TIR-FOR (*Tabula Imperii Romani – Forma Orbis Romani*) and the landscape archaeology in northern Dacia. The case of Potaissa

Florin-Gheorghe Fodorean

Babeș-Bolyai University Cluj-Napoca

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**Abstract**

This study represents an overview of the settlement of Potaissa (today Turda, Cluj County, Romania). The first part of the study is a short introduction to the topic, while the following sections include a description of some essential aspects regarding the legionary fortress, the city, necropolises, ceramic workshop, aqueducts and the rural settlements around Potaissa.

**Keywords:** Potaissa, TIR-FOR, Roman Dacia, mapping archaeological sites, gazetteer.

1. **Introduction**

Defining the topography of a Roman city is conditioned by numerous circumstances. Important Roman cities such as *Aquincum*, *Vindobona*, *Mogontiacum*, *Argentoratum* and *Napoca* are now entirely or partially covered by modern cities, making research more difficult. Urban archaeology is about rescuing pieces from the puzzle. One must bear in mind that, during the 1970s in Western Europe and after the 1990s in Eastern Europe, increased investments in road constructions, the development of residential areas and the rise in the number of inhabitants, together with other causes, put tremendous pressure on heritage, resulting in a significant increase in preventive archaeological excavations in these affected areas.

The mission of an archaeologist is, in our opinion, not only to discover but also to protect. We must therefore act fast, and we must act now, to identify, map, digitise and promote our heritage. This is our mission, dictated by our conscience and legally sustained by the recommendations of the La Valletta convention and by each country’s legislation in the area of archaeology.

Potaissa is no exception. The history of the city begins with the Romans; before them, a Dacian presence is barely documented. The boom started in 168 AD, when *legio V Macedonica* was transferred here from Troesmis (Moesia Inferior) due to events related to the Marcomannic wars. Before 168 AD, Potaissa was a small *vicus* but the presence of the army led to the rapid development of the city. During Septimius Severus, it became a *municipium* and then *colonia*, possibly at the end of the reign of the famous African emperor.

The topography of Potaissa is a topic constantly focused on by historians (Fig. 1). Since the 1970s, or even earlier, elements of the former city were revealed due to different factors, such as rescue archaeological studies and terrain observations. Even so, we need more data to clarify some issues.

Current preventive archaeological research represents an important source of information for all these issues. This paper attempts to shed some light on the topography of the city, combining data obtained using digital technology, non-invasive methods to locate discoveries, old data

1. E-mail: fodorean_f@yahoo.com
from the 19th century and information based on archaeological excavations.

2. **POTAISSA. THE LEGIONARY FORTRESS AND THE CITY. A SHORT HISTORY OF THE ARCHAEOLOGICAL RESEARCH**

The fortress of *legio V Macedonica* was built on the hill known as “Cetate”, located in the western part of the current city (Fig. 2, Fig. 3). The legion was brought here during the Marcomannic Wars (ca. 170 AD) and it stayed here for almost 100 years. The legionary fortress from Potaissa (today Turda, Cluj County, Romania), known since the 19th century, was first archaeologically investigated in 1958. After an interruption of more than two decades, the archaeological excavations restarted in 1971 under the supervision of Mihai Bărbulescu and they continued, with no other interruptions, until 2019. During this period of half a century, several important internal buildings of the fortress were identified and entirely or partially excavated. These are: *porta decumana, porta principalis dextra*, the north–west bastion and a wastewater canal in its proximity, the curtain wall bastion on the western side, *via praetoria, via principalis*, the headquarters building (*principia*), the baths (*thermae*), the granaries (*horrea*), the *palaestra*, and the garrison’s barracks (*centuriae* partially unearthed in *praetentura sinistra, praetentura dextra, latera praetorii* and *reptentura*). Other buildings located in *praetentura dextra* were also partially investigated. Research in the civil area (*canabae*) was also carried out. Until now ten monographs have been published, of which eight focus on the legionary fortress and three on the city.

Preventive and systematic archaeological work was also carried out on different occasions, also within the territory of the former Roman city, nowadays covered by the modern one. The results of these investigations have been published in various articles and studies.

