ROMAN POTTERY KILNS IN MODERN SERBIA

Snežana Černač-Ratković

Abstract: *This paper deals with Roman pottery kilns from the territory of modern Serbia. In Antiquity, this territory was first part of the Roman provinces Pannonia Inferior and Moesia Superior, and later of Valeria, Panonia Secunda, Moesia Prima, Dacia Ripensis, Dacia Meditteranea and Dardania. The kilns can be dated from the 1st century to the end of the 4th and the beginning of the 5th century. Most of the kilns mentioned in this article were situated near big city-centers, like Sirmium or Viminacium, but also next to large military camps, like Novae, Saldum or Transdierna. The pottery production centers were often situated next to the necropolises, outside the city walls but often also close to clay sources.*

Key words: *Pottery kilns, Pannonia, Sirmium, Viminacium, Roman Period*

Cuvinte cheie: *cuptoare pentru ars ceramică, Sirmium, Viminacium, perioadă romană*

In Antiquity, the territory of modern Serbia was part of the Roman provinces Pannonia Inferior and Moesia Superior, and later of Valeria, Panonia Secunda, Moesia Prima, Dacia Ripensis, Dacia Meditteranea and Dardania. In this area, there were found many pottery kilns that could be dated from the 1st century to the end of the 4th and the beginning of the 5th century A.D.

On this area (Fig. 1), in ancient Pannonia, there was a thriving pottery production center in Sirmium (Sremska Mitrovica)[1]. *Sirmium* was an important urban center near the *limes* and the road to the East. During the systematic excavations in 1961 and 1962, many pottery kilns were found: round, oval and round-oval, including a single rectangular brick kiln. All the kilns were rather well preserved. In some of the kilns there were found pottery fragments that included shreds of pots, bowls, plates, jugs, amphorae, dolia, lamps etc., made of gray, red-gray or yellow clay. Such pottery types mostly belong to the late Antiquity.

Sirmium's (Fig. 2) extraordinary strategic, administrative and political position (near the *limes* and the capital of Roman Pannonia in late Antiquity), its location on the Imperial road and on one of the most important fluvial routes permanently stimulated all economic branches, including pottery production. Due to the connections to other Pannonical pottery production centers and to production centers in the neighboring provinces (Dalmatia, Moesia, Dacia), but also to distant provinces like Italy, Gallia, Germany or other Mediterranean provinces, trade flourished under various influences, infusing a specific character to Sirmium pottery.

Sirmium, rich in good Sava clay and with a long tradition of prehistoric and protohistoric potters, thus became an important pottery production center itself. The vicinity of Sava Valley and its swampy surroundings represented a good environment for pottery production. To this we must add the thick forests around Sirmium, which provided the necessary wood for the potters. In the vicinity of the great necropolis alone, 28 pottery kilns were found during the excavations. In order to prevent fires, the pottery kilns were built several hundred meters away from the eastern city wall, in the vicinity of the Čikas stream and Sava

[1] Vikić-Belančić 1970, 31.

River. Nowadays, the course has been altered, but the river used to flow just next to *Ciglana*, where several kilns were discovered.

Between the road to Vinkovci (*Cibalae*) and the swamp, four more kilns were found. Almost all the discovered kilns have a round base, measuring 2 m in diameter. They are made of clay with straws and hay. The chamber is divided in two and its openings are approx. 1 meter long and 0.7 m wide. The dividing wall served as support for the firing plate, provided with round holes, about 5-10 cm wide. In order to optimize the temperature, some of the openings were obstructed with pottery fragments during baking. According to their construction, it appears that the kilns were rebuilt every season and did not have long lasting character[2].

