THE ORIGIN AND DEVELOPMENT OF THE MAIN ROAD INFRASTRUCTURE AND THE CITY NETWORK OF ROMAN DACIA

Abstract: Our intention when we first started to write this paper was simple: to offer the readers the possibility to understand, using as example the province of Dacia, the capacities, the discipline, the genius and the organization of the Romans during and after the conquest of the north-Danubian territories. Dacia represents a very good study case because of several reasons. But one should notice that the difficulty of organizing such province relied on its position: north of the natural frontier, with a very long frontier itself (almost 1500 kilometers) (Fig. 1), with a diverse landscape, composed by plains, hills, mountains, rivers, some of these very difficult to pass. Not only the Romans succeeded to overcome these barriers, as in other cases too, but they planned, constructed and maintained a careful defensive system and an outstanding road network, which had as main element the so-called imperial road, in fact the main 'highway' of Dacia. This is the road which started from the Danube with two branches, Lederata-Tibiscum and Dierna-Tibiscum, continued towards the valley of the Bistra, heading to Ulpia Traiana Sarmizegetusa and then to Apulum, Potaisa, Napoca and Porolissum (Fig. 2). We managed to identify how the Romans planned and used this road. Therefore, we divided the points along this route in two categories: 1. Primary sites, located circa 72 to 80 Roman miles one from another. These points are: Berzovia; II. Ulpia Traiana Sarmizegetusa; III. Apulum; IV. Napoca; V. Porolissum), (Fig. 3); 2. Secondary, intermediate sites, generally positioned in between the points from the first category, at distance of circa 36 to 40 miles. These are: A. Varadía (Arcidava; B. Jupa (Tibiscum); C. Cigmău; D. Râzboieni-Cetate (Salingis); E. Sutoru (Optatiana?). We have used a similar method to that of Andrew Burghart for Pannonia to identify these points. The final remarks of our contributions represent a solid prove of the carefulness and accuracy of the Romans during the process of conquest and organisation of Dacia.

Keywords: roads, cities, Roman Dacia, organization, primary sites, secondary sites.

1. PREMISES. ROADS AND CITIES. DEVELOPMENT STRATEGIES IN THE ROMAN EMPIRE

Almost 40 years ago, in 1979, Andrew Burghardt published a valuable contribution about the origin of the roads and city network of Roman Pannonia.¹ It starts from the observation that "the pattern of the network was determined by the selection of basic strategic objectives,

¹ BURGHARDT 1979, 1-20; FODOREAN 2016, 46-47.
Studies

which were placed on specific sites of high military-transport potentiality. Analyzing the network genesis from Pannonia in close relation with the route network, the author was able to define an ‘impulse chain’ pattern, including six stages: 1. The so-called impulse generator, or, in other words, the decision-making centre. For Pannonia, the author considered Rome to be this centre, envisaged as the initiator of the decision to conquer new territories, to set up new roads and to create new cities. 2. To move forward, the author defined a link between the generator and the primary objective. This is the so-called base of operation. 3. In the third stage, Burghardt took into consideration the point from which the movement begins. This was perceived as the launching point. 4. The fourth strategic point was defined as the major crossroads of the province. 5. The fifth strategic point was considered the central crossroads; 6. The final point was identified as the primary or strategic objective, or the area towards which the roads are directed, normally located on the periphery of each province.

As far as Pannonia was concerned, the cities chosen as examples for each category are: 1. Rome, the administrative centre of the Roman Empire. 2. Aquileia, as the closest city to Pannonia. 3. Emona (modern-day Ljubljana) was chosen as the launching point. 4. The gateway was Poetovio (Ptuj). This was the place where in 69 A.D. Vespasian was elected Roman emperor by the Danubian legions; it was also the base-camp of legio XIII Gemina. Under Trajan, in 103 A.D., the settlement became Colonia Ulpia Traiana Poetovio. In the Antonine itinerary, the main roads of the province start from Poetovio. 5. The central communication node was Savaria. 6. The strategic objectives were Carnuntum (at the beginning of Roman occupation), then Aquincum. The third city, according to its strategic importance, was Brigetio. The fourth city in significance for the Romans was Vindobona. According to the author, in addition to these cities, other important centers developed over time, such as Arrabona or Scarabanza.

Our study will try to reveal if such model can be also applied for Dacia. We will take into consideration not only the presentation of the main arteries of the province, but also the interconnectivity between these primary strategic roads, and the origins and the development of new cities along these roads.

2. THE CONQUEST OF DACIA AND THE ORIGIN OF THE ROUTE NETWORK

Before the conquest of Dacia, Trajan had carefully prepared the invasion of the north-danubian territories, by accomplishing several things. The most important were, according to our opinion, the improvement of the road infrastructure from Pannonia and Moesia, in order to reach the areas close to the Dacian lands easily, and the inclusion, within his stuff, of important specialists in logistics and land measurement (the mensor Balbus, the architect Apollodorus), who were capable of organizing the new conquered territory.