Of the most important buildings unearthed inside the fortress, the headquarters building (*principia*) is very important (Fig. 4). *Principia* were built facing the *via principalis* and centred on the long axis of the fortress. The headquarters cover a surface area of 0.899 ha, accounting for 3.8% of the entire area of the fortress (23.66 ha). The shape of the *principia* is rectangular (124.6 m, 125 m, the length of the northern and southern

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Figure 2. The fortress of *legio V Macedonica* at Potaissa. General view. Source: Bărbulescu *et alii*, 2020, 13, Fig. 1.

Figure 3. The fortress of *legio V Macedonica* at Potaissa. Plan. Source: Bărbulescu *et alii*, 2020, Fig. 3.

Figure 4. The reconstruction of the headquarters building at Potaissa. Perspective superimposed over the archaeological remains. Source: Bărbulescu *et alii*, 2020, 64, Fig. 79.
sides; 72.6 m and 71.8 m, the length of the eastern and western sides). A large opening of 18.90 m was left in the centre of the eastern side. The inner courtyard, without the porches, measured 41.50 × 73 m, occupying a total surface area of 3,029 m². With such an area, this seems to be the largest principia court among the legionary fortresses from the Roman Empire, surpassing even the court of the legionary fortress from Vetera, which measures 2,805 m².7

The fortress baths (thermae) were totally unearthed from 1993 to 2007.8 The baths are located in the praetentura dextra. The edifice has a maximum length of 73 m and a maximum width of 37 m. It has a total surface area of 1,850 m², accounting for 0.8% of the entire area of the fortress (Fig. 5, Fig. 6). The baths at Potaissa are relatively small compared to the large dimensions of the principia. The plan of the thermae at Potaissa is very similar to the plan of the baths from the auxiliary fort at Weißenburg (phase III), contemporaneous with the baths from Potaissa. The elements identified inside the baths are: 1. The frigidarium/vestibulum E (rectangular, 23 × 9 m), which occupies a central position, paved with bricks; 2. The semi-circular basin, which covered an area of approximately 38 m²; 3. The rectangular basin (7.60 × 4.10 m), open towards the frigidarium / vestibulum E; 4. A small, rectangular basin (255 × 130 cm) located in the south-eastern corner of the frigidarium E; 5. Room G (7.5 × 5.95 m) located south of basin F; 6. Latrina I, located near the entrance from the basilica, measuring, on the inside, 9 × 5.70 m; 7. Wastewater channel I; 8. The apodyterium (room N), measuring 9 × 9 m. This room could be entered from the basilica or from the frigidarium E; 9. The tepidarium-destrictarium (room M), a rectangular room of 8.90 × 9 m with a praefurnium located to the west; 10. Room L (tepidarium; laconicum?), located to the south, also rectangular in shape (8.95 × 9.10 m) and with a praefurnium to the west; 11. Room K (caldarium), measuring 12.20-12.30 × 9-9.10 m, located in the south-western corner of the baths; 12. Room I (frigidarium, then caldarium), situated in the south-eastern corner of the baths, measuring 9 × 12.50 m; 13. Room H, south of the frigidarium E, measuring 9.05 m × 4.90 m; 14. The basilica thermarum, initially measuring 19.30 × 9.20 m, located in front of the frigidarium E, enlarged during stage II to 29.60 × 10.34 m; 15. A palaestra without porticoes, situated parallel to the via praetoria, measuring 91.15 × 23.40 m.

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The baths were built in three phases: phase I (170-195 AD); phase II (195-211 AD); phase III (211-235 AD).