One of the kilns is a recent find (Fig. 3); it was dug 3.3 m deep under the town's western wall from the late period and provides us with important data for better understanding the pottery production at Sirmium during the Early Period of the Roman Empire. The kiln is almost perfectly round, with a diameter of 1.40 m and a 1.6 m tall domed roof. The opening, facing west, is 0.7 m wide and 1 m long. From the northern and southern side of the fire place, next to the wall, there are two rectangular pillars on each side, made of moulded pieces of mud. The bottom of the fire place is made of mud and small irregular pieces of stone. The opening of the fire chamber was filled with a 10 cm thick layer of mortar. These pillars support the firing plate, which is 10 to 13 cm thick, with eight holes along the edge, where the plate meets the dome. The holes are of irregular round shape, with a diameter of approx. 3 cm. The distance between them varies from 11 cm up to 26 cm. The kiln was found filled with pottery. One part, that contained several entirely preserved vessels, was found on the roast, while the other fragmented part filled the fire chamber. Since the kiln was full of pottery, it is clear that it was abandoned during the process of producing pottery. It is most likely that the firing plate broke due to extreme heat, causing damage to the kiln and the pottery inside it. From the moment it was abandoned, it was never renewed. On its place, new architectural objects were built[3].

Systematic preventive excavations at Vranj[4] (Fig. 4), Krčevine and Hrtkovci confirmed the existence of pottery kilns and pits with rich material from the end of the 1st to the end of the 2nd century. Two pottery complexes were examined – the kilns (I, II) in area 33, remains of pottery kilns (sections 28-31) and four pits with rich ceramic material in the site at Vranj and on the right side of L. Ribara street in Hrtkovci. At the Krčevine site (sections 32), fragments of walls have been examined, indicating the existence of early-Roman objects. The finds from the cultural layer indicate a late Roman settlement and a necropolis[5].

The most numerous objects from both Gomolava Plateaus (Fig. 5) are kiln remains that were found in the first soil layers, fragmented, with remains of construction imprinted in burned red clay, as well as floor remains. Most of the lower dome parts have been preserved, as well as firing plates and kiln floors of round or oval shape[6]. Here, the Romans used Celtic kilns for pottery production.

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2 Premk 1993, 15-17.
3 Premk 1992, 364.
4 Dautova-Ruševljan 1991, 44.
5 Dautova-Ruševljan 1999-2000, 167.
6 Dautova-Ruševljan, Brukner 1992, 11.

The most eastern finding place in this part of south Pannonia is Progar[7], near Zemun (Taurunum). In 1967 and 1968, during systematic excavations, several pottery kilns, a large brick kiln and a pottery workshop were discovered. In the brick kiln, bricks with the "Classis Flavia Pannonica" stamp were produced. Inside the kiln, there were vessels in situ and in the workshop building there were probably two sherds of unfinished lamps and some faulty goods. In the same site, fragments of moulds for relief decorated vessels were found. According to the numismatic finds from this site, the entire complex could be dated to the 4th century.[8]

Besides these important pottery production centers of the eastern confluence, there were other smaller or bigger production centers, of which we only know little information. Apart from the above mentioned kilns in Brest by Beska and in Progar by Zemun, several kilns were also found in Dalj (Teutoburgium), Surduk (Rittium), Novi Banovci (Burgenae), Surcin and Sotin (Cornacum). Future investigations will certainly cast more light on the pottery production in south Pannonia.

In ancient *Emona* (in Slovenia), there was a larger pottery production center, although finds of kilns are rare. It is known that the pottery production center spread along the road to Poetovio (Ptuj), since there is a great number of finds of pottery kilns, moulds or malformed vessels in this area.

Among the older finds there is a small round kiln from Donja Hajdina; in its vicinity, pottery fragments and a mould were discovered. The material could not be accurately dated.

In 1962, in Osek bei Gradišče in the Slovenian hills, a severely damaged round pottery kiln was discovered. Some fragments were found inside it and also near the waste pit, most of them belonging to pots and bowls. All the finds can be dated from the 1st century to the end of the 2nd century.

On the territory of modern Croatia, there are also numerous pottery kilns, but most of them are accidental finds without adequate documentation. Typical is the case from Siscia (Sisak), which was undoubtedly the biggest pottery production center in south Pannonia.

In Sisak a square pottery kiln was found, but it was not fully excavated or documented, therefore not accurately dated. The kiln was 3.15 m long, and the width of 1.80 m was incomplete. Within the layer of clay, bricks measuring 40 × 30 cm were placed, so that they built a platform with holes, each measuring 10 cm².