On the right bank of the Danube, the construction of the road started during the reign of Tiberius. This artery was planned and built by two important legions: IV Scythica and V Macedonica, as proved by two inscriptions (one discovered in Gospodjin Vir and the other one in Boljetin) dated 33/34 A.D. The construction of this artery was finished during Trajan’s reign. The rock-carved inscription from Ogradena records the operations performed by the Romans to finish this road in 100 A.D. Also, the navigating conditions across the Danube Klisura were improved.

During this first campaign (101-102 A.D.) the Roman military units penetrated into the territory of the Banat using two roads, which rapidly became parts of the main artery of Dacia. The first was the road between Lederata (today Ram in Serbia) and Tibiscum (today Jupa in Caraș-Severin County). The second one was the road between Dierma (today Orșova in Mehedinți County) and the same Tibiscum. Besides the Trajan’s Column, where we find scenes depicting soldiers involved in the road building somewhere in Banat, the only available source for the reconstruction of the events happened during these wars is Trajan’s work, De Bello Dacico. But only one sentence has survived: inde Berzobim, deinde Aizii processimus (‘from there we advanced to Berzobis, and then to Aizis’). These two settlements are also recorded in the Peutinger map along the road Lederata-Tibiscum (the western road). Trajan’s sentence describes the advancement of the Roman army on this road built during the first military campaign in the western part of Banat. Most probably the emperor used the same simple style to present the settlements located along the advancement lines, and maybe also the distances between them, in the form of a written itinerarium. This knowledge could be easily transformed into an itinerarium pictum. Both these types of data were considered, even in the fourth century A.D., the most important sources of strategic and geographic knowledge, as it is suggested by Flavius Vegetius Renatus (ca. 400 A.D.), who recommended the use of depicted and written itineraries in his work De re military: ‘A commander must have itineraria written out, so that he might learn not only the usual information on distances but also about the condition of the road, and also so that, having had them accurately described, he might take into account shortcuts, branch-roads, hills, and rivers. So much so, that more ingenious commanders are claimed to have had itineraries of the areas in which their attention was required not so much annotated but even illustrated, so that the road for setting out on might be chosen not only by a mental consideration but truly at a glance of the eyes.’

8. BÂRBULESCU 1999, 34.
How accurate was planned the north-danubian conquest and the organization of the new territory? One answer is to be found in Balbus’ book on topography and geometry, entitled Expositio et ratio omnium formarum, dedicated to Alexandria in Egypt. The information which survived is essential for understanding the role played by surveyors during the expeditions against the Dacians: ‘After we entered enemy territory for the first time, Celsus, the operations of our emperor immediately began to require surveying skill. Two aligned straight lines (rigores) had to be established, with a defined width for the roadway between them… Through your invention the use of the ferramentum revealed these (lines), when part of the work had been brought into the line of sight. In respect of the survey of bridges, we were able to work out from the adjacent bank the width of rivers, even if the enemy wished to launch repeated attacks. Furthermore, that skill venerated by the gods showed us how to work out the height of mountains that had to be stormed. After it had been tested in the great events in which I had participated, I began to cultivate this skill more devoutly, as if it were worshipped in all the temples, and hastened to complete this book as if I were fulfilling a vow.’

Using land measurements, and geometric methods, with the help of the mensores from legions, Balbus established the path of the roads and the location of the future forts. During the military campaigns, he coordinated the building of the roads necessary for the troops to advance and the forts to accommodate the soldiers of the legions and the auxiliary troops. At the end of the first military campaign the region of the Banat came under Roman control. The forts from Vârădia, Surducu Mare, Berzovia, Fârlău and Cornuțel were built along the western road. The forts from Dierna (today Orșova, Mehedinti County), Mehadia and Teregova were erected along the eastern branch (Fig. 1). From Tibiscum, the most important crossroads in Banat, the main artery headed along the valley of the River Bistra, through the Iron Gates of Transylvania, towards Ulpia Traiana Sarmizegetusa. At Zăvoi, between Tibiscum and Ulpia, a fortress was also erected. Leaving aside the period from 103 to 105 A.D., when Apollodorus surveyed the construction of the longest bridge in the Roman Empire, between Drubeta (Drubeta-Turnu Severin, Romania) and Pontes (Kladovo, Serbia), another key aspect in this discussion is the Balbus’ presence in Dacia for a year, after the conquest of the province in 106 A.D., to organize the new conquered territory, together with the governor of the province.