3. The internal roads of the city and the former bridge

The traces of the main imperial road are lost at the entrance to the city, in the north-west part of the current city. What we know is that the road avoided the hill “Cetate”. According to M. Bărbulescu, the road followed the route of the current roads Bariţiu – Dr. I. Raţiu or General Dragalina, or a route between these two current roads.9 Another proposal regarding the route of the former Roman road is to locate it towards the east, following the current roads of Clujului, Avram Iancu, then the central area with Republicii street, then reaching the current area of the 1 Decembrie 1918 street, and then Libertăţii street.10 Funerary monuments and graves have been discovered in several areas, including the streets Bariţiu, Libertăţii and Raţiu. In any of these two versions, the road passed through the area called today “Piata Romana”, located in the northern area of the Arieş River and in the southern part of the current city. From this point, the Roman road crossed over the rivulet Sând, then crossed the area of the Septimian municipium. M. Bărbulescu recorded that the road represented a cardo maximus for the Roman city, which is correct.11 After crossing the Arieş River, the road continued towards the south-east, crossing the so-called “industrial area” of Turda. The southern necropolis of Potaissa is located close to the route of the Roman road. Further on, the same road continued towards the current villages of Bogata and Călăraşi. It is mapped and indicated with the toponym “Drumul lui Traian” (“Trajan’s road”). After approximately 12 Roman miles from Potaissa, it reaches the Roman fort of Războieni-Cetate.

Like the former Roman city, the internal road network of Potaissa is obviously covered by the current city. However, some small sectors of these roads have been observed at times in different areas, such as the so-called “Dealul Zânelor”, or along the valley of the river Sând, or at the exit from porta principalis dextra.12 Regarding the Roman bridge across the Arieş River, nowadays its traces are lost but data about it have been known since the 19th century, when the Hungarian writer Orbán Balázs noted that he saw the ruins of the bridge at a distance of about 100 paces away from the former Bethlen mill.13 The building of this mill is still standing today and is located close the crossroads between the streets Panait Cerna and Alecu Russo. The ruins of the bridge were also observed in the terrain before the time of Orbán Balázs. In 1833, J. Ercesey observed, in the field, the remains of the sides of the bridge, together with other artifacts, fragments of columns and some capitals. We also know that, in 1882, these remains totally collapsed, and we know that 42 stone blocks were removed and used for different constructions within the city.14

4. The cemeteries of Potaissa

Potaissa is the only former Roman city where important discoveries, places with ruins and various artifacts have been systematically recorded since the 19th century. The biggest role was played by a school inspector of Hungarian origin, Téglás István (1853-1915). For 21 years, from 1894 until his death in 1915, he drew, noted, made sketches, bought and recorded ruins, wall foundations and artifacts, as a true pioneer of archaeology. He even started an archaeological collection. His hard work and passion resulted in 56 absolutely incredible diaries, full of notes and coloured drawings on maths paper. Based on these data, articles regarding the location of some sites were published.15 These diaries still exist today and, moreover, in 2005 Téglás’ great-grandson, Bajusz I., published them in a two volume monograph.16

Another important work published in the 19th century is the book by Orbán Balázs.\textsuperscript{17} Some information, mostly about artifacts, can also be recovered by analysing what was left from the collections and photographs made by Botár Imre.\textsuperscript{18} Other antiquities from Potaissa were collected during the 19th century by Count Kemény József (1795–1855) at Luncani (Cluj County), a village close to Turda where the Hungarian count owned a castle. Inscriptions from Potaissa are still visible today on the walls of the Reformed church in Luncani.

Roman graves in Potaissa have been uncovered since the 19th century. We owe this to Téglás István, who discovered and registered in his notes a series of Roman graves in 1895, 1902-1907 and 1911-1912.\textsuperscript{19} Then, during the last century, graves were discovered in some special circumstances, mostly due to rescue excavations.\textsuperscript{20}

In Potaissa, the archaeological evidence shed light on the location of two main necropolises. The biggest one is the southern cemetery, located on the right (southern) bank of the Arieş River, along the imperial Roman road Potaissa-Apulum (see Fig. 1). It is difficult to appreciate which are the limits of this cemetery. Still, it seems that the northern limit corresponds with the current area where the former cement factory was built. To the south and south-east, the limit might be the line of the imperial road. In the western part, the cemetery was extended towards the current village Mihai Viteazu. Discoveries of graves in this area were registered in several points, such as “Bodoc”, “Râutel Sânmihăienilor”, and “Uzina de apă”. Some graves were also discovered during the preventive archaeological work carried out in 2007 due to the construction of the Transylvanian highway. Comparing the number of the graves discovered within this cemetery (around 2/3 of the total number of graves from Potaissa), it seems that this necropolis was the main one in the city. The other cemetery, located in the western part of the former Roman city, is made up of several points, such as the hills “Şuia” and “Zânelor”, the valley of Pardei, the valley of the rivulet Sând and other small areas.