In ancient Mursa (Osijek) there were surely many pottery kilns, although finds are rare. The only known discovery was made in 1935, when two pottery kilns were found during the construction of a modern leather factory. Next to the kiln, pottery fragments from the Early Empire were found.

Intensive pottery production was ascertained in *Cibalae* (Vinkovci) by the discovery of a great number of pottery kilns. The oldest finds were not accurately documented, although many of the modern finds were also accidental and therefore also not properly documented. Most of the kilns were discovered along the Bosut river bank – eight round poorly preserved kilns of different sizes. Inside and around the kilns there were fragments of usual pottery types that dated to the 3rd and 4th century.

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7 Dimitrijević, Progar, Zemun 1967, 98.

8 Vikić-Belančić 1970, 32.

Several other kilns were discovered in different areas of the town, all of them poorly preserved and poorly documented. According to pottery fragments found inside them, they could be dated to the 2nd and 3rd centuries.

After listing the pottery production centers in south Pannonia down to the Sava River, we can conclude that the most common pottery kiln type was round or round-oval. They were usually dug into the soil and made of clay. Rectangular kilns, made exclusively for production of vessels, were not found in this area.

The basic principle of all the kilns was that the fire chamber and pottery chamber were divided by a wall. In such conditions, vessels never came in direct contact with the flames. Most of the kilns consisted of two separated kidney-shaped spaces that are sometimes equal and sometimes of different sizes. The bottom of the fire chamber consists mostly of clay, but in some kilns the floor is made of bricks. In some cases the dividing wall is so tall that it separates the opening in two as well, but for most of the kilns the wall is just tall enough to reach the opening without dividing it. In some kilns there are openings opposite the firing opening that serve for directing the smoke outside the kiln. The fire chamber is in most cases separated from the upper kiln part by a plate with holes, through which hot air flows and bakes or dries the vessels. Such a plate is supported on both sides of the kiln and also in the middle by the separating wall of the fire-place. Therefore such a plate is always thicker on the margins and in the middle. Plates were made of clay and had round holes, each measuring 5 cm. For most of the plates, the openings are of different sizes, they are not evenly or systematically placed along the plate. Sometimes pottery fragments were found in some of the holes, and were used to close certain holes and thus regulate temperature and heat flow. Regarding the brick kilns, there are two types. The first type has channels in the fire-place, i.e. a bowed chamber with holes that allow the heat flow. The second type, just like pottery kilns, has a horizontal dividing plate with rectangular or round holes.

According to V. Vikić-Belančić's typology, all the kilns found in Cibalae belong to the round kiln type[9]. This type is the most common and the most spread compared to other types of pottery kilns. Such type appeared in the 2nd century and lasted until the 4th century. There are five such kilns known from Sirmium, dated to the 3rd and 4th century. In the Roman city of Cibalae[10], a great number of pottery kilns from South Pannonia was found, dating from the 2nd to the 4th century[11]. Accurate dating of such kilns is not possible, but they are undoubtedly of Roman origin.

According to P. Petru's typology, our kilns would belong to his type "C", i.e. to the more developed type with a supporting wall[12].

Similar types of kilns were found at Lavoye[13], which is known for the production of Gallic *terra sigillata* and in Rheinzabern[14], where they were used for the production of German *sigillata* in the 1st and the 2nd century.

9 Vikić-Belančić 1970, 39.
10 Šaranović-Svetek 1980, 19.
11 Vikić-Belančić Beograd 1970, 39.
12 Petru 1976, 227-228.
13 Chenet, Gaudron 1955.
14 Ludowici 1901-1905, 164, Abb. 46.

In P. Petru's kiln typology, we can recognize three kiln types found on the above-mentioned territory[15]: a) open firing kilns with; b) updraft kilns and c) kilns with a roast and horizontal air flow; also, according to their ground plan, kilns can be round or rectangular.

The original way of baking vessels was in open firing kilns. According to H. Crisan's researches in Dacia, this kiln type was equipped with a horizontal plate made of stamped clay. Such kilns, although covered, were found in Gomolava. The second type of kilns, with horizontal air flow, is known from Baska and Sremska Mitrovica.