After 106 A.D., the legio XIII Gemina at Apulum (today Alba Iulia, Alba County) and the legio III Flavia Felix at Berzobis (today Berzovia in Banat) were garrisoned in Dacia. It is important to emphasize that both were strategically placed on Dacia’s main Roman road, exactly 72 Roman miles south and north of the Dacia’s main city, Ulpia Traiana Sarmizegetusa. This proves that accurate measurements along roads were made from the beginning of the Roman presence north of the Danube. These data were grouped into written or painted itineraria, first used by the army.

Therefore, Dacia was finally conquered and it became a Roman province. Quite rapidly, as we will see below, the Romans succeeded to finish the construction of the main artery of the province, its so-called ‘highway’. Starting from the Danube, this road crossed the region of Banat with its two branches (Lederata-Tibiscum and Dierna-Tibiscum), heading towards Ulpia Traiana Sarmizegetusa and then to Apulum, Potaissa and Napoca, ending in the northernmost point of Dacia, Porolissum. The total length of this road is of circa 450 km. The next step, happened in the next decades, was to choose the location and to build the future cities. All the major cities of Dacia (Dierna, Tibiscum, Ulpia Traiana Sarmizegetusa, Apulum, Potaissa, Napoca and Porolissum) are located along this road. Also, the legions which defended the province were garrisoned along this artery. The crossroads of Dacia was Apulum. The major part of the villae rusticae is located along the same road, close to these major cities. The same artery was depicted in the Peutinger map.

3. THE MAIN ARTERY OF DACIA REFLECTED IN THE EPIGRAPHIC SOURCES AND IN THE PEUTINGER MAP
How rapidly did the Romans erect the main road in Dacia? The answer is to be found in the text of the inscription of the milestone discovered in 1758 at Aiton (Cluj County), today lost. This small village is positioned between Potaissa (Turda) and Napoca, exactly 10 miles (14.785 km) north of Potaissa. Recent research has shown that during Roman times, a mansio was established on the territory corresponding to the current village, precisely in its northern part, very close to the main road. A rural settlement also developed here, documented by the discovery, in many places, of wall substructions, coins, and ceramic fragments. The milestone is outstandingly important for the history of Dacia. It demonstrates how fast the Romans fulfilled their task of organizing the road network into the new conquered territory. Also, the final formula from the inscription, a Potaissa Napoca, represents the first epigraphic evidence of Potaissa and Napoca. Another essential aspect is the mentioning of cohors I Flavia Ulpia Hispanorum milliaria civium Romanorum equitata as the military unit which built this military road or at least the sector located between the two settlements recorded above. The troop participated

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13 A discussion about their contribution to the organization of the new province and their topographic skills in FODOREAN 2016, 32-33. Also BAATZ 1984, 315-325 (for mensores recorded in auxiliary units); SHERK 1974, 546-551; for more general aspects NICOLET 1991, 151-157; MARCU 2009, 23.
14 NEMETH/FODOREAN/MAȚEI/BLĂJAN 2011, 56, and figs 18, 120, 19, 121, figs 41, 142.
15 O’CONNOR 1993, 142-145 (no. T13); GALLIAZZO 1994, 320-324 (no. 646); ĆUČKOVIĆ, MIHAILOVIĆ, KAROVIĆ 2007, 119-130.
in the wars against the Dacians and after 106 A.D. it was garrisoned at Orheiu Bistriței (Bistrița-Năsăud County), along the north-eastern frontier.21

How the new roads, settlements and distances were recorded? Obviously, the Peutinger map is the only document which enables us to affirm that right from the beginning of the first war, continuing with the second campaign, and immediately after the conquest, this new road network was registered with great accuracy in military itineraries. Such documents were used afterwards to compile, during the fifth century A.D., the so-called Tabula Peutingeriana.22

The segments VI and VII include data about three roads in Dacia: Lederata-Tibiscum, Dierna – Tibiscum – Sarmizegetusa – Apulum – Napoca - Porolissum and Drobeta – Romula – Caput Stenarum - Apulum.23 The settlements Tivisco, Sarmategte, Apulga, Napoca and Porolissus are indicated by double-tower vignettes. A special vignette, indicating a thermal place, is represented at Ad Aquas.

