The top-ranking towns in the Balkan and Pannonian provinces of the Roman Empire

Najpomembnejša antična mesta balkanskih provinc in obeh Panonij

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Izvleček

Rimska mesta balkanskih in podonavskih provinc so bila doslej le redko del raziskav širših mestnih mrež. Namen prispevka je prepoznati glavne značilnosti mestnih sistemov in na podlagi najpomembnejših mest provincialne mestne hierarhije poiskati njihovo vpetost v ekonomijo provinc v času severske dinastije. Avtor se osredotoča na primerjavo velikosti prvorazrednih mest z ostalimi naselbinami, upošteva pa tudi njihovo lego in kmetijsko bogastvo zaledja. Ugotavlja, da moramo obravnavano območje glede na ekonomske vire razumeti kot obrobje rimskega imperija. Glavna bogastva obravnavanih provinc so bili namreč les, volna, ruda in delovna sila, kar se jasno izraža tudi v osnovnih geografskih parametrih prvorazrednih mest: v njihovi relativno skromni velikosti, obrobni legi in vojaški naravi.

Ključne besede: Balkanski polotok; Donava; principat; urbanizacija; urbani sistemi

Abstract

The Roman towns of the Balkan and Danube provinces have rarely been studied as parts of wider urban networks. This paper attempts to identify the principle features of these urban systems and their implications for the economy of the provinces at the time of the Severan dynasty, through the prism of the top-ranking towns in the provincial urban hierarchies. The focus will be on the size of the first-ranking settlements in relation to the size of the lower-ranking towns, their location and the agricultural riches of their hinterlands. One of the main conclusions of this study is that, from an economic perspective, the region under study was a peripheral part of the Roman Empire. Its main assets were its timber, wool, metallic ores and labour force. This is reflected in the basic geographic parameters of the first-ranking settlements: their relatively humble size, their peripheral locations and militaristic nature.

Keywords: the Balkan peninsula; the Danube; High Empire; urbanization; urban systems

INTRODUCTION: CONCEPTS AND GOALS

One of archaeology's many borrowings from the broader field of Human Geography is the concept of urban or, more generally, settlement systems. The attraction that this notion holds for the archaeologist is in part created by an allusion to an underlying scheme in the distributions of settlements discovered in the field. Settlement maps – an iconic artefact of archaeological knowledge – are more than meaningless site-distributions or mere reflections of the distribution of natural resources. The concept of urban system supersedes that of urban geography by postulating a set of stable and structured relationships between the individual towns of a given area. This implies that a group of settlements that belongs to a certain geographic or economic area constitute an integral organism. Changes in one segment of the system are bound to impact the integral structure. Therefore, the history of individual towns is not determined solely by "endogenous" factors, but it is part of a broader socio-economic dynamic.

On the surface, there is nothing controversial in this position. After all, all good histories of individual towns place a strong accent on the participation of the urban communities under study in the wider socio-economic processes and conditions.[1] It is unnecessary to adopt the concept of urban systems to learn that towns are not isolated islands. The conceptual muddle has in part arisen because archaeologists often need to be reminded that towns – and settlements in general – are essentially places at which social and economic processes intersect, not just distinct site-categories.[2] The distribution of towns and settlements does not merely reflect the distribution of population, but is also highly sensitive to the distribution of services, production and consumption and wealth. Although some degree of ambiguity is unavoidable, it can be said that there are patterns in the urban geographies that cannot emerge outside a certain set of social and economic relations. From this point of view, towns are the silent source material for the study of the societies that have created them.

The concept of urban systems is not entirely unproblematic when applied to pre-industrial societies. It has been devised by economic geographers who study modern societies and, in its original form, does not account for the different realities in the pre-industrial era. Although no one would be so obdurate to deny any connections between settlements that belong to the same geographic or administrative unit, the degree of interaction between individual towns and settlements, even in the case of advanced societies like the Roman Empire, is a controversial topic.[3] Many archaeologists and historians of antiquity would argue that the town-countryside relationship is much more important than the town-town relationship for the study of the towns of Classical Antiquity. No less problematic is the notion of an enclosed entity entailed in the concept of urban systems. This is a minor issue when dealing with national economies in an Early Modern context, but it becomes ever more difficult to define the unit of analysis as we move back in time.[4]

The analytical tools that accompanied this concept have been of a far greater practical significance than its theoretical implications. Although these techniques have been adopted by archaeologists for several decades, not everyone has embraced them wholeheartedly and their usage is still relatively limited.[5] This is not the place to review the differing opinions on the topic of geographic analysis in archaeology.[6] Obviously, the main point of this disagreement has been the extent to which these ideas and techniques can be applied to the distant past without distorting historical reality. In any case, there is no apparent reason to discard the whole approach on theoretical grounds. More importantly, there are not many alternatives to the traditional descriptive approach that does not allow us to look into the possible structure of the urban geography and its ramifications for the society or time-period under study.

In this paper, we shall demonstrate the still significant potential of some of these techniques for the study of ancient societies and their economies, on the example of the urban hierarchy in the Balkan and Danube provinces of the Roman Empire in the second and third centuries AD.[7] Settlement hierarchies are a topic familiar to most archaeologists. This is a facet of settlement geography that has been studied by archaeologists long before the adoption of the concept of the urban system.[8] Its popularity in regional studies suggests that many archaeologists believed that settlement geographies were more or less structured – otherwise hierarchies would have been very shallow or imperceptible – even if they lacked the conceptual and analytical apparatus to elaborate this point. Among other things, this aspect of settlement geography has attracted much attention, precisely because of its

[1] See for example, Mossé 1973.

[2] Cf. Abrams, Wrigley (eds.) 1978.

[3] Finley 1977; Rich, Wallace-Hadrill (eds.) 1991; Cornell, Lomas (eds.) 1995; Bowman, Wilson (eds.) 2011; Hanson 2016.

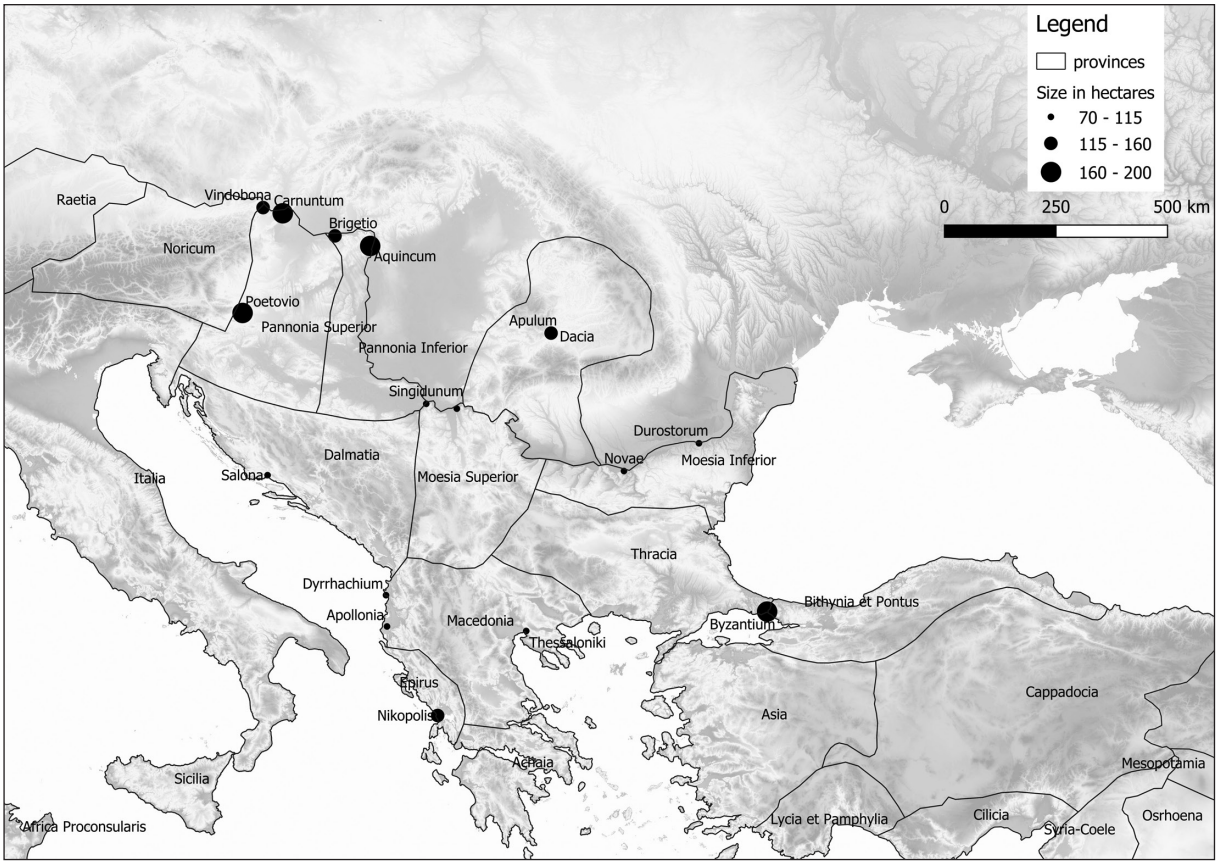
[4] Johnson 1980.