5. The aqueducts of Potaissa

An aqueduct (\textit{aquaeductus}) made of ceramic tubes brought water for the legionary fortress from the spot called “Izvorul Copăceniilor” today, south-west of Copăceni, in the border area of the Trascău Mountains, on the right of the current Turda-Petreşti road (Fig. 7). Another aqueduct supplied water to the city of Potaissa. Data regarding this aqueduct have been recorded since 1810, when a traveller, Moise Nicoara, recorded, in the village of Copăceni, the remains of the aqueduct.\textsuperscript{21} Few years later, M. J. Ackner and J. F. Neigebau mentioned traces of the same aqueduct.\textsuperscript{22}

At the end of the 19th century, Orbán Balázs presented the antiquities from Turda in a book. In a subchapter about aqueducts, he noted the position of the spring, the qualities of the water, the approximate route of the aqueduct and the possible existence of an aqueduct for the Roman legionary fortress on Zânelor hill. “From here, at a distance of one mile and on the hill above Copăceni, close by the road which goes to the mountain ("Drumul Mocanilor"), there is a corridor of stone where a rich spring called Şipotul (Cişmeaua) de Piatră (Kőcsorgó) is located, with a rivulet of water as thick as an arm, as cold as ice, which flows into a sort of stone basin. The Romans collected this from the beginning. They have stolen it from its riverbed, forced it to enter the pipes of the aqueduct and guided it to the Roman camp and the city of Potaissa”.\textsuperscript{23}

The aqueduct which supplied the fortress with water was identified at several points.\textsuperscript{24} About 70 m south-west of the road Turda-Petreşti and 40 m south of the road to Sânduleşti, in the autumn of 2007 during the excavation of a trench for a gas pipe, fragments from the aqueduct were discovered at a depth of 0.80 m.

\textsuperscript{17} Balázs, 1889.
\textsuperscript{18} Ardevan, Rusu, 1979, 387-409.
\textsuperscript{19} Bajusz, 2005, 855-894.
\textsuperscript{21} Bărbulescu, 1980, 285, note 17.
\textsuperscript{22} Bărbulescu, 1994, 68.
\textsuperscript{23} Balázs, 1889, Ch. 9, 51-53.
\textsuperscript{24} Fodorean, 2011, 99-101.
Two years earlier, in the winter of 2005-2006, when the works for the construction of the Transylvanian highway started, another water pipe was discovered, at the same depth and almost in the same place as the other one, around 130 m north-east of the highway. The pipe was found in one piece: 60 cm in length, external diameter 16.5 cm, internal diameter 12.5 cm. Three decades earlier, in 1978, to the west of the military fortress and close to the porta decumana, other pipes from the same aqueduct were discovered. These are identical in diameter; only the lengths are different (43 cm, 55 cm).

The same aqueduct was identified in gardens on the western side of the village of Copăceni. This point is situated south of the current road between Petrești and Turda.

The distance between the spring (“Izvorul Copăcenilor”) and the fortress is approximately 4,950 m. The altitude of the starting point of the aqueduct (caput aquae) is 525 m. The fortress is at an altitude of 375 m, so there is a difference in level of 150 m at 5 km; i.e. 30 m every kilometre. Assuming a ceramic pipe measured on average 50 cm, one can calculate that at least 10,000 tubes were needed to bring spring water to the fortress. Assuming maximum flow, the aqueduct would have brought around 2,600,000 litres daily into the fortress, this being very little for such a large number of soldiers and so many needs. It has been estimated that human consumption in the fortress needed a maximum of 12,500 litres/day while animal consumption needed around 18,000 litres of water/day. To this, we should add technical consumption, consumption by the valetudinarium, the individual baths of the officers, the latrines and the consumption by the baths. Therefore, the water requirements that can be estimated (drinking and cooking water, water to fill the basins in the thermae) do not surpass 150,000 litres/day. This is not so much but it merely represents the consumption of “static” water. The largest quantities of water were needed for the baths and this is the so-called “running water”. An estimate regarding solely the flow through the wastewater channel of the latrines indicates 0.0575 m³/sec.; i.e. more than 50 litres/sec., almost double the flow of the aqueduct. Therefore, the aqueduct was unable to provide all the water required by the fortress.