All these three roads were of great importance. The main one is the so-called imperial road, from the Danube to Porolissum. The second is a sector connecting Drobeta with the valley of the River Olt. The third road is a strategic sector built along the valley of the River Olt, from Romula to Apulum. For our discussion, we are interested in the first road. Along it, the following distances and settlements are indicated: 1. Segmentum VI 2: the road between Lederata and Tibiscum: Lederata-XII (Roman miles); Apus flumen-XII; Arcidava-XII; Centum Putea-XII; Berzobis-XII; Aizis-XII; Caput Bubali-X; Tivisco (depicted by a vignette). Eight settlements are mentioned as well as a total distance of 73 Roman miles; 2. Segmenta VI 3 and VII 1: the road between Tierva and Porolissos: Tierva-XI (Roman miles); 2. Segmentum VII 2: the road between Lederata and Tibiscum: Lederata-XII (Roman miles); Ad Mediam-XIII; Pretorio-IX; Ad Fannoniae-IX; Ganganis-XI; Masclanias-XIII; Tivisco-XIII; Agnavia-VIII; Ponte Augusti-XV; Sarmategte-XIII; Ad Aquas-XIII; Petris-VIII; Germizera-VIII; Blandiana-VIII; Apulga-XII; Brulca-XII; Salinis-XII; Potavissa-XXIII; Napoca-XVI; Optatiana-X; Largiana-XVII; Cersie-III; Porolissus. Twenty-four settlements are indicated as well as a total distance of 270 Roman miles.

4. MENSORES AT WORK: MILITARY STRATEGIES AND GEOGRAPHICAL KNOWLEDGE. FORTS, CITIES, AND DISTANCES ALONG THE ROAD LEDERATA/DIERNA – TIBISCUM – POROLISSUM

Recently we have concluded that the military roads indicated on the Peutinger map represent the lines of advance taken by the Roman marching columns during the Dacian wars.24 The forts and stations built right after the conquest replaced the provisory ones built by the army during the military campaigns. All the specialists involved in the organization of the new province relied on the capability of the legions to build roads and fortresses, coordinated by mensores and using terrain reconnaissance mainly performed by exploratores. During the conquest of the Dacian territories, the Romans applied an extraordinary military strategy. This is noticeable when we analyze the distances between the stopping points, which in many cases is 12 miles (sometimes 13, 11 or 9).25 Such value is smaller comparing with the indications from ancient sources, which record an average distance to be covered in one day of 20 Roman miles, but this did not apply to times of military campaigns,26 only during training.

Therefore, how was Dacia ‘measured’ and organized?

4.1. The decision making center

Obviously, as in the case of Pannonia, this was Rome, and also the desire of several Roman emperors to conquer the regions north of the Danube. During Augustus’ reign, this was only an idea. Domitian actually tried to gain control over the north-Danubian territories, but he failed.27 Trajan succeeded to conquer Dacia. The humiliation of Domitian’s military campaigns was erased.

4.2. The base of operation

In our case, this was Singidunum. Marked on the Peutinger map with the usual double-tower vignette, the settlement was also attested by this toponym in Ptolemy’s Geography. The topography of the site includes a legionary fortress, the municipium and colony Singidunum, the necropoleis and the territory belonging to the settlement (ager Singidonensis).28 The legionary fortress today completely overlaps with the medieval and Austrian fortification of Belgrade, on the grand plateau called ‘Kalemegdan’.29 In 86 A.D. the legion III Flavia Felix arrived there. Its presence determined a rapid development of the settlement. The fort was erected exactly at the point where the Sava flows into the Danube.30 Research was carried out there after the Second World War, in 1953, 1960, 1963–1964, 1968, and 1971–1973.31

4.3. Stopping point, crossroads, forts and cities along the main road of Dacia

We have often highlighted that the Roman road Lederata/Dierna – Tibiscum - Porolissum was the most important artery in Roman Dacia.32 Of 11 municipia or coloniae attested in Roman Dacia, the following seven are located along the main artery of the province (from south to north) (Fig. 2): Tibiscum, Ulpia Traiana Sarmizegetusa, Apulum I and Apulum II, Potaisa, Napoca and Porolissus.33 In Dacia three legions were garrisoned: 1. In Apulum, legio

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22 The entire discussion about the role, purposes, the dating of the Peutinger map, and the roads depicted in Dacia, together with a detailed presentation of the history of research and bibliography in FODOREAN 2016, 41–43 and 83–100 (chapter 6: Dacia in the Ancient Geographical Sources).
23 I did not illustrate in this study the section from Tabula covering the territory of Dacia. The entire itinerary, including the complete alphabetical list of all the settlements in the Peutinger map, can be easily consulted in R. Talber’s database, online, at: http://cambridge.org/us/talbert/index.html.
24 FODOREAN 2016, 95.
27 FODOREAN 2016, 23.
28 BOJOVIĆ 1996, 53.
29 BENEA 1983, 159.
31 GUEDEA 2001, 50, with all the bibliography.
32 FODOREAN 2016, 84-91.
33 Dierna and Drobeta are located along the Danube River, Romula along the valley of Olt and Apulum along the valley of the river Aampoi, west of the main imperial road, close to the core of the Apuseni Mountains, where Alburnus Maior is located.
XIII Gemina, from 106 to 271 A.D.; 2. In Berzovia, legio III Flavia Felix, from 106 to 117 A.D.; 3. In Potaissa, legio V Macedonica, from 168 to 271 A.D. All these three fortresses are located along the same main artery of Roman Dacia.