The most spread kiln type was the one with horizontal air flow. Such kilns are known from Gomolava, Sremska Mitrovica, Progar, Štrbinci, Beška, Prilep, Vis, Fažana, Ptuj and Osijek, also, the type with supported roast is known from Sirmium, Mursa, Cibalae, Singidunum, Scupi, Certissa, Neviodunum and Progar.

On the territory of Upper Moesia, one of the active centers for pottery production and trade was developed in *Viminacium*[16] (Figs. 6-11). The existence of pottery production centers in this area was confirmed by discoveries of pottery kilns. Ten were discovered so far, thus making Viminacium one of biggest pottery production centers[17].

The majority is of round or oval shape, as transmitted from the Iron Age. Compared to the older ones, Roman kilns are bigger and of better quality. This is the most usual and numerous type of kiln that appears not only in Moesia Superior[18], but also in other neighboring provinces from the 2nd to the 4th century. Among the authors of kiln typologies are B. Vikić-Belančić[19], V. G. Swan.[20] We rely on the typologies they established.

Kilns of this type were built of bricks, with a clay slip in several layers. This fact indicates that they were in use for a long period of time, as well as that they were repaired every now and then. There are also examples of kilns built on top of each other; thus, one fire chamber holder was used for several kilns. This is the case with one of the kilns (No. 5), which had a fire chamber holder that was repaired and rebuilt and served for three kilns.

So far, isolated pottery production centers have been established in several spots. Most of the kilns were found along the Danube, mostly in the Iron Gate region, mainly because of the more numerous excavations conducted in this area.[21]

At *Diana*, three kilns were found: one in section 13/80, next to the western wall and dated to the second half of the 4th century; the second one was discovered in 1981 in section 1/79, in the inner tower at the south-western corner, in the layers from the 4th century; the third kiln was found in section 45/84, quadrant 1, in the middle of the camp, containing material from the first half of the 5th century. At *Pontes*, (Fig. 12, 13) in square G/17[22] and in square L/12, two kilns of the same type were discovered, containing material from the second half of the 4th century. Kilns considered to be intended for pottery production and dated from the 4th century to the of Early Byzantine period were found at *Singidunum*[23], Ravna[24] and Boljetin[25].

15 Petru 1976, 227-228.
16 Raičković 2005, 6.
17 Jordović 1994, 95-106.
18 Cvjetićanin 2000, 245.
19 Vikić-Belančić 1976, 227-228.
20 Swan 1984.
21 Cvjeticanin 2006, 160.
22 Garašanin, Vasić 1987, plan X.
23 Kondić 1974, 73; Bjelajac 1982, 13.

The kiln found at Grabovica[26] could not be accurately dated, while the ones at Hajdučka vodenica[27] are of unknown purpose. In the villas in the vicinity of Mihajlovac, kilns and other objects intended for pottery production were found.[28] Craftsmen's centers with pottery and brick production kilns, some of which were still in use during the 3rd and in the 4th century, were excavated in Viminacium[29]. Except those from Viminacium, all kilns have oval or circular pits, with a round firing chamber, walls made of mud and a supporting pillar, often quite long, typical for the 4th century[30].

Except for *Viminacium*, which was a bigger production center, small scale production was conducted as follows: at small village estates[31], which in the 1st and the 2nd century were mostly built near cities and in late antiquity mostly in villages, but the latter was never the case in the area discussed in this paper; a certain production center was situated in Naissus; at the *Limes*, there were kilns at Grabovica, Hajdučka Vodenica and in some smaller sites, like the fortress from Hum[32]; possible pottery production at Ulpiana and Horreum Margi; two pottery productions centers: Viminacium-Margum and a smaller workshop in Singidunum; and a possible pottery production center at Kosmaj.

We can conclude that Pannonian pottery production reflects the rich style of 1st century Italian pottery, while the pottery produced in the provinces of the Lower Danube imitates Gaulish or East-Mediterranean examples. Potters from the eastern provinces were epigraphically confirmed in all the above mentioned sites, and we hope that the new investigations in the Iron Gates area will provide us with further important information on this topic.