[5] Orton, Hodder 1976; Johnson 1977; Lock (ed.) 2000; Verhagen 2018; for criticism, see, Hodder 1986; Tilley 1994.

[6] A useful summary of the early views is given in Earle, Preucel 1987; this debate has continued within the context of GIS and digital technology, Van Leusen, Gaffney 1995; Wheatley 2004.

[7] Most of the data has been collected by the author of this paper within the frames of the project "*An Empire of 2000 cities: economic integration and urban networks in the Roman Empire*", coordinated by Luuk de Ligt and John Bintliff. The size-figures for the towns of the southern part of Epirus, Lower Macedonia, coastal and eastern Thrace have been kindly provided by Michalis Karambinis and Rinse Willet. The period of the Severan dynasty has been chosen, because it is believed that the urban system of the Empire reached a point of maturity at that point of time. Admittedly, this is not applicable to all provinces of the Empire, but it fits the developments in the study-area.

[8] For example, Adams 1965.



Map 1: Map of the study-region and the size of the top-ranking settlements.
Karta 1: Obravnavano območje in velikost prvorazrednih naselbin.

relevance to the organization of administration, economic and religious life in the past.

Understandably, a detailed analysis of the urban hierarchies in all Balkan and Danube provinces would be out of place for this paper.[9] Therefore, the focus shall be on the top-ranking settlements in the urban systems of the individual provinces. As we shall shortly see, every province in this study area had one or more urban settlements that were clearly set apart from the rest of the towns. One of the goals of this survey is to identify and examine the parameters that distinguish the top-ranking towns from the other settlements in the urban hierarchy. Apart from practical reasons, the choice to focus on the top-ranking settlements is also motivated by the special place of this settlement category in the urban hierarchies. Scholars that study urban systems have observed that the size of the top-ranking settlements, and especially their relation to the settlements of lower rank, is an important index of the nature of the economic relations in the regions under study.[10] This is a measure of the degree of economic and political centralization in society. To be sure, looking solely at the top-ranking settlements cannot reveal everything about a given urban system, but it can be highly indicative, not only of the relationships between the towns that constitute the system, but also of the place and role of the study-region in the wider urban constellation.[11]

There are other, equally interesting questions that surround the emergence of first-tier settlements. Did they perform any special functions, not shared by the rest of the urban settlements? Is there anything in the locations of this settlement category that gave them the necessary advantage over the average provincial town? Were the first-ranking settlements self-sufficient or were they

[9] Donev 2020.

[10] The concept of primate city was first introduced by Jefferson (1939) and was quickly adopted across the social sciences. Berry 1961; Vapnarsky 1969; Timberlake (ed.) 1985; Chen 1991; Chase-Dunn, Willard, Willard 1994; Chase-Dunn, Manning 2002.

[11] A good example is the study by Smith 1985, 121–167.

dependent on some special arrangements to secure their sustenance? It is important to stress that the goal is not to offer an explanation for the rise of these particular towns on the top of the urban hierarchy. The factors that shape urban geographies are often unextractable from the particular historical developments and, obviously, these cannot be considered for every regional centre. By focusing on a few aspects of the urban geography, we hope to draw the profile of the regional capitals and infer possible implications for the nature of the provincial societies and their place in the Roman Empire.

The study-area includes all Balkan provinces with the exception of Achaea (*Map 1*). The small segment of the tenth Italian region that extends into Istria and the Julian Alps is left out of the analysis, because the great majority of the towns in this region, including the top-ranking town of Aquileia, are located on the Apennine peninsula. Noricum is likewise excluded because it belongs to the Alpine region, although, unlike Italy, it had much in common with the Balkan and Pannonian provinces. Taken as a whole, this fairly large area does not represent a fully meaningful analytical unit. There are profound differences between the frontier provinces along the Danube and Dacia, and the demilitarized provinces in the southern and western parts of the peninsula. This study shall also point to a number of similarities between the urban hierarchies in the individual provinces but, in principle, each province represents a discrete urban system.

The size-figures refer to the period of the High Empire or, more precisely, the time of the Severan dynasty – arguably, for many provinces in this study region, a period of prosperity. Admittedly, a diachronic approach would have been much more promising than focusing on one point in time, but the scarcity of data does not allow us to venture into this direction. Even within a synchronic approach, the margin of uncertainty is great, especially for towns like Dyrrhachium, Byzantium or Thessaloniki, occupied continually until the present day. Because of this, it is necessary to consider alternative size-estimates for some of these towns. In order to simplify the discussion, the possibilities will be limited to the minimum and maximum size-estimate for every town included in the analysis. In non-controversial cases, the difference between the two alternative estimates is negligible.

WHICH ARE THE TOP-RANKING SETTLEMENTS?

The urban and urban-like settlements of the Balkan and Danube provinces – here defined as all agglomerations greater than 5 ha and with evidence of public buildings or formal institutions – group into three or four size-categories. Whether these settlements are spread across pre-defined size-ranges or plotted against their rank on a logarithmic scale – Rank Size analysis – the outcome is the same. The specific size-ranges may vary between provinces, but in general, there is a strong positive correlation between juridical status and size. Settlements could rarely aspire to grow beyond the threshold of 15 ha, without an autonomous status. Excluding a small number of obscure *poleis* or *municipia*, most of the settlements that belong to the lowest size-range lack autonomous status. Technically speaking, they were not towns, but this fact does not necessarily exclude them from the urban system. The fact that this size-category represents at least 70% of the settlement systems hints, at its importance for the urbanization of the provinces. In every province, the second-tier settlements are represented by the largest among the autonomous towns. Normally, this group accounts for between 8 and 20% of all settlements included in the analysis. In some provinces, the remaining autonomous towns, together with a small group of prosperous *vici*, cluster into a distinct third tier. In others, there is less differential growth within juridical categories and they join the lowest tier in the hierarchy.

In all provinces, the urban hierarchies have a clearly perceptible top settlement-tier (*Tab. 6*). It has been somewhat surprising to discover that the number of settlements that belonged to this tier differs from province to province. Over half of the provinces have a single settlement on the top of the urban hierarchy. These are Dalmatia with Salona, Macedonia with Thessaloniki, Thrace with Byzantium and Dacia with Apulum. It is possible that this model was more widespread. If more conservative size-estimates are adopted for Dyrrhachium, Apollonia and Durostorum, both Epirus with Nikopolis and Moesia Inferior with Novae will join this group.

A different pattern emerges in the Pannonian provinces, Moesia Superior and, if the high size-estimate for Durostorum and the low size estimate for Nikopolis are accepted, Moesia Inferior and Epirus. In these provinces, the second largest set-

tlements occupy more than three-quarters of the area occupied by the first-ranking settlements and the two are lumped together in the same size-range or placed too close to each other on the rank-size graphs. In fact, in Pannonia Superior there are not two, but three settlements in the top size-range. These are the two legionary towns of Carnuntum and Vindobona, and Poetovio. In the other provinces of this group, with the obvious exception of Epirus, the top-tier of the settlement hierarchy is reserved for the legionary towns: Aquincum and Brigetio in Pannonia Inferior, Viminacium and Singidunum in Moesia Superior and, conditionally, Novae and Durostorum in Moesia Inferior. In the case of Epirus, a lower size-estimate for Nikopolis will lower the size differential between the first- and second-ranking settlements to less than 20%, and the newly founded provincial capital will join the Corinthian colony of Apollonia in the top tier of the urban hierarchy. It should not be excluded that the second-ranking settlement was the Roman colony of Dyrrhachium – whose size estimate is extremely uncertain – and not Apollonia, or that all three towns belonged to the top rank.[12]

This unusual distribution is almost an exclusive attribute of the urban hierarchies in the frontier provinces. The case of Moesia Inferior is problematic because we have virtually no clue about the size of the *canabae* of Durostorum. The minimum estimate for this town is provisional. It is very likely that the true size-figure was much closer to the maximum than to the minimum estimate.[13] Epirus too is an unlikely exception. In this case, the maximum estimates for Dyrrhachium and, especially Apollonia, are meant to represent the improbable extremes. On the other hand, the maximum estimate for Nikopolis is more probable than the minimum.[14]

Most urban geographers would interpret the presence of more than one settlement in the top tier of the settlement hierarchy as a sign of an immature urban system.[15] In normal conditions and given the necessary time depth, the uneven circulation of people, wealth and ideas should result in a differential growth among the leading settlements, leaving only one settlement in the top-tier. The close proximity of the top-ranking settlements in the frontier provinces – the legionary towns are often spaced at distances shorter than 100 km – eliminates the possibility that they were centres of distinct sub-regions. The time-factor could have also played an important role. In the time period that is the focus of this study, the urban systems of the frontier provinces were not older than a century to a century and a half. Compare this to the urban systems of the demilitarized provinces that had evolved over a period of several centuries prior to the reign of the Severan dynasty. The urban geography of the frontier provinces was chiefly outlined by the movements and actions of the Roman army at the time of conquest, and the military towns continued to play a vital role in the administration of the frontier provinces and the defence of the frontiers.