What is important for our discussion? Along the main imperial road Lederata/Dierna-Tibiscum-Porolissum, we think that the Romans established with accuracy several strategic points, according to primary measurements executed during the military campaigns and immediately after the conquest of Dacia.

We divided these points in two main categories:

1. Primary sites, strategically outstandingly important, positioned circa 72 to 80 Roman miles one from another. These points are: I. Berzovia – fortress of legio III Flavia Felix, garrisoned here from 106 to 117 A.D.; II. Ulpora Traiana Sarmizegetusa – legionary fortress in the first phase, from 102 to 106 A.D.; III. Apulum – fortress of legio XIII Gemina, garrisoned here from 106 to 271 A.D.; IV. Napoca – municipium during Hadrian’s reign; V. Porolissum (today Moigrad, Sălaj County), the northernmost site of Dacia, located on the frontier, where several troops were garrisoned in a large auxiliary fort positioned on the Pomet Hill (Fig. 3);

2. Secondary, intermediate sites, generally positioned in between the points from the first category, at distance of circa 36 to 40 miles (half of the distances in between the first category of points). In our opinion, these are: A. Vârădia (Arcidava?), where two auxiliary forts were identified; B. Jupa (Tibiscum), an important crossroads, where the two branches of the imperial road intersect. An important fort is attested here; C. Cigmău (close to Germisara, Hunedoara County), where an auxiliary fort was erected; D. Râzboieni-Cetate (Salinis); E. Sutoru (Optatiana?)

In the following, we will describe and analyze this pattern.

4.4. Primary sites

4.4.1. Berzovia

It was the garrison of legio III Flavia Felix, which was brought in Dacia from Singidunum in Moesia Superior to fight against the Dacians together with Trajan. There is a strong possibility that this legion remained after the first war north of the Danube, on the spot where the future Colonia Traiana Sarmizegetusa was built. After the end of the second Trajanic war in 106 A.D., the legion built a fortress in Berzobis (today Berzovia, Caraș-Severin County), of 490 x 410 m, with a precinct made of earth and a wooden palisade.34 Although researches have been made here with several occasions,35 the inner topography of the fortress is still, in some parts, unknown, except the location of the principia and other elements of its defensive system. At the beginning of Hadrian’s rule, the legion was sent back in Moesia Superior.

Beside lack of data regarding the internal topography of the fortress, the most important aspect for our study is the analysis of the location of this important strategic objective. Berzobis is located along the first road depicted in the Peutinger map, the road between Lederata and Tibiscum (segmentum VI 2): Lederata-XII (Roman miles); Apus flumen-XII; Arcidava-XII; Centum Putea-XII; Berzobis-XII; Aizis-III; Caput Bubali-X; Tivisco (depicted by a vignette).

Therefore, from Lederata (Ram, Serbia) to Tibiscum (Jupa, Caraș-Severin County, Romania), the Peutinger map marks seven settlements and six distance figures. This road was traced, constructed and used by the Roman armies led by Trajan in the first military campaign (101 A.D.). It was the road followed by Trajan, as he states in his De Bello Dacico: Inde Berzobim, deinde Aizi processimus (‘From there we advanced to Berzobis, and then to Aizis’). Along this road, five distance figures out of seven have the value of 12 miles, one of three miles and one of ten miles. The total distance (73 miles – almost 108 km) is correct if the locations proposed are correct as well. So far, we know little about the location of these intermediate points. Apus flumen was identified with the river Caraș. The next stations were hypothetically located as follows: Arcidava (Vârădia?); Centum Putea (Surdulu Mare?); Berzobis (Berzovia); Aizis (Fălărci?); Caput Bubali (Cornuțel?); Tivisco (Jupa). There is, however, one mistake. Between Aizis and Caput Bubali only three miles are depicted on the Peutinger map. If there were not only III, but also XII miles, the stretch would fit the current distance between Fălărci and Cornuțel. Such a mistake could have occurred when the medieval copyist transposed the information from the original. In that case, this segment renders a total distance of 83 miles, which equals 122.7 kilometers.

4.4.2. Ulpia Traiana Sarmizegetusa

Founded immediately after the conquest of Dacia, but not earlier of 108/109 A.D.,36 Colonia Traiana Augusta Ulpia Dacica Sarmizegetusa was the first colonia deducta of Roman Dacia. The city with an estimated population of 20,000 inhabitants was the headquarters of the financial procurator of Roman Dacia and also benefited of ius Italicum. It was the administrative, financial, political and cultural metropolis of Dacia. In fact, it received the epithet metropolis during the reign of Severus Alexander. In had a total surface of 32.4 ha (600 x 540 m) intra muros. Archaeologically, several important buildings were discovered in Ulpia: the forum, the praetorium of the financial procurator, an amphitheatre, a schola gladiatorum, and several temples. The first Capitolium of the province was erected here.37 But again, for our discussion, the most important aspect is the fact that the city is located circa 72 Roman miles from Berzovia and 72 miles away from Apulum. Therefore, the most important settlement of Dacia was located half-way between the two legionary fortresses erected in Dacia during Trajan. G. Cupcea has already commented upon the strategic reasons which determined the Roman to position their colonies close to the legionary fortresses by the time of Trajan.38