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24 Kondić 1967a, 67.
25 Zotović 1982-1983, 220, pl. 3/2.
26 Paprenica, Grabovica 1986, 363.
27 Petrović 1969, 98; Petrović 1970, 55.
28 Aleksandorv 1983, 54, 58-60; Aleksandorv 1984, 27-29, 36.
29 Jordović 1994, 95-106.
30 Swan 1984, fig. 14.
31 Swan 1984.
32 Cvjeticanin 2006,171.

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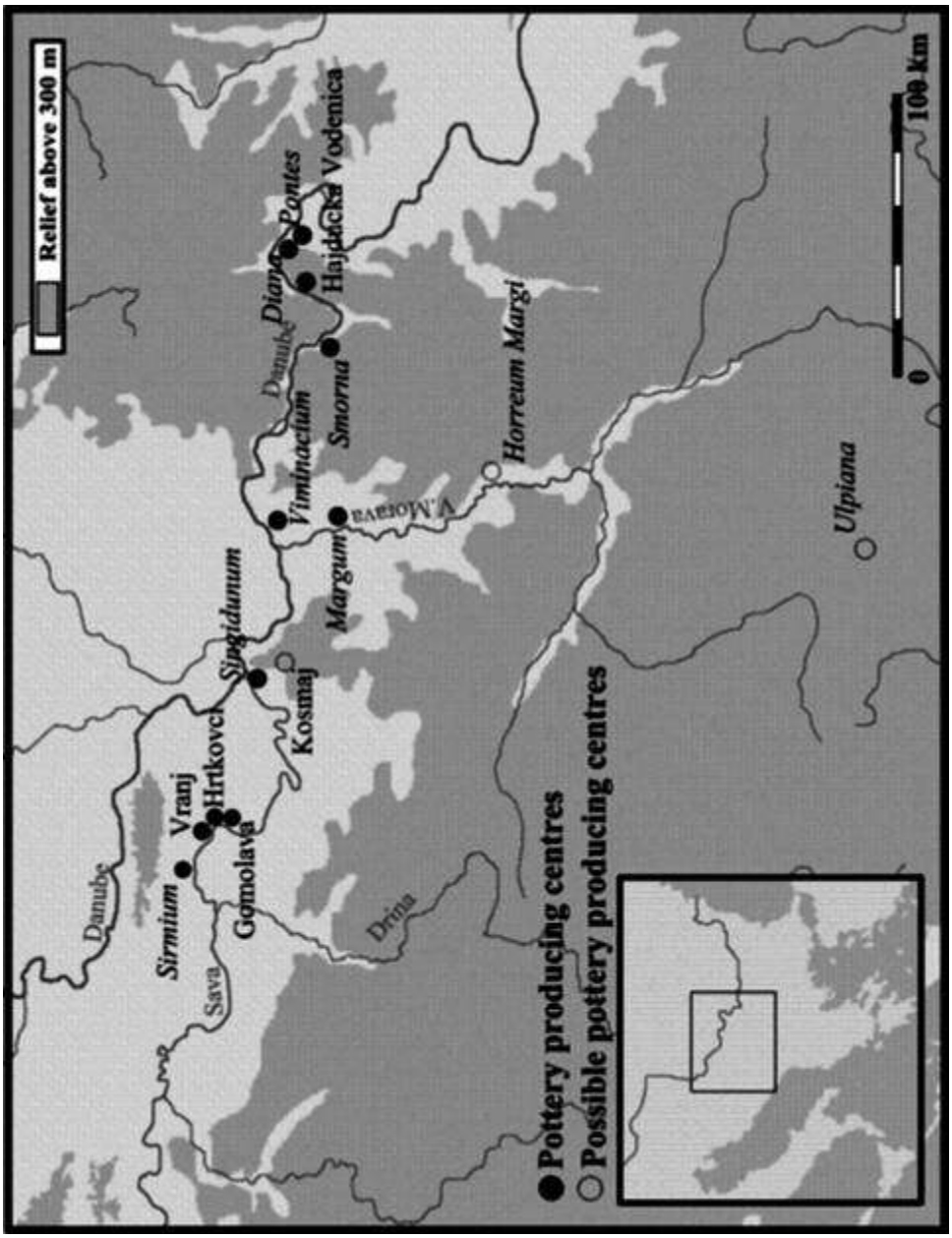

Fig. 1. Map of pottery producing centers in Pannonia and Moesia.