THE PRIMACY INDEX

The differences between the size of the built-up areas of the first-ranking settlements in this study-region are not negligible, even if only the largest settlements in every province are considered (*Tabs. 1; 2*). The maximum figures range from 70 to 200 ha, the minimum, from 53 to 157. They cluster into three size ranges for both estimates.[16] The majority of the first-ranking settlements belong to the middle size-range. They measure between 70 and 100 hectares according to the minimum, or between 100 and 150 ha, according to the maximum estimates. Only the Dalmatian capital Salona belongs to the lowest size-range of 50 to 70 ha or, alternatively, to that of 70 to 100 ha. Depending on the size-estimates, the three largest towns in the study-area measure between 100 and 150 or between 150 and 200 ha.

Seen from an Empire-wide perspective, this part of the Roman Empire lacked very large towns. Admittedly, both the Pannonian capitals and Byzantium satisfy the criteria to enter Pounds' A category,[17] but the maximum estimates for these

[12] The Augustan walls of Dyrrhachium enclose an area of almost 50 ha, Gutteridge, Hoti, Hurst 2001; but accidental discoveries during modern construction suggest an extensive *suburbium*; Santoro, Monti 2008. On the other hand, geophysical research at Apollonia in the last couple of decades has shown that the town contracted during the Roman period; Lamboley et al. 2011.

[13] Ivanov 2003; Donevski 2009; Donevski 2015.

[14] This has been clearly indicated by M. Karambinis in the project's database.

[15] Johnson 1980, 234–236, 240.

[16] The size-ranges have been determined by the Natural Break method; Osaragi 2002.

[17] Pounds 1969. This pioneering study of the urbanization of the Mediterranean in Classical Antiquity has

Province	Town	Min. size (in ha)	Max. size (in ha)	Data source
Thrace	Byzantium	150	200	Mango 1985; Mango, Dagron (eds.) 1995; R. Willet (pers. comm.)
Moesia Inferior	Novae	100	115	Tomas 2007; Donevski 2009; Boyanov 2010
Macedonia	Thessaloniki	80	110	Karambinis (pers. comm.) (see *fn. 34*)
Epirus	Nikopolis	80	150	Michalis Karambinis (pers. comm.)
Dalmatia	Salona	53	72	Cambi 1991
Moesia Superior	Viminacium	77	100	Popović 1967, 29–49; Zotović, Jordović 1990
Pannonia Inferior	Aquincum	157	187	Zsidi 2003
Pannonia Superior	Carnuntum	140	185	Doneus, Gugl, Doneus 2013
Dacia	Apulum	100	158	Diaconescu 2004

Tab. 1: Size-estimates for the first- ranking settlements in the provinces of the study-region.
Tab. 1: Ocena velikosti prvorazrednih naselbin v obravnavanih provincah.

towns are, for different reasons, problematic.[18] In this respect, the Balkan and Danube provinces stand much closer to the western European provinces than to the Eastern Mediterranean.

No apparent patterns emerge from the differences in size between individual towns. This should occasion no surprise. Settlement size is the resultant of an unknown number of factors that are often historically and geographically specific. Nonetheless, overall, the military towns are larger than the civilian. The inclusion of the smaller top-ranking settlements would have only reinforced this pattern. Many of the civilian towns come close to the size of the smaller of the two legionary towns, but they never really outgrew them. The only exceptions are Byzantium and, if the high size-estimates are accepted, Nikopolis and Poetovio. Severan Byzantium might have been incomparably smaller and less important than the towns of Constantine I or Justinian I, but the fact that it was the only civilian town that joined the group of largest towns in the wider region, without the presence of the military, is indicative of its potential for growth. At the same time, the fact that only a few civilian towns managed to cross the 100-ha threshold underscores the economic imbalance between the military and civilian sectors. The scope for growth in the autonomous sector was relatively limited, and this might be related to the size and importance of the army.

So far, we have looked at and compared the sizes of individual towns. The size-distributions of individual towns can hint at important aspects of the societies studied, but they force the observer to view the urban system under a very narrow angle. Absolute size-figures are insensitive to the degree of centralization in the system or the degree of urbanization. For example, the scarcity of civilian towns larger than 100 ha could have been compensated for by the presence of a large number of medium- and small-sized towns. It is therefore crucial to ask how dominant the top-ranking settlements were in the provincial urban hierarchies.

There are a few different ways of expressing this relation, known as the primacy index.[19] In

recognized five size-categories. Category A unites the largest towns in the Roman Empire, with built-up areas greater than 100 ha.

[18] The Pannonian capitals were double towns – see below – and, in theory, it is possible to treat them as two separate towns or deny the urban character of the military component; Piso 1991; Doneus, Gugl, Doneus 2013. Byzantium is a difficult case for obvious reasons. It is comforting that the size-estimate accepted here – corresponding to the area of the town enclosed by the Severan wall – can be transformed into a population figure that matches the population estimates for pre-4th century Byzantium, derived from historical sources, Mango 1985; Mango, Dagron (eds.) 1995.

[19] See the bibliography cited in fn. 10.

Province	Town	Min. size (in ha)	Max. size (in ha)	Data source
Thrace (2)	Ainos	100	150	R. Willet (pers. comm.)
Thrace (3)	Philippopolis	75	105	Djambov, Mateev 1980
Moesia Inferior (2)	Durostorum	50	110	Donevski 2015
Moesia Inferior (3)	Troesmis/ Marcianopolis	32	70	Alexandrescu, Gugl 2016; Tačeva (ed.) 2004
Macedonia (2)	Amphipolis	30	60	Karambinis (pers. comm.) (see *fn. 34*)
Macedonia (3)	Beroia	40	60	Karambinis (pers. comm.) (see *fn. 34*)
Epirus (2)	Dyrrhachium	48	94	Gutteridge, Hoti, Hurst 2001; Santoro, Monti 2008
Epirus (3)	Apollonia	67	80	Lamboley et al. 2011
Dalmatia (2)	Doclea	24	32	Wilkes 1969
Dalmatia (3)	Iader	22	32	Suić 1981
Moesia Superior (2)	Singidunum	60	75	Vujadin Ivanišević (pers. comm.)
Moesia Superior (3)	Scupi	40	44	Mikulčić 1971
Pannonia Inferior (2)	Brigetio	130	160	Borhy et al. 2004
Pannonia Superior (2)	Poetovio	110	180	Horvat et al. 2003
Pannonia Superior (3)	Vindobona	105	135	Kronberger, Mosser 2002
Dacia (2)	Sarmizegetusa	32	75	Diaconescu 2004
Dacia (3)	Romula	60	64	Diaconescu 2004

Tab. 2: Size-estimates for the second- and third-ranking settlements in the provinces of the study-region.
Tab. 2: Ocena velikosti drugo- in tretjerazrednih naselbin v obravnavanih provincah.

this study, we have calculated the ratio of the first to the second-ranking settlement – in this paper, primacy index A – and the fraction of the total urban area represented by the first ranking settlement – primacy index B (*Tabs. 3; 4*). In essence, both approaches are derived from the Rank-Size rule or Zipf's Law.[20] This is a case of size-distribution in which the size of the town ranked *nth* always equals the quotient of the size of the largest town in the system and rank *n*. In effect, the largest town is two times larger than the second largest town, three times larger than the third largest town and so forth. There is no single theoretical explanation for this regularity. It is most commonly observed in the urban hierarchies of highly developed countries or, at least, in countries with a long urban tradition.[21] The Rank-Size rule is of interest to this paper, because it provides us with a measure of centralization. To geographers, the Rank-Size rule epitomizes systems in which people, resources and services are optimally distributed in space. It is a state of equilibrium, in which the forces or centralization are counterbalanced by those of disintegration. This implies that the primacy index A – the ratio of the size-figure for the largest to that of the second largest settlement – in these systems must equal 2. If this ratio is smaller than 2, the disintegrative forces prevail, if they are greater than 2, the opposite, centripetal forces prevail. We will shortly see that this index cannot encapsulate the properties of the integral system, but it has the potential to shed light on aspects that are easily lost from sight if the focus is on the overall shape and position of the rank-size graphs.

Although the percentage of the total urban area is a variable dependent on both the size of the

[20] Johnson 1977; Drennan, Peterson 2004; Marzano 2011.
[21] Berry 1961; Krugman 1996.

Province	Town	Primacy index a	Primacy index b	Projected
Thrace	Byzantium	1.3	0.18	0.24
Moesia Inferior	Novae	1.04	0.13	0.22
Macedonia	Thessaloniki	1.83	0.05	0.19
Epirus	Nikopolis	1.59	0.22	0.26
Dalmatia	Salona	2.21	0.08	0.21
Moesia Superior	Viminacium	1.32	0.19	0.25
Pannonia Inferior	Aquincum	1.17	0.18	0.22
Pannonia Superior	Carnuntum	1.01	0.21	0.25
Dacia	Apulum	2.10	0.16	0.21

Tab. 3: Primacy indices for minimum estimates.
Tab. 3: Indeks prednosti za najmanjše ocene.