6. The pottery workshop

Starting in the 19th century, Téglás István recorded the existence of pottery fragments in two distinctive areas, called “Zâna Mică” and “Zâna Mare”. Moreover, he was convinced that,
at the foot of the “Zâna Mică” hill, and due to consistent discoveries, a pottery workshop had existed in Roman times. These assumptions and terrain observations made by Téglás have been confirmed by both older and more recent archaeological investigations. In 1964 six pottery kilns were identified on the south-eastern slopes of the hills “Zâna Mică” and “Zâna Mare”. More recently, other parts of the pottery workshop have been discovered: six kilns in 2005; a further six in 2006 together with waste pits and traces of constructions; and other discoveries in 2008. After the archaeological excavations carried out in the area of the hill called “Zânelor”, and the mapping of these discoveries, a firm conclusion could be drawn: two workshops were in operation in Roman times in Potaissa, in this area.

7. Some final remarks

It is important to locate and map the precinct wall of the city. Old sources mention that, in 1857 and due to some work, a 200 m long wall was discovered close to the old mill. Locating and mapping the precinct wall would also provide new data regarding the area covered by the former Roman city. The internal road network of Potaissa can be reconstructed based on both older and current data. Moreover, data concerning the former bridge have been known since the 19th century. In the future, it would be interesting to locate the Capitoline temple of the city. In 1856 several altars were discovered in an area which might indicate the existence of such a temple. Another difficult task is the location of the forum, since the current city covers the Roman city. There are also data regarding the existence of other temples in the city; for instance, an interesting altar dedicated to Saturnus, dated around 200 AD, might indicate the existence of a temple dedicated to the African divinity within the territory of Potaissa. There are also archaeological data regarding the location of at least one mithraeum. A colossal head of Mithras, together with his right hand, was discovered at a point called “Forduló” (“Furdulaşeni”). Another task in the future is to establish, more precisely, the residential areas of the former city. If mapped and precisely located, these many disparate discoveries could provide important information about the city’s topography. For example, we estimate that, in the area of the current streets Aroneanu, Cheii, M. Costin, P. Cerna, Zamfirescu, Bălcescu and A. Russo, there is a remarkably high density of discoveries, indicating the presence of some former domestic houses. A fragment of a Roman road, different artifacts (brooches, rings, bracelets, combs), fragments of altars, statues etc. are all discoveries which, after their mapping, will offer new insights regarding domestic life in Potaissa. But we need to put together all these discoveries, to map them and interpret the data obtained. Only by using this methodology will we be able to indicate the density of the inhabitation inside the city and in areas very close to it, like the so-called “Dealul Zânelor” (“The Fairy Hill”), “Piata Romană” (“the Roman square”), the valley of the river Sând, Sânduleşti street, etc.

Another important research topic for the future is to locate and excavate the amphitheatre. As yet, no indications have been uncovered regarding the existence of an amphitheatre but a city with circa 20,000 inhabitants would presumably have had such a place of entertainment.

Extensive archaeological investigations in the field will also enable us, in the future, to gather more data concerning the topic of territorium Potaissae.

Therefore, due to the contribution of amateurs like Téglás István but mostly due to constant archaeological work carried out since the last century, Potaissa has become one of the best known settlements in Roman Dacia in terms of artifacts, topography and other elements. Based on all these data, we could easily include Potaissa in the FOR part of the TIR-FOR project in the future.

Bibliography


BĂRBULESCU, Mihai; ANDONE-ROTARU, Mariana; BĂRBULESCU, Cornelia; BĂRBULESCU, Toma; CĂTINAȘ, Ana; FĂBIAN, Istvan; FODOREAN, Florin-Gheorghe; HUSZARIK, Pavel; Munteanu, Mihai; Neachea, Luciana; NEMETI, Irina; NEMETI, Sorin (2019). *Termele din castrul legionar de la Potaissa* (coord. M. Băbuliucu). Cluj-Napoca.


FODOREAN, Florin-Gheorghe (2013). “Roman Potaissa and its surroundings”. In: *Aerial Archaeology and Remote Sensing* — 141 —