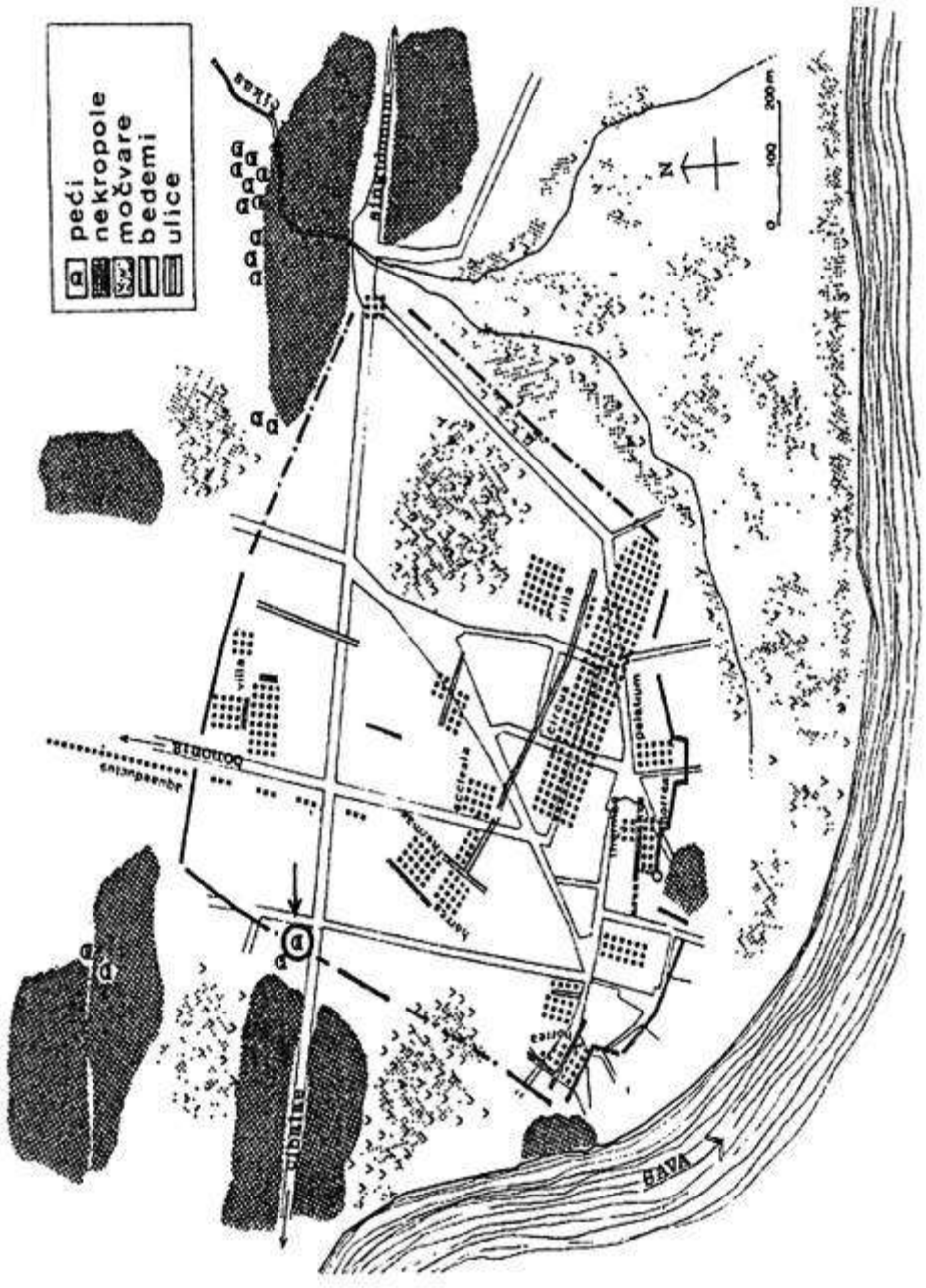

Fig. 2. Map of Sirmium (after Premk 1993).