Province	Town	Primacy index a	Primacy index b	Projected
Thrace	Byzantium	1.5	0.21	0.24
Moesia Inferior	Novae	2	0.24	0.22
Macedonia	Thessaloniki	2	0.09	0.19
Epirus	Nikopolis	1.19	0.18	0.26
Dalmatia	Salona	2.20	0.10	0.21
Moesia Superior	Viminacium	1.28	0.23	0.25
Pannonia Inferior	Aquincum	1.20	0.28	0.22
Pannonia Superior	Carnuntum	1.25	0.24	0.25
Dacia	Apulum	1.66	0.17	0.21

Tab. 4: Primacy indices for maximum estimates.
Tab. 4: Indeks prednosti za najvišje ocene.

Province	Town	Ratio of second- to third-ranking town (min. estimates)	Ratio of second- to third-ranking town (max. estimates)
Thrace	Ainon	1.33	1.42
Moesia Inferior	Durostorum	1.56	1.57
Macedonia	Amphipolis/Beroe	1	1
Epirus	Dyrrhachium/Apollonia	1.39	1.17
Dalmatia	Iader/Doclea	1.09	1
Moesia Superior	Singidunum	1.5	1.70
Pannonia Inferior	Brigetio	2.16	2.13
Pannonia Superior	Vindobona	2.33	1.92
Dacia	Sarmizegetusa	1.03	1.17

Tab. 5: The ratio of the size of the second- to the third- or, in the case of Pannonia Superior, the third- to fourth-ranking settlement.
Tab. 5: Razmerje velikosti med drugo- in tretjerazrednimi naselbinami oziroma tretje- in četrtorazrednimi naselbinami Zgornje Panonije.

largest town and the total number of towns in the system, it too can be projected on the basis of the Rank-Size rule. Given that these two parameters – the size of the largest town and the total number of towns – are known, it is possible to predict the total urban area and the percentage of the largest town. For the provinces studied in this paper, the largest town needs to occupy between one quarter and one fifth of the total urban area to satisfy the Rank-Size rule. If in reality, this percentage is lower than predicted, the largest town has not reached its optimal size; if it is higher, it has grown too large.

On the surface, the first approach appears too imprecise, because it focuses only on the largest two settlements in the system.[22] This is particularly inconvenient for this study-area, because of the presence of two or more towns in the top-tier. Predictably, primacy index A suggests that these systems have a very shallow hierarchy. In all provinces with multiple towns in the top-tier, the ratio of the largest to the second largest settlement is lower than 1.3. According to this index, some of the largest towns in the study region were the least dominant in their provincial urban hierarchies. As discussed in an earlier paragraph, this is considered a characteristic of systems that have been established recently or were so poorly integrated that they essentially functioned as two or more separate sub-systems. However, it suffices to look at the differential between the second- or third- and the next-ranking settlement to discover that this is a simple effect of the multiple top-ranking settlements in these provinces (*Tab. 5*). The ratio of the second to the third largest settlement or, in the case of Pannonia Superior, between the third and the fourth ranking settlement, increases sharply in all provinces with multiple top-ranking settlements. In fact, in the Pannonian provinces, it is greater than two – a trait of systems dominated by a primate city. At the same time, this ratio drops below 1.5 in the case of the provinces with a single settlement in the top-tier.

Going back to the primacy index A, it was equally surprising to discover that the smallest among the first-ranking settlements were the most dominant in the urban hierarchies of their provinces. The primacy index was the highest in the case of Dalmatia, a province whose first-ranking settlement, Salona, was the smallest among the group of first-ranking settlements in this region. Still, in no other province was the largest settlement more than twice the size of the second-largest settlement. Technically, Salona approaches the model of the primate city, but the rank-size graph for this province is pronouncedly concave.[23] This might not be entirely out of place, because other sources indicate that Salona was the head of a dendritic regional system and her main role was to channel the natural resources that flowed from Dalmatia to Italy.[24] In this respect, Salona does match the profile of the typical primate city. The strong but asymmetric links with Italy could be one of the factors that prevented her from growing into a true primate city.

The only other province in which the primacy index is close to two, with both the minimum and maximum size estimates, is Macedonia. Similar primacy indices have been recorded for Moesia Inferior and Dacia, but not for both size-estimates. In some of these provinces, Macedonia and Moesia Inferior, the primacy index follows the Rank-Size rule, i.e. the largest settlement is exactly twice the size of the second largest town. This is an unlikely scenario for Moesia Inferior but, in the case of Macedonia, it might be related to the maturity of the system, predating the Roman conquest by at least a couple of centuries. However, as in Dalmatia, the Rank-Size rule is broken immediately after the second-ranking settlement, and nearly all lower ranking settlements are larger than predicted by this law.

With the exception of Apulum in Dacia, a town that belongs to the group of the largest top-ranking settlements, the largest towns in Macedonia and Moesia Inferior do not exceed the threshold of 100 ha. This negative correlation between settlement-size and primacy index A is predetermined chiefly by the phenomenon of multiple towns in the top-tier of the urban hierarchies. However, even if the hierarchies with multiple top-tier settlements are left out of the analysis, the smaller first-ranking settlements will continue to be more dominant in their provincial hierarchies than their larger counterparts. This seemingly confusing relation points to the fact that there was a difference of scale in the size-ranges of the first- and second-order settlements between the frontier and demilitarized provinces. Both the first- and the second-tier settlements were proportionally smaller than their counterparts in the frontier provinces.

[22] Cf. Chen 1991.

[23] Donev 2020.

[24] Alföldy 1965; Bojanovski 1974; Cambi 1991.

The paradoxical situation in which the smallest towns are the most dominant in their provincial hierarchies is rectified, once we calculate the fraction of the largest town in the total urban area of the provinces. There is a positive correlation between the size of towns and their percentage in the total urban area, albeit not particularly strong. For example, both Byzantium and Viminacium represent about the same percentage of the total urban area of their provinces, although Byzantium was twice the size of Viminacium. This is obviously related to the fact that primacy index B takes into account the number and size of the rest of the towns in the system.[25] Therefore, calculating index B makes sense only in relation to the projections of the Rank-Size rule.

The last columns on the right in *Tabs. 3* and *4* estimate the percentage of the largest settlement in the total urban area on the basis of the Rank-Size rule. We were surprised by the relatively narrow range of variation between the individual provinces. The provincial systems look far less uniform when the individual size-figures are compared. The projected index fluctuates between 19 and 26% for the minimum size-estimates, and even less – between 21 and 25% – for the maximum estimates. It is correlated positively to the size of the largest settlement, and negatively to the number of towns in the system. Comparing these projections with the actual percentages of the largest towns in the total urban areas, it becomes evident that, in nearly every province and in nearly all scenarios for the size-estimates, the largest towns occupy a fraction of the total urban area smaller than predicted by Zipf's Law. There are only a few exceptions. One is Novae and the towns of Moesia Inferior at their minimum size – a scenario that is not very likely and does not deserve a thorough comment. The other is Aquincum and the towns of Pannonia Inferior, again with the minimum estimates only. This is the only town which has outgrown its optimal size by 6%. This does not contradict the rank-size graph for Pannonia Inferior, although even Aquincum cannot be readily described as a primate city. The other two towns that come close to the projections of the Rank-Size rule are Carnuntum, Aquincum's counterpart in Pannonia Superior and, somewhat surprisingly, Viminacium in Moesia Superior. Both towns fall short of the projected values by one or two percent.

The share of the rest of the first-ranking settlements in the total urban areas of their respective provinces is smaller than predicted by the Rank-Size rule. This is particularly pronounced in the maximum size-estimates, a scenario in which every first-ranking settlement in the study-region is at least 4 to 5% smaller than the optimal projection. From this perspective, none of the first-ranking settlements has grown to its optimal size. This could either imply that a large proportion of the wealth produced within the system was trapped in low-ranking, micro-regional centres or, more likely, that most of it escaped the confines of the province via the capital and the other major centres.

It should be noted that the differences between the projected and estimated indices were variable. Ironically, the greatest differential – greater than 10% – has been recorded in Macedonia and Dalmatia, the provincial systems with the most dominant first-ranking towns according to primacy index A. The first-ranking settlement in these provinces might have been twice the size the second-ranking settlement, but the large number of towns of medium and small size have preconditioned a primacy index B lower than 10%. A similar differential has been calculated for the towns in Moesia Inferior, with the maximum size-estimates. In the rest of the provinces, the differences between the projected and estimated figures for primacy index B range between 4 and 6%.

THE FACTOR OF FORMAL FUNCTION

Earlier it was mentioned that all towns that belong to the second tier of the provincial urban hierarchies were autonomous towns. Because they did not possess urban territory and a land-owning elite, the subordinate central places were much smaller than the official towns. What traits distinguished the first-ranking settlements from the rest of the autonomous towns? Were they assigned some special role or privilege that gave them the advantage over the second-tier, autonomous town?

Indeed, only three out of 16 top-ranking settlements lack a special role in their respective urban systems (*Tab. 6*). However, the reader should recall that the top-ranking status of Dyrrhachium and,

[25] Obviously, its major disadvantage is that there is no guarantee that the list of towns and especially town-like settlements are complete for every province, still less that each province has been studied equally well. Luckily, the settlements that are most likely to be missing are the smallest, and their share in the total urban area cannot have been greater than few percent, cf. De Ligt 2012.

