1924. From the same year dates an inscription placed inside a heart, containing the text Geu(?)... B Georg besides the year 1924 (Pl.2/9). In image 10 two letters are engraved inside a heart; the first is an M, the other cannot be distinguished. Image 11 depicts the letters MEA (M and E in ligature) followed by SAEI (?). In image 12 one can see in the upper part the shape of a shield containing two letters; the first might be a C or a G, while the second cannot be read. Outside the shield, in the left bottom corner there are the letters MB in ligature and in the right bottom corner, the letters JB. In image 13 one can easily see the letters GE, possibly followed by a cross, then letter E, AN(N)O with the abbreviation mark above N and the year 1706. Image 14 illustrates the letters IH inside a shield and possibly the year 1557 outside it. Other letters or numbers (G, IN) are also drawn in stone. There are also numerous heart-shapes (Pl. 4/19, 21; Pl. 5/25 and Pl. 5/29) and shields (Pl. 3/15–16; Pl. 4/24 and Pl. 5/27) without inscriptions or with inscriptions that cannot be read due to weather or human destructive interventions. Image 17 contains the letters ZRLW and the year 1584. In image 18 one can distinguish two hearts containing the letters S(...)H and WG. Image 20, depicting probably one of the best preserved inscriptions, shows the text STEPHANUS, with most letters in ligature, MANG (... ?) with letters M and A in ligature, ROSAE with AE in ligature, followed by a series of letters in lower script (oalkm?) and I(N) A(NNO) 1695. On the stone block in photo 22 one can see several letters and digits, destroyed by other intentional scratch marks; one can still read some letters such as DG...R and digit 7, probably part of the year (1757). Photo 23 depicts a heart containing the letters Geo(rg) Göel(ner) An(n)o (with an abbreviation mark above n) and the year 1762. To the right of the year inscription there is the group 8o (octo?) and on the right side, outside of the heart, there is the text ian(uarii). In image 26 one can see a heart containing the inscription MFO 1887, several sketched shields, a rectangle containing letters HEALK and, possibly placed later, the year 1903. In image 28 there are similar depictions of hearts and shields, with letters inside and around them; in the central part of a shield-like shape there are letters CVM placed in a vertical row, connected by a vertical line. In image 30 have the shape of the shield, inside it one can see two letters, possibly BB and below a(nno) 1739. Image 31 depicts the letters MH in ligature besides the

year 1767. In the final image (Pl. 6/32), one can note a shield-like shape containing several letters, GR OLh(?); letters WW and the year 1957, were added later, during the contemporary period for certain, below the shield.

Starting from these graffiti and not knowing the real reasons for which their authors wished to remain for posterity, one can only presume that they wished to leave behind a personal imprint, as close as possible to this sacred space, i.e. the church. For certain, the shapes of these shields do not belong to the category of heraldic coats of arms and the heart-shape might have suggested love and protection. Future research and analogies with other such forms of inscriptions might certainly lead to new working hypothesis.

Adrian Stoia
Metropolitan See of Transylvania, Andreiana Printing House Sibiu
Sibiu, RO
adistoia@yahoo.com

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Plate 1.

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Plate 2.

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Plate 3.

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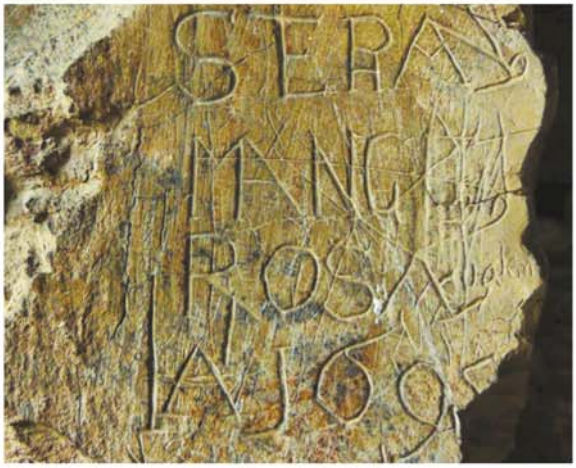

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Plate 4.

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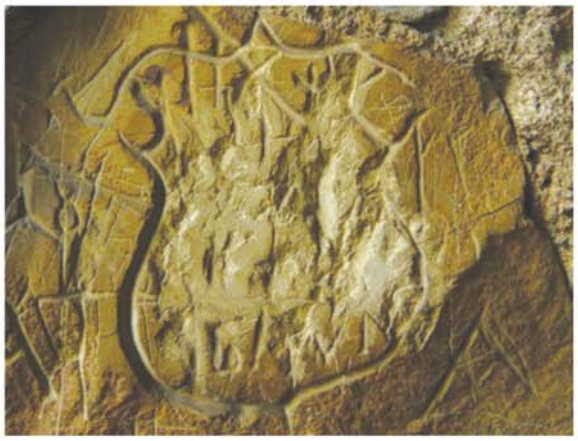

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Plate 5.