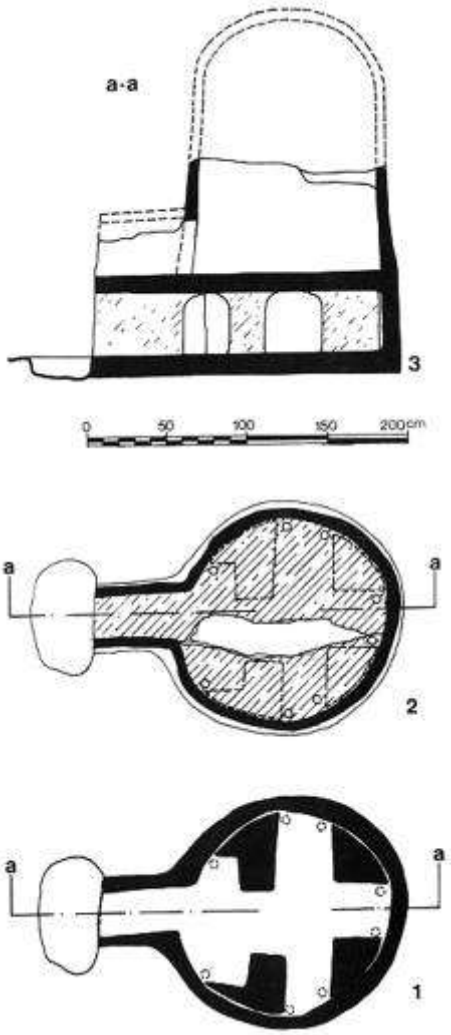

Fig. 3. Pottery kiln from Sirmium
(after Premk 1993).

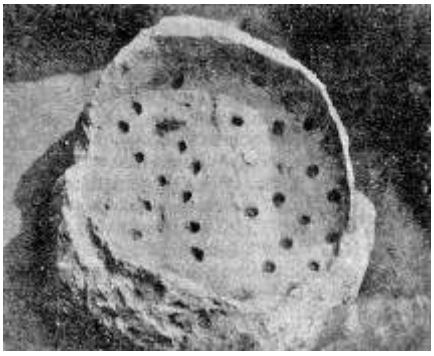

Fig. 4. Pottery kiln from Vranj
(after Dautova-Ruševljan 1991).

Fig. 5. Pottery kiln from Gomolava
(after Dautova - Ruševljan, Brukner 1992).

Fig. 6. Pottery kiln from Viminacium (after Raičković 2005).

Fig. 7. Pottery kiln from Viminacium (after Raičković 2005).

Fig. 8. Pottery kiln from Viminacium (after Raičković 2005).

Fig. 9. Pottery kiln from Viminacium (after Raičković 2005).

Fig. 10. Pottery kiln from Viminacium
(after Raičković 2005).

Fig. 11. Pottery kiln from Viminacium
(after Raičković 2005).

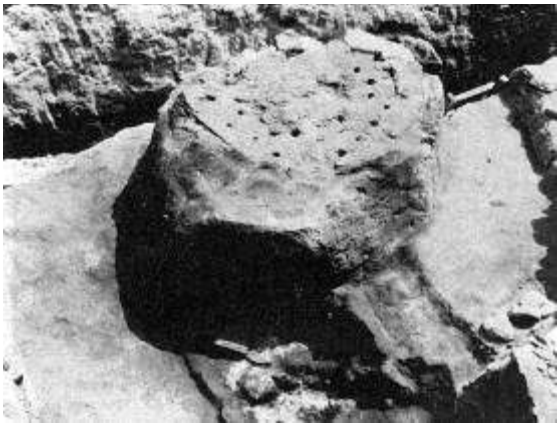

Fig. 12. Pottery kiln from Pontes
(after Garašanin, Vasić 1987).

Fig. 13. Pottery kiln from Pontes
(after Garašanin, Vasić 1987).