Province	Town	Administrative role
Thrace	Byzantium	/
Moesia Inferior	Novae	Legionary base/provincial capital?
Moesia Inferior	Durostorum	Legionary base
Macedonia	Thessaloniki	Provincial capital
Epirus	Nikopolis	Provincial capital
Epirus	Dyrrhachium?	/
Epirus	Apollonia?	/
Dalmatia	Salona	Provincial capital
Moesia Superior	Viminacium	Legionary base/Provincial capital
Moesia Superior	Singidunum?	Legionary base
Pannonia Inferior	Aquincum	Legionary base/Provincial capital
Pannonia Inferior	Brigetio	Legionary base
Pannonia Superior	Carnuntum	Legionary base/Provincial capital
Pannonia Superior	Poetovio	Procuratorial seat
Pannonia Superior	Vindobona	Legionary base
Dacia	Apulum	Legionary base/Provincial capital

Tab. 6: A list of the top-ranking settlements in the study-area and their role in the administration of the provinces.
Tab. 6: Seznam vodilnih mest na obravnavanem območju in njihova vloga pri upravljanju provinc.

especially that of Apollonia, is uncertain. Thus, Byzantium is the only town in the study-region whose status of a top-ranking settlement is undisputable and who did not perform any special political function prior to the fourth century. The Thracian capital was in Perinthos and the seat of the provincial assembly in Philippopolis. This is another indication that, from a regional perspective, Byzantium had been an important centre prior to the founding of Constantinople.[26] All other first-ranking settlements in this study-region either grew next to legionary bases or were the provincial capitals and, quite often, both.

The legionary towns were by nature composite agglomerations. This is related to the social composition of these communities. They consisted of the garrison unit – usually, a legion plus an auxiliary unit –, the civilian community, composed of the families of soldiers, craftsmen, petty merchants and various service-providers and, in the case of double towns, the autonomous community of Roman citizens, located at a distance of about 2 km from the legionary camp.[27] Each of these sub-communities occupied a physically discrete segment of the conglomeration: the army was stationed in the fortified camps, the civilian community that followed the army lived in irregular agglomerations that surrounded the army camps on all sides, whereas the landowning elite, if present, was based in the *municipium*, located just outside the military zone.[28] The legionary camp, taken in isolation, would already rival the second-tier settlements in some of the demilitarized provinces. If we add to these the *municipium* – which would alone qualify as a second-tier settlement – and the *canabae* – extending over areas of at least 70–80 ha – the dominant position of the legionary towns in the provincial urban systems becomes easily comprehensible. Obviously, the complex topography of these towns is merely a symptom of their size and segmented social structure. Notwithstanding the negative connotations of living on the edge of the civilized world and in the shadow of an army camp, the permanent presence of the army did attract large civilian communities, which included not only the regular army followers but also veteran soldiers and their families. The permanent garrisons would have been potential consumers and, although their

[26] Clearly, the new capital was on a scale completely different from that of its predecessor, but to argue that the town had been fairly insignificant prior to the reign of Constantine I is an overstatement; cf. Mango 1985, 118–119, who is nonetheless right to observe that Byzantium had a poor water supply and unprotected hinterland.

[27] Piso 1991, 137–141.

[28] Doneus, Gugl, Doneus 2013, 179–182.

impact on the provincial economies is a matter of debate, this must have been one of the factors that propelled their growth.[29] In addition, because of their strategic importance, the legionary towns received generous acts of munificence from the emperors on a regular basis.[30]

The differences in size between the individual legionary towns is determined chiefly by the presence or absence of autonomous towns near the legionary bases. These were absent in the Moesian provinces and, as a result, the legionary towns in Moesia were smaller than their Pannonian counterparts or the Dacian capital.[31] A comparison between the size-figures for the double towns in the Pannonian provinces will reveal that the provincial capitals, Carnuntum and Aquincum are approximately 20% larger than the second legionary towns of Vindobona and Brigetio. There is a similar differential between the size of the capital of Moesia Superior, Viminacium and the second legionary town of Singidunum, although neither was a double town. Thus, despite the uniformity of the legionary towns – the combined areas of the legionary camp and the *canabae* are similar in most frontier provinces – the additional function of provincial capitals always resulted in a greater size.

The effect of the role of provincial capital on the size of the settlements is most plainly evident in the demilitarized provinces. With the notable exception of Thrace, the first-ranking settlements were always the provincial capitals. The absence of other potential factors of growth – like the permanent garrisons in the frontier provinces – contributed to the much greater differential between the first- and second-ranking settlements in these provinces and a higher primacy index A. It is a sensible objection that the presence of the provincial governor and his relatively small staff could not have had the same effect on the urban economy as the large garrisons, but the indirect effects of their presence should not be underestimated. To live in a close proximity to the provincial governor must have been advantageous in the eyes of the provincial elite, and had they decided to move into the capital, it would have inevitably drawn other urban-minded segments of the provincial population.[32] This would have automatically extended the economic base of the capitals. The case of Poetovio demonstrates that even the presence of the financial administration can be a powerful attractor. Because of their status, the provincial capitals were probably the exclusive locations for a certain number of services.[33] Finally, like the legionary towns, the provincial capitals were more likely to draw attention and support from the central government than the ordinary provincial town.

Admittedly, we are still far from understanding the specific reasons that led to the clustering of people and wealth near the bases of the provincial government. It can be argued that most of the provincial capitals were already large prior to their promotion. Indeed, the case of the Thracian capital Perinthos – which is not among the three largest towns in this province – warns against assigning too much weight to the factor of formal status. However, the history of most of the capitals in the demilitarized provinces speaks to the contrary. Thessaloniki experienced a period of growth as a provincial capital, surpassing the former capital of the Macedonian kingdom, Pella.[34] Prior to the Roman conquest, Salona had been an insignificant *emporium* of the Greek colonies in the Adriatic, whereas Nikopolis was a newly founded settlement. Apart from a few exceptional cases, the role of provincial capital guaranteed a dominant position in the urban system.

In conclusion, the top-tier of the urban hierarchy in this entire region was to a great extent determined by political and strategic factors. Once chosen to become a legionary base or a seat of the provincial governor, the town's place in the top-tier of the hierarchy was not only secured, but it was also unlikely to be challenged. The gap that separated the first- from the second-tier settlements was even more insuperable than that separating the autonomous towns and the subordinate central places.

[29] Erdkamp (ed.) 2002.

[30] Lengyel, Radan (eds.) 1980.

[31] Claims have been made that both Novae and Durostorum were double towns, but the evidence adduced in support of this thesis is not very convincing, Tomas 2007; Donevski 2009; Boyanov 2010.

[32] Wilkes 2002; Ferjanić 2002.

[33] This was certainly the case for legal services, Eck 2000, although this issue remains unexplored.

[34] Karambinis (forthcoming), *Urban Networks in Early Roman Macedonia and Aegean Thrace.*

GEOGRAPHICAL POSITION, GATEWAY COMMUNITIES?

If the first-ranking settlements in this study-region were largely chosen by the will and whim of the conqueror, was there anything in their location that preordained their place in the urban hierarchy? What are the patterns of distribution of the top-ranking settlements in this study-region? Their location in relation to the provincial territories and main axes of communication are of particular interest.

It is immediately apparent that the great majority of the top-ranking settlements are located on the edge of the study-region (*Map 1*). Only two out of 16 towns have a central position in relation to the provincial territories. These are Apulum and Poetovio, a non-capital. The rest of the top-ranking settlements are either located on the coast or on the Danube frontier. From the point of view of governing the provincial territories and, especially, providing services to all corners of the provinces, these are not the optimal locations. The peripheral locations of the top-ranking settlements reflect a very different logic. Although geometrically peripheral, the sites of all top-ranking towns were well-connected to the Empire-wide network of roads and cities. The chief concern of the central and provincial government would have been to ensure an uninterrupted flow of taxes and resources from the provincial capitals to Rome and, in the frontier provinces, the interconnectivity of the military bases on the frontier and their continuous supply with food and other necessities. It has to be remembered that the Danube was not only a frontier, but an important interregional corridor.[35] Seen from this angle, the locations of the legionary towns on the frontier were analogous to those of the large port-towns in the demilitarized provinces. They all occupied locations that were potential mediators between the region they governed and the outside world.

On the surface, our top-ranking settlements are reminiscent of the profile of the gateway towns, observed by regional geographers in an Early Modern colonial context.[36] Briefly, the gateway town is a settlement that appears in the contact-zone between two areas at different levels of economic development. In our study-region, this is paralleled both by the port-towns, which at the time of the conquest stood on the edge of an area that was still largely uncivilized, and the legionary towns, the bases for future conquest and mediators between the Empire and the *barbaricum*. In contrast to the traditional central place, the gateway is, like the great majority of our top-ranking towns, located on the edge of its territory. Empirical observations have demonstrated that the gateway towns were always larger than the typical central place. Another striking similarity between the gateway model and our first-order settlements is the structure of the urban population. Gateway towns have been characterized as places of trade, commerce, building industry and transportation. They are often set in opposition to the older, more cultured cities. Admittedly, census-data for our study-period is lacking and we have to think in terms different than building industry or wholesale. Nevertheless, it is surely likelier to discover merchants, traders or concessioners in the epigraphic record of the port-towns and *canabae legionis* than in those of the average provincial town. Most striking of all, is the similarity in topography. Like some of the legionary towns, the gateway communities live in segmented conurbations. In fact, some have even been described as twin towns or double towns, a duality that has been linked to a functional segregation between administration and trade.