34 OPREANU 2006, 68, believes that legio III Flavia Felix was garrisoned in Berzobis from 101 A.D. (the beginning of the first Trajanic war) until 117 A.D. (end of Trajan’s reign), in a fortress with a wooden principia, rebuild in stone.
36 See a detailed presentation of the debate around this aspect in OPREANU 2016, 205-226.
37 PIȘO 2010, 269-278.
38 CUPCEA 2011, 250.
4.4.3. Apulum

Apulum was the most important crossroads in Dacia. Several roads converged in the city: 1. the road connecting Dacia with Pannonia along the river Mureș towards Partiscum (today’s Szeged, Hungary); 2. the roads along the valleys of Târnava Mare and Tîrnava Mică; 3. the road leading to the gold district, in the Apsuene Mountains, at Alburnus Maior (Roșia Montana). The Peutinger map shows the main road at Apulum as well as the road which connects Drobeta, via Romula, to Apulum, along the valley of the river Olt. The settlement is represented by a vignette. Apulum was the headquarters of the legio XIII Gemina from 106 to 271, when the province was abandoned. The city flourished during Marcus Aurelius’ rule, when the initial pre-urban nucleus (in the southern part of the current city) became a municipium. Under Commodus the settlement turned into colonia Aurelia. At the beginning of the third century A.D. the colony received ius Italicum. The rest of the city developed close to the fortress, on Cetate Hill, and under Septimius Severus it became municipium Septimius Apulense and then colonia under Traianus Decius.

These two cities, together with the military fortress, formed the biggest and the most important settlement in Roman Dacia. With an estimated population of ca. 35,000, Apulum was also the headquarters of the consular governor of Dacia. Commercial traffic developed along the river Mureș, and a harbour was constructed to handle all the settlement’s activities. The fortress of legio XIII Gemina (440 × 430 m) now overlaps with the medieval and modern settlement. One aspect should be mentioned: The porta principalis dextra is very well preserved to this day. Stamps reading LEG XIII GEM were found everywhere in a vast area, up to the gold district in the north-west. This underlines the strategic importance of this legion positioned along the main imperial road, capable of acting in different areas, especially in the west and north, to safeguard the gold mines.

4.4.4. Napoca

Napoca is represented on the Peutinger map by a double-tower vignette. The city flourished during Hadrian’s reign, when it became municipium Aelium Hadrianum Napocensium. Napoca was surrounded by a wall of the opus quadratum type, which enclosed a total area of circa 25 ha. With an average population of 15,000 inhabitants, Napoca became colonia Aurelia during the reign of Marcus Aurelius. Septimius Severus rewarded the city with the ius Italicum. The Roman city was later almost totally covered by the medieval settlement. Because of the ius Italicum, numerous landowners positioned their farms in close proximity to the city. Napoca was also an important crossroads. It was the starting point of a westwards route leading to the military fort in Gilău and forward towards west to the military fort in Bologna. Another branch starting from Napoca continued along the valley of Someș Mic, following the right bank of the river, until it reached the fort from Gherla and then the valley of the Someș river. The imperial road coming from Potaisa exited from Napoca heading towards north-west, to Porolissum, via Mera, Șardu and Sutoru. Because this city is located along the main road of Dacia, and of course because of the intensive process of colonization in Dacia which started during Trajan’s reign, Napoca, like other cities, rapidly flourished.

4.4.5. Porolissum

It took only around 8 to ten years for the Romans to built the most impressive road north of the Danube, starting right with the first military campaign in 101-102 A.D. The milestone from Aiton, dated in 108 A.D., represents a strong argument to affirm that the imperial road was built rapidly and maybe in 110 A.D. or around this year the road reach the northernmost point in Dacia, Porolissum. A beautiful layer of volcanic stones covers the surface of the road right at the entrance in the roman city.

Porolissum was defined by the Romanian historiography, many times, as the key of the defensive system of northern Dacia. So it is. The sophisticated defensive system created here included two Roman forts, watchtowers, and walls of defense. A large civilian settlement developed here. The Roman road is very well preserved at the entrance to the city.

Porolissum became a municipium during the reign of Septimius Severus. Beside the two forts, the archaeological excavations unearthed a statio portorii, temples (among them, one dedicated to Jupiter Optimus Maximus Dolichenus), an aerial aqueduct (the only one of this kind found so far in Dacia), an amphitheatrum castrense built of wood in the early period of the province and rebuilt in stone in the time of Antoninus Pius. A large bi-ritual cemetery has also been identified.