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Plate 6.

Abbreviations

ActaAntHung	Acta Antiqua Academiae Scientarum Hungaricae. Budapesta.
Agria	Egri Múzeum Évkönyve. Eger.
AMN	Acta Musei Napocensis. Cluj.
AÉ	Archaeologiai Értesitõ. Budapesta.
AnB S.N.	Analele Banatului, Serie nouă. Timișoara.
Antiquity	Antiquity. Cambridge, Newbury.
AO	Arhivele Olteniei. Craiova.
Apulum	Apulum. Alba-Iulia.
ArchKorrBl	Archäologische Korespondenzblatt. Mainz.
ArhMed	Arheologia Medievală. Brăila, Reșița, Cluj-Napoca.
ASMB	Arheologia satului medieval din Banat. Reșița.
Balcanica	Balcanica. Annuaire de l'Institut des études Balkaniques. Belgrad.
BAM	Brvkenthal Acta Mvsei. Sibiu.
Banatica	Banatica. Reșița.
BAR Internationale Series	British Archaeological Reports, International Series. Oxford.
BpRég	Budapest Régiségei. Budapest.
BerRGK	Bericht der Römisch-Germanischen Kommission, Frankfurt am Main.
CAANT	Cercetări arheologice în aria nord-tracă, L'Institut Roumain de Thracologie. București.
ComArchHung	Comunicationes Archaeologicae Hungariae. Budapest.
Crisia	Crisia. Oradea.
Current Anthropology	Current Anthropology. Chicago.
Dacia (N.S.)	Dacia. Recherches et Découvertes Archéologiques en Roumanie, București; seria nouă (N.S.): Dacia. Revue d'Archéologie et d'Histoire Ancienne, București.
DIR, C, I-IV, 1953–1955	Documente privind Istoria României, C. Transilvania, veacul XIV, I-IV. București 1953–1955.
DolgCluj	Dolgozatok az Erdélyi Nemzeti Érem- és Régiségtárából. Klozsvár (Cluj-Napoca).
Eurasia Antiqua	Eurasia Antiqua. Zeitschrift Für Archäologie Eurasiens. Mainz am Rhein.
EJA	European Journal of Archaeology.
FA	Folia Archaeologica. Budapest.
FBW	Fundberichte aus Baden-Württemberg. Stuttgart.
Germania	Germania. Anzeiger der Römisch-Germanischen Kommission des Deutschen Archäologischen Instituts. Mainz am Rhein.
HOMÉ	Hermann Ottó Múzeum Évkönyve. Miskolc
Istros	Istros, Revue d'Histoire Ancienne. București.
JCA	Journal of Conflict Archaeology. Glasgow.
KözCluj	Közlemények az Erdélyi Nemzeti Múzeum érem- és régiségtárából. Kolozsvár (Cluj-Napoca).
MCA	Materiale și cercetări arheologice. București.
MB	Mitropolia Banatului. Timișoara.
MFMÉ-StudArch	A Móra Ferenc Múzeum Évkönyve. Studia Archaeologica, Szeged.
NK	Numizmatikai Közlöny. Budapest.

OJA	Oxford Journal of Archaeology. Oxford.
PBF	Praehistorische Bronzefunde. Berlin.
PPS	Proceedings of the Prehistoric Society. Cambridge.
Proc. Soc. Antiq. Scot.	Proceedings of the Society of Antiquaries of Scotland, Edinburgh.
PZ	Prähistorische Zeitschrift. Berlin.
Rég. Tan.	Régészeti Tanulmányok. Budapest.
RMM-MIA	Revista Muzeelor şi Monumentelor, Monumente istorice şi de artă Series. Bucureşti.
JahrbRGZM	Jahrbuch des RömischGermanischen Zentralmuseums Mainz.
Sargetia	Sargetia. Deva.
SCIV(A)	Studii şi Cercetări de Istorie Veche (şi Arheologie), Bucureşti.
SlovArch	Slovenská Archeológia. Bratislava.
StComBrukenthal	Studii şi Comunicări. Muzeul Brukenthal. Arheologie-Istorie. Sibiu
Thraco-Dacica	Thraco-Dacica. Bucureşti.
TR	Transylvanian Review. Cluj-Napoca.
UPA	Universitätsforschungen zur Prähistorische Archäologie. Bonn.
VAMZ	Vjesnik Arheoloskog muzeja u Zagrebu. Zagreb.
VMMK	A Vespré Megyei Múzeumok Közleményei, Veszprém.
World Archaeology	World Archaeology. London.
Ziridava	Ziridava, Arad.