Although this parallel is intriguing and worth exploring, the differences between these two distant historical contexts should not be lost from sight. According to this model, gateway towns are transitory phenomena, typical in periods of territorial expansion, whether conquest or colonization. As the border is pushed farther out, the gateway town loses its function and is transformed into a traditional central place. We could think of Poetovio and, especially Sarmizegetusa, – even if it was not a first-ranking settlement – as former gateway communities.[37] However, the majority of our port-towns continued to function as links between Rome and her provinces, as long as Rome was the centre of the Empire. They had a permanent role in the Empire-wide urban network that might have been instrumental to their size and prestige. The

[35] Whittaker 1994.

[36] Burghardt 1971.

[37] Poetovio was not only a former legionary base, but also had a composite topography, with several districts strung along the Amber Road; Horvat et al. 2003. On the other hand, the fragmentation of the territory of the Dacian colony – Piso 1995 – is an exact replica of the territorial redefinition of the gateway community after its loss of status and transformation into a traditional central place, Burghardt 1971.

Province	Town	Urban population (min. area × 150)	Arable land (in ha) (15 km)	Land deficit (in ha)	Land deficit incl. rural population (in ha)(75%)	Land deficit incl. rural population (in ha)(50%)
Thrace	Byzantium	22 500	23 150	+ 650	- 66 850 (3.9)	- 21 850 (1.94)
Moesia Inferior	Novae	15 000	29 950	+ 14 950	- 30 050 (2)	- 50 (1)
Moesia Inferior	Durostorum	7 500	27 950	+ 20 450	- 2 050 (1.07)	+ 12 450
Macedonia	Thessaloniki	12 000	34 800	+ 22 800	- 25 200 (1.72)	+ 10 800
Epirus	Nikopolis	12 000	8 000	- 4 000	- 52 000 (7.5)	- 16 000 (3)
Epirus	Dyrrhachium?	7 200	21 500	+ 14 300	- 7 300 (1.34)	+ 7 100
Epirus	Apollonia?	10 050	31 500	+ 21 450	- 8 700 (1.2)	+ 11 400
Dalmatia	Salona	7 950	8 300	+ 350	- 23 500 (3.83)	- 7 600 (1.91)
Moesia Superior	Viminacium	11 550	20 250	+ 8 700	- 25 950 (2.28)	- 2 850 (1.14)
Moesia Superior	Singidunum?	9 000	17 650	+ 8 650	- 18 350 (2.04)	- 350 (1.01)
Pannonia Inferior	Aquincum	23 550	15 600	- 7 950	- 78 600 (6.04)	- 31 500 (3.01)
Pannonia Inferior	Brigetio	21 000	31 450	+ 10 450	- 52 550 (2.67)	- 10 550 (1.33)
Pannonia Superior	Carnuntum	21 000	32 900	+ 11 900	- 51 100 (2.55)	-9 100 (1.27)
Pannonia Superior	Poetovio	16 800	41 350	+ 24 550	- 25 850 (1.62)	+ 7 750
Pannonia Superior	Vindobona	12 000	29 700	+ 17 700	-18 300 (1.61)	+ 5 700
Dacia	Apulum	19 500	34 950	+ 15 450	- 43 050 (2.23)	- 4 050 (1.11)

Tab. 7: Population to land ratio for the top-ranking settlements in the study-region.
Tab. 7: Razmerje med prebivalstvom in zemljiščem prvorazrednih mest na obravnavanem območju.

legionary towns, on the other hand, are in many ways specific and difficult to fit into any model. Because of the *Limes*, they could not service the outward hinterland like the model gateway town. They could certainly channel the external trade of the Empire, but too little is known about the intensity of this relationship to see it as a potential factor of growth.[38] As centres of administration, these towns looked inwards and were more akin to a former than to an actual gateway. The Roman military outposts at the time of the Late Republic would have resembled the gateway communities more closely than the legionary bases founded after the introduction of the static *Limes*.

The patterns of distribution of the first-ranking settlements also reflect the variable importance of the different segments of the Balkan coast and the Danube *Limes*. It is striking that none of the top-ranking settlements was located on the western Black Sea coast. In contrast, two, possibly four, top-ranking settlements were located on the Eastern Adriatic and Ionian coasts. The key difference between the two littorals is obvious. Whereas the Adriatic and Ionian coasts faced the centre of the Empire, the Black Sea was a peripheral region, only partly integrated into the economy of the Roman Empire. At the time of the High Empire, Byzantium would have been far more important as a station on the continental roads that linked Asia to Europe than as a maritime base in the traffic between the Black Sea and the Mediterranean. The variable strategic importance of the different segments of the Danube *Limes* could also explain the differential growth among the legionary towns. Is it by chance that double towns have only emerged in the Pannonian and not in the Moesian section of the *Limes*? Pannonia was not only much closer to Italy and Rome than Moesia, but it was crossed by two roads of a major interregional importance: the Amber Road and the road that led from Aquincum across the Carpathian Range. On the other hand,

[38] Wielowiejski 1990; Gabler, Vaday 1992; Krekovič 2001; Kuzmová 2005; Galestin 2005.

the Moesian section of the *Limes* faced a limited segment of the *barbaricum*, essentially a pocket of enemy territory trapped between the Empire and Dacia. The tribes that lived on the other side of the Pannonian frontier, the Marcomanni and Quadi, were sedentary societies that had developed a certain level of economic relationship with the Roman Empire and, according to some historians, were even considered as a possible addition to the Empire.[39] In contrast, the Moesian sector of the *Limes* bordered on areas dominated by nomadic people, like the Iazyges or the Sarmatians and, until the Gothic invasions of the mid-3rd century, they were of a lesser strategic importance than the Pannonian *Limes*.

The importance of the global urban constellation for the regional urban developments is best illustrated by the changes in the urban geography after the establishment of the new capital on the Bosphorus. Whereas the Dalmatian coast and the western Balkans in general entered a long period of urban decline and restructuring, the eastern part of the peninsula, especially Thrace and the Black Sea region experienced a period of prosperity and urban growth that, despite the chronic instability caused by barbarian invasions, lasted until the end of the 6th century.

WERE THE FIRST-RANKING SETTLEMENTS TOO LARGE FOR THEIR TERRITORIES?

Discussing the primacy index and the degree of centralization in the urban systems, it was observed that individual size-figures reveal little if seen in isolation. Towns that were relatively small proved to be the most dominant in their respective urban systems. Equally important is the ratio of the size of the town, expressed as a projected population figure, to the agricultural productivity of its hinterland. This will give us an idea of the self-sustainability of the top-ranking settlements and it will filter through the factor of agricultural productivity as a determinant of the size of towns.

The population estimates are derived by multiplying the size-estimate of the built-up area by 150. In view of the assumption that larger settlements have higher population density, these are fairly conservative estimates.[40] In order to test the sustainability of these towns in optimal conditions, we have used only the minimum estimates. For similar reasons, the outreach radius of the towns has been extended to 15 km. This is equivalent to the so-called market catchment, enclosing the area from which it would have been viable to bring agricultural goods on the town-market and return in one day.[41] The amount of arable land within this catchment was calculated with the help of Google Earth on the basis of the modern plough-zone. Another simplification was to set the annual grain consumption rate of a grown-up individual at 1 ha.[42] In reality, the total consumption rate must have been somewhat lower, because the children and elderly probably consumed less, and calories would not have been obtained from grain only. However, our goal is not to offer a precise reconstruction of the agricultural production and consumption in these towns, but to make a rough assessment of their sustainability. Could these towns secure their subsistence from the resources available in their hinterlands or were they dependent on a much larger hinterland or the support of the central government? In order to widen the error-margin and account for the possible mistakes in the calculation process, it is advisable to look only for cases in which the deficit is far beyond the agricultural capacity of the urban catchment.

A simple comparison between the estimated urban population and the amount of arable land in the market catchments shows that most towns could comfortably live off the agrarian potential of their hinterlands (*Tab. 7*: Column 5). This result does not contradict the analysis of the primacy indices. The great majority of the first-order settlements were neither too dominant in the urban hierarchy nor were they too large for their hinterlands. The only exceptions are Aquincum and Nicopolis. These two towns have little in common, except for the fact that their agricultural territories are extremely limited because of their locations. Nikopolis is located on an isthmus, whereas Aquincum is too close to the northeast corner of Pannonia Inferior. The theoretical surplus was also dangerously low in the case of the port-towns of Salona and Byzantium. Despite the big size-differential between these two towns, they were equally oversized in

[39] Birley 2000.

[40] Marzano 2011, 196–228; Hanson 2016.

[41] For a detailed discussion of the concept, see Bintliff 2002.

[42] Foxhall, Forbes 1982. Of course, this is dependent on the estimated productivity of ancient agriculture, Garnsey 1998; Erdkamp 2005.

relation to their hinterland. The market catchments of the rest of the top-ranking settlements could easily sustain a settlement twice their size.