Several important military units are attested in Porolissum. Among these, we mention cohors V Lingtonum, cohors I Brittonum milliaria, cohors I Augusta Iturœorum, cohors I Hispanorum quingenaria, cohors III Campestris, numerus Palmyrenorum Porolissensium sagittariorum, together with vexillations from legions XIII Gemina, VII Claudia, VII Gemina and III Gallica. The city was estimated to have housed 20,000 inhabitants.

4.5. Secondary sites

As we have already mentioned, these intermediate or secondary sites are key-strategic points located at distances of circa 36 to 40 miles away from the primary sites, or half distance between these main sites. All the secondary sites considered by us in our demonstration are actually represented by military forts: A. Vărâdia (Arcidava?); B. Jupa (Tibiscum); C. Cigmău (close to Germisara, Hunedoara County); D. Războieni-Cetate (Salinis); E. Sutoru (Optatiana?).

We shall briefly describe these sites.

41 E. g. GUDEA 1989.
42 ARDEVAN 1988, 67.
43 Several new researches regarding the city and mainly the fort located on the Pomet Hill: ȘTEFAN/OPREANU/LĂZĂRESCU 2013, 599-524; OPREANU/LĂZĂRESCU/ȘTEFAN 2013, 83-106; OPREANU/LĂZĂRESCU 2015, 901-907.
44 GUDEA 1988, 175-189; GUDEA 1996.
45 GUDEA/TAMBA 2001.
46 MATEI 2003, 293-311.
47 BAJUSZ 2011.
48 FODOREAN 2016, 91.
4.5.1. Vârădia (Arcidava?)

The site, where two fort were erected, is located in the Banat region, along the western road starting from Lederata towards Tibiscum. On the hill “Chilii”, the Romans first built an earth and timber fort of 214 x 132 m. The historians generally accepted the idea that the fort was used only during the Dacian wars, based on two important facts. One is represented by the discovery of a tile with the stamp of the legion III Flavia Felix.49 A detachment from this legion was garrisoned in this fort during the military operations form the Dacian wars. The other argument which supports the idea of a short existence of the fort from “Chilii” is another archaeo略有ical reality: the Romans built another fort, only at circa 900 m to the south of the first one, in a place named today “Pusta Rovinei”. This second fort of 170 x 154 m50 garrisoned an infantry unit, the cohors I Vindelicorum milliaria equitata. Excavations carried out here revealed the existence of the building phases, first with the internal buildings of earth and timber and then rebuilt in stone.51

4.5.2. Tibiscum (Jupa)

The location of Tibiscum in Dacia is exceptional. It proves, once again, the genius of the mensores in Roman army. It is situated 36 Roman miles East from Berzovia, exactly half of the distance from Berzovia to Ulpia Traiana Sarmizegetusa, which is, along the Roman road, 72 miles. More, the ancient settlement has a privileged position, along the valley of the Timiş River, within a depression limited by the Poiana Ruscă Mountains, the Godeanu Mountains and the massive of Semenic. This location is ideal. That is why the Romans used it as a outpost during the military campaigns against the Dacians. The soldiers following the road from Lederata (leded by Trajan’s himself) met the other troops coming from Dierna in Tibiscum, before the Dacian territory along the Bistra river. Therefore, Tibiscum is more than a secondary site. It is, in our context. But on a general map of Dacia, its location is extremely related to its importance. The presence of five forts52 in this place represents not only an interesting case, but also proves the importance of the site. Although these camps were obviously not contemporary, a fort of 110 x 101 m is documented during Trajan’s period.

But not the fort is important. The city which developed here is also an element important for our discussion. A pagus Tibisciensis53 at the beginning, located within the territory of Ulpia Traiana Sarmizegetusa, it will become during the third century A.D. municipium Tibiscense.54 Although the first epigraphical attestation is dated during Gallienus,55 such a late promotion to the status of municipium is unlikely. Historians have agreed on an earlier date for this, during the reign of Septimius Severus.56 On the left bank of the Timiş River, close to the military fort, a vicus militaris is attested.57

The archaeological excavations have revealed some important elements of the vicus, including the internal road system58 and a thermal complex. The cemetery of the settlement is located along the Roman road which heads toward Dierna,59 in the southern part of the vicus.