The problem with these calculations is that they do not take into account the factor of the rural population, who would have also been dependent on the resources available in the urban hinterlands. The figures (*Tab. 7:* column 5) would have been roughly accurate were the majority of the urban dwellers farmers themselves. However, this could not have been the case for the provincial capitals and legionary towns.[43] Therefore, realistic projections for the grain demand in the market catchments of the towns cannot be made, unless the rural population is accounted for in the equation. Unfortunately, there is very little data about the possible size of the rural population in the hinterland of the Balkan towns. Nonetheless, making a few educated guesses might open an important insight into these relations.

Most scholars who have studied the economy of the Roman Empire through the lenses of urbanization argue for urbanization rates of slightly over 10% in most European provinces, with the exceptions of Italy and Baetica.[44] This could very well apply to the frontier provinces in this study-region, but in the more urbanized demilitarized provinces in the south of the peninsula, it is sensible to expect higher urbanization rates, at least in the region of 20 and probably closer to 30%. To avoid making separate calculations, the population to land ratio has been estimated for hypothetical urbanization rates of 25 and 50%. The first figure is a notional average for the entire study-region, the second, a notional maximum urbanization rate. Theoretically, even higher urbanization rates are possible, but only at the expense of agricultural productivity. In this scenario, the advantages of sustaining a smaller rural population would have been cancelled by a lower agricultural output.

Once the rural population enters the equation, none of our towns is self-sustainable, even at a relatively high urbanization rate of 25%. The deficit ranges from seven to eight square km of arable land in the case of the smaller top-ranking settlements, to over 50 sq. km, in the case of the double towns or some of the port towns. Obviously, if we lower the urbanization rate, the deficit will rise further. Still, in absolute terms, these are not particularly high deficits. Afterall, these were autonomous towns whose administrative territory was often much greater than the market catchment. However, it should not be forgotten that the addition of extra agricultural land would have amounted to nothing without a rural population to cultivate it.

If the urbanization rate is increased to 50%, the sustainability problem disappears for over half of the settlements, and for the other half, the land-deficit is reduced to less than 10 sq. km. The only exceptions are Aquincum, Byzantium and Nikopolis, towns whose micro-locations are extremely marginal in relation to the productive land in their respective provinces. Obviously, an urbanization rate of 50% is unrealistic for any pre-modern society, but only in so far as this rate is pertinent to the entire territory under study. It is equally unrealistic to expect that the density of rural population was equal in any given segment of the countryside. Admittedly, it is a sensible assumption that the urban market was a strong attractor, both for the urban and rural segments of the population. However, the fact that most of this land was owned by the urban elite would have posed a limit to the concentration of rural dwellers in the urban hinterlands. A look at the settlement patterns in the agricultural and market catchments of the Roman towns in this area will reveal a countryside dominated by *villae* or farmsteads.[45] With the exception of Thrace and, possibly Macedonia, nucleated settlements are rare.[46] But even if the survey data is not deemed very reliable, a rise in the rural population in the urban hinterland is unlikely to offset the very high population densities documented in the urban settlements. Hence, the proportion of the rural population in the total population of the town and its market catchment must have been lower than implied in the general urbanization rates.[47]

[43] Cf. the occupation profile of the population of Herculaneum, De Ligt, Garnsey 2012.

[44] In this, and in the majority of other studies of ancient urbanization, the rate of urbanization is expressed as the fraction of the projected total population. An exhaustive bibliography can be found in Hanson 2016, fn. 657.

[45] Carnuntum: Ployer 2009; Apulum: Oltean 2007; Aquincum: Zsidi 2003; Apollonia: Davis et al. 1998–2002; in this case, the pattern dates to the Hellenistic period.

[46] The evidence is almost exclusively epigraphic: Gerov 1980; Papazoglou et al. 1999; Martemianov 2012.

[47] Even if half of the rural population in an urban territory with an urbanization rate of 10% lived in the market catchment, the urbanization rate in this catchment would have still been almost 10% higher than the general urbanization rate. For example: 5000 (urban pop.) / [5000 (urban pop.) + 22500 (half of the rural population)]= 18.1%.

High local urbanization rates were not the only possible solution to the land deficit of the top-ranking settlements. In the case of the legionary towns, the sustenance of a large segment of the population – the army units – would have been guaranteed by the provincial governor. In fact, grain for the legionary towns could have been requisitioned from those parts of the province that lacked a large urban population. On the other hand, the big maritime settlements, like Byzantium or Nikopolis would have had access to the agricultural produce of an area much wider than their market catchments. Finally, the epigraphic record from the countryside reveals that the economic bases of the first-ranking settlements were much larger than their urban territories, because members of their elite could own land anywhere in their native province or beyond.[48]

As expected, the inclusion of the rural population in the calculations of the land to population ratio has pushed nearly all of the first-order settlements above the threshold of self-sustainability. However, the land-deficit was not particularly high, even if the urbanization rate is set at 25%. This is in accord with our earlier observation that none of these towns was so large as to present a serious logistical challenge for the local or provincial authorities. There were no towns on the scale of Alexandria, Antioch or Ephesus in this study-region. All of our top-ranking settlements could secure their grain-supply either from within their urban hinterlands or from the provinces to which they belonged.

CONCLUSION

Seen from an Empire-wide perspective, the first-ranking settlements in this study-region cannot be qualified as *metropoleis*. In fact, almost none would qualify as a first-ranking settlement on an Empire-wide level. This is understandable in view of the short urban tradition in most corners of the study-area. With the exception of the coastal zone colonized by the Greeks and the areas controlled by the Epirote and Macedonian monarchies, Classical urbanism was introduced in this region shortly after the Roman conquest. Proper roads were absent prior to the conquest, and population density would have been too low to support large urban populations in many parts of the area.[49] Although important roads passed through the study-region and its legions played a key role in the defence of Italy, from an economical point of view, the Balkan and Danube provinces occupied a peripheral corner of the Roman Empire. The most important assets of this region would have been the army recruits and, possibly, its ore and timber resources. This would not have been the right climate for the emergence of very large cities.

An interesting particularity of the urban systems in the frontier provinces of the study-region was the presence of two or more towns in the top-tier of the urban hierarchy. The size-differential between these towns was too small to place them into separate size-ranges. Although slightly unusual at a first sight, this arrangement is highly revealing of the nature of the urban systems in the study-region. The urbanization of the area and its later development were tightly controlled by the provincial government. It is true that the urban systems in the frontier provinces had existed for only about a century to century and a half at the time of the Severan dynasty. The lack of greater time-depth could have been an important factor for the survival of these arrangements, but it is questionable if the legionary towns would have grown at a different pace had the *Limes* survived the third century crisis. The upkeep of both legionary towns, despite of their size and proximity, was a purely strategic decision, unaffected by spontaneous, bottom-up tendencies.

The calculation of the primacy indices showed that none of the first-order settlements exhibited the traits of a primate city. Intriguingly, the towns that resembled this model the most were the smallest among the first-ranking settlements in the study-region. However, it suffices to consider the integral urban system to conclude that this resemblance is superficial. From the vantage point of the largest towns, the urban systems in the study-region were fairly decentralized. This can be seen as an outcome of two complementary tendencies. On the one hand, the poor level of connectivity between the second-tier settlements limited the scope for differential growth in the system. The differences in size between these towns are minor, reflect-

Mathematically, this phenomenon is encapsulated by the function of local density: as the area of interest decreases, local density increases, see Conolly, Lake 2006, for a brief introduction and references.

[48] Donev 2020.

[49] Moesia Inferior: Gerov 1997, 121–209; Duch 2017; Dalmatia: Dzino 2010.

ing primarily the variable distribution of natural resources or distinct historical developments. On the other, the excessive growth of at least some of the first ranking-settlements would have been prevented by their role in the political economy of the High Empire. Only a smaller proportion of the wealth produced in their respective provinces would have been kept in these towns. The bulk would have been sent to Italy and Rome.[50] In the frontier provinces, the emergence of a primate city was impossible due to the presence of two or more towns in the top-tier of the urban hierarchies. These urban systems were tailored primarily to the needs of the military and their evolution would have been to a large extent controlled by the provincial authorities.

The absence of a perceptible spontaneous dynamic in these systems is also underlined by the fact that nearly all of the top-ranking settlements had been assigned the role of provincial capitals, legionary bases or both. The second-order towns could never aspire to compete with the provincial capitals or legionary towns, still less to take over their place in the urban hierarchy. This feature of the provincial urban systems is not unique to the Roman Empire. The modern national capitals, at least those in the Old World, are also the largest towns in their respective countries. In fact, it is possible that this scheme was introduced for the first time in this region by the Romans. The stability of the provincial administrative system resulted in a clear articulation of top-tier settlements in the urban hierarchies of the provinces. The political centres of earlier and later tribal alliances and monarchies were more transient than the Roman provincial capital. Cogently, the urban hierarchies in these societies would have been relatively shallow.