4.5.3. Cigmău (Hunedoara County)

The fort from Cigmău is located at a distance of circa 40 Roman miles (around 60 kilometres) north-east of Ulpia Traiana Sarmizegetusa. This distance was measured following, obviously, the line of the Roman road, identified in the terrain in several points along this area.60 Speaking of roads, we should mention that the fort was connected with the thermal complex in Germisara (today Geoagiu Bâi, Hunedoara County) with a segment of road also identified in the terrain and carefully mapped,61 which is actually one of the best preserved road sectors in the entire Roman Dacia. The point where the fort is located is entitled “Cetatea Urieșilor” (translated is “The giants fort”). The position chosen by the Romans to build this fort is another example of their awareness regarding the potential of the terrain in the organization of the landscape. It is a nice plateau very close to the Mureș River. The hill dominates the landscape and from the fort the horizon opens nicely towards south, west and east. As we already noticed, the distance from Ulpia Traiana until here is of circa 40 miles. Another aspect is also important. The distance from Micia (today Vețel, Hunedoara County) until Cigmău is of circa 25 Roman miles along the Roman road.62 Actually, the fort is located half distance away both from Micia and Apulum. The troop attested in the fort of Cigmău is pedites Britannici.63

The fort itself represents the proof of the capacity of Roman engineers to adapt the construction to the terrain features. They built it in a shape of an irregular trapeze, trying to set the enclosure walls using the shape of the terrain. Archaeological excavations were carried out here in 2000 and 2002. Aerial photographs have also revealed the existence of a vicus militaris close to the fort.64

4.5.4. Războieni-Cetate (Alba County)

The same topographic pattern is attested also in Războieni-Cetate like in Cigmău. A Roman fort, the garrison of ala I Batavorum milliaria, and its vicus militaris, are both identified.65 Archaeological excavations were carried out in the fort.66 The vicus was identified based on aerial photographs. The site is located 36 Roman miles north-east of Apulum, along the former Roman road. What is more interesting is the fact that the same site from Războieni is located at the same distance of 36 miles away from Napoca. In a word, between Apulum and Napoca there are 72 Roman miles, and the fort of Războieni is located at the half of the distance. This fact is very important for the configuration of

49 NEMETH 2014, 34, with bibliography.
50 MARCU 2009, 172.
51 NEMETH 2005, 139-131; NEMETH 2014, 34.
52 MARCU 2009, 160.
54 ARDEVAN 1988, 41-42.
55 ARDEVAN 1988, 41.
56 ARDEVAN 1988, 41-42.
58 See RUSU-BOLINDEȚ/ONOFREI 2010, 396-442.
59 BENA/CIȚANT 2015, 125-131.
60 BENA/REGEP 2016, 330-331.
61 See for this road FODOREAN 2007, 365-384.
63 MARCU 2009, 122.
64 MARCU 2009, 127.
65 HANSON/OLTEAN 2003, 103-109; OLTEAN 2007, 158.
66 Details in POPOVICI/VĂRGA 2010.
67 See RUSU-BOLINDEȚ/ONOFREI 2010, 396-442.
the imperial road in Dacia and its elements. One example will support more our affirmation. During Gallienus, when detachments from the legio V Macedonica were sent away from Potaissa to fight outside Dacia, ala I Batavorum milliaria was moved to Potaissa and was active under the command of (arcus) Publicianus Rhe[n]ius. This character is mentioned in two inscriptions discovered in one of the buildings belonging to the thermal complex from the praetentura dextra of the Roman fortress. What is more interesting is the Publicianus’ function recorded in the epigraphs: praef(ectus) alae I (primaе) Bat(avorum) (milliariae) [al]egens vice praef(ecti) leg(ionis). Therefore, in an exceptional moment, during Gallienus’ reign, when part of the legion was sent away from Potaissa, the troop from Râzboieni served to strengthen the defence in Potaissa, because it was the closest troop from Potaissa. Again, the location and the arrangement of the fort along the imperial road in Dacia proved to be very important in crucial moments.

4. 5. Sutoru (Sălaj County)
The fort of Sutoru, first archaeologically identified in 2002, is located 30 miles north-west from Napoca. From Sutoru to Porolissum there are 24 Roman miles along the Roman road. A numerus Maurorum Optatianensium was garrisoned here in a fort of 165 x 220 m. Therefore, the military unit located here could serve to control the Roman road in this area.

5. FINAL REMARKS
It is quite remarkable to analyze and understand how Romans have used the terrain, the landscape, to organize, administrate and rule a new province. Not only in the case of Dacia, but also in many other situations, they used at maximum the potential of the relief when they projected and built roads, cities, forts, fortresses, burgi, and different others elements of the landscape. Therefore, one should be aware that in the case of Dacia, the building of the roads and the location of the new forts started right from the beginning, during the first Dacian war, in 101-102 A.D. These outstanding engineer achievements continued during the second Dacian war in 105-106 A.D. and obviously after the creation of the new province in 106 A.D.

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Fig. 1. Map of the forts of Roman Dacia.
Fig. 2. The municipia and coloniae in Roman Dacia.
Fig. 3. Primary and secondary sites along the main imperial road from Dacia.