One of the major differences between the first-ranking settlements in the Roman provinces and those in the modern nation-states is that the former had been conceived of primarily as nodes that linked the provinces to the centre of the Empire rather than as independent administrative centres. This is most apparent from the peripheral locations of nearly all top-ranking settlements included in this analysis. They were located either on the western and southern Balkan coast or on the Danube. This special role in the Empire-wide urban network brought them close to the colonial capital in the Early Modern era – hence, possibly the hints of primacy among some of these towns – or the gateway communities observed in the New World during the colonial period. The specifics of the region and time-period studied do not allow us to identify the top-ranking settlements with either of these models. Nevertheless, these parallels help us understand certain aspects of the top-ranking settlements that are otherwise indistinguishable. On a global level, their main task would have been to convey the wealth and resources extracted from the provinces to Rome. This role must have given them the decisive advantage over the other provincial towns but, at the same time, it must have acted as a growth-limiting factor.

In view of their modest size, the sustenance of the top-ranking settlements in the study-region could not have presented a serious logistical challenge. Their population was only a small fraction of the population of towns like Alexandria, Antioch or Ephesus. The potential grain supply problems that were identified in this study were caused primarily by their marginal locations. The top-ranking settlements had a number of possible solutions at their disposal, even if it is granted that the urbanization rates in the urban hinterlands were lower than 25%. These included direct intervention by the provincial government, access to agricultural goods produced outside the province and landownership outside the urban territory, a mechanism that might have had a negative impact on the growth of lower-ranking towns or the emergence of towns in densely populated rural areas. In theory, the bare existence of oversized towns is a potential factor of differential growth.

This panoramic overview of the top-ranking settlements in the study-region could not do justice to the specific developments of the individual towns and it probably blurred a number of important differences. We may only hope that the insights opened from this perspective outweigh the likely simplification of certain developments that are pertinent to individual or groups of towns. The argument that each of these towns had its unique development is certainly valid, but it is not very helpful and should not prevent us from drawing analogies or making generalizations. In the end, there are numerous monographs that offer detailed studies of individual towns. What is missing is an analysis of the relationships between the towns in the region and their role in the Empire-wide urban network.

[50] Cf. Marzano 2011, 196–228.

ABRAMS, P., E. A. WRIGLEY (eds.) 1978, *Towns in societies. Essays in economic history and historical sociology.* – Cambridge.

ADAMS, R. McC. 1965, *Land behind Baghdad: a history of settlement on the Diyala Plains.* – Chicago.

ALEXANDRESCU, C-G., C. GUGL 2016, The Troesmis--project 2011–2015 – research questions and methodologies. – In: C-G. Alexandrescu (ed.), *Troesmis – a changing landscape. Romans and the others in the Lower Danube region in the first century BC - third century AD. Proceedings of the International Colloqium Tulcea, 7th–10th October 2015,* 9–23, Cluj-Napoca.

ALFÖLDY, G. 1965, *Bevölkerung und Gesellschaft der römischen Provinz Dalmatien.* – Budapest.

BERRY, B. J. L. 1961, City-size distributions and economic development. – *Economic Development and Cultural Change* 9.4/1, 573–588.

BINTLIFF, J. 2002, Going to market in Antiquity. – In: E. Olshausen, H. Sonnabend (eds.), *Zu Wasser und zu Land. Verkehrswege in der antiken Welt,* Stuttgarter Kolloquium zur historischen Geographie des Altertums 7 (1999), 209–250, Stuttgart.

BIRLEY, A. 2000, *Marcus Aurelius. A biography.* – London.

BOJANOVSKI, I. 1974, *Dolabelin sistem cesta u rimskoj provinciji Dalmaciji* (Dolabellae systema viarum in provincia romana Dalmatia). – Djela ANUBiH 47, Centar za Balkanološka ispitivanja 2, Sarajevo.

BOYANOV, I. 2010, Municipium Aurelium Durostorum or vicus Gavidina. – *Archaeologia Bulgarica* 4/2, 53–59.

BORHY, L. et al. 2004, Brigetio, Ergebnisse der 1992–1998 durchgeführten Ausgrabungen (Munizipium, Legionslager, Canabae, Gräberfelder). – In: M. Šašel-Kos, P. Scherrer (eds.), *The Autonomous Towns of Noricum and Pannonia / Die autonomen Städte in Noricum und Pannonien. Pannonia* II, Situla 42, 231–251.

BOWMAN, A., A. WILSON (eds.) 2011, *Settlement, urbanization and population.* – Oxford Studies on the Roman Economy 3.

BURGHARDT, A. F. 1971, A hypothesis about gateway cities. – *Annals of the Association of American Geographers* 61/2, 269–285.

CAMBI, N. (ed.) 1991, *Antička Salona.* – Split.

CHASE-DUNN, C. S. MANNING 2002, City-systems and world-systems: four millennia of city growth and decline. – *Cross-cultural Research* 36/4, 379–398.

CHASE-DUNN, C., C. WILLARD, A. WILLARD 1994, Cities in the central political/military network since CE 1200: size-hierarchy and domination. – *Comparative Civilizations Review* 30, 104–132.

CHEN, X. 1991. China's city hierarchy, urban policy and spatial development in the 1980s. – *Urban Studies* 28/3, 341–367.

CORNELL, T., K. LOMAS (eds.) 1995, *Urban society in Roman Italy.* – London.

DAVIS, J. L. et al. 1998–2002, *The Mallakastra Regional Archaeological Project*. [http://river.blg.uc.edu/mrap/].

DE LIGT, L. 2012, *Peasants, citizens and soldiers: Studies in the demographic history of Roman Italy 225 BC– AD 100.* – Cambridge.

DE LIGT, L., P. GARNSEY 2012, The album of Herculaneum and a model for the town's demography. – *Journal of Roman Archaeology* 25, 69–94.

DIACONESCU, A. 2004. The towns of Roman Dacia: an overview of recent archaeological research. – In: W.S. Hanson, I. P. Haynes (eds.), *Roman Dacia. The Making of a Provincial Society,* 87–142, Portsmouth.

DJAMBOV, C., M. MATEEV, 1980. Données nouvelles sur l'ensemble du forum de Philippopolis. – In A. Fol (ed.), *Pulpudeva: Semaines philippopolitaines de l'histoire et de la culture Thrace* 3, 106–121, Plovdiv.

DONEUS, M., C. GUGL, N. DONEUS 2013. *Die Canabae von Carnuntum-Ein Modelstudie der Erforschung römische Lagervorstädte.* – Wien.

DONEV, D. 2020, *The busy periphery: the urban systems of the Balkan and Danube provinces (2nd–3rd c. AD).* – Oxford.

DONEVSKI, P. 2009, Archaeological excavations in Silistra (Durostorum). – *Bulitinul Muzeului Județean Teleorman* 1, 105–130.

DONEVSKI, P. 2015, A comparison between Novae and Durostorum in Lower Moesia: topography, defensive system and legal status. – In: L. Vagalinski, N. Sharankov (eds.), *LIMES XXII: Proceedings of the 22nd International Conference of Roman Frontier Studies, Ruse, Bulgaria, September 2012,* 163–168, Sofia.

DRENNAN, R. D., C. E. PETERSON 2004, Comparing archaeological settlement systems with rank-size graph: a measure of shape and statistical confidence. – *Journal of Archaeological Science* 31, 533–549.

DUCH, M. 2017, *Economic role of the Roman Army in the province of Lower Moesia (Moesia Inferior).* – Gniezno.

DZINO, D. 2010, *Illyricum in Roman Politics.* – Cambridge.

EARLE, R., R. W. PREUCEL 1987, Processual Archaeology and the radical critique. – *Current Anthropology* 28/4, 501–538.

ECK, W. 2000, Provincial administration and finance. – In: A. Bowman, P. Garnsey, D. Rathbone (eds.), *The Cambridge Ancient History* XI. *The High Empire A.D. 70–192*, 266–292, Cambridge.

ERDKAMP, P. (ed.) 2002, *The Roman Army and the Economy.* – Amsterdam.

ERDKAMP, P. 2005, *The Grain Market in the Roman Empire: a social, political and economic study.* – Cambridge.

FERJANIĆ, S. 2002, *Naseljavanje legijskih veterana u balkanskim provincijama. I–III n.e.* – Posebna izdanja 79. Balkanološki institut SANU, Belgrade.

FINLEY, M. 1977, The ancient city: from Fustel de Coulanges to Max Weber and beyond. – *Comparative Studies in Society and History* 19/3, 305–327.

FOXHALL, L., H. A. FORBES 1982, Sitometria: the role of grain as a staple food in Classical Antiquity. – *Chiron* 12, 41–90.

GABLER, D., A. H. VADAY 1992, Terra Sigillata im Barbaricum zwischen Pannonien und Dazien. – *Acta Archaeologica Academiae Scientiarum Hungaricae* 44, 83–160.

GALESTIN, M. 2005, Barriers for Barbarians. – In: Z. Visy (ed.), *LIMES* XIX, *Proceedings of the XIXth International Congress on Roman Frontier Studies held in Pécs, Hungary, September 2003,* 221–226, Pécs.

GARNSEY, P. 1998, Grain for Athens. – In: W. Scheidel (ed.), *Cities, Peasants and Food in Classical Antiquity: essays in social and economic history,* 183–200, Cambridge.

GEROV, B. 1980, *Beiträge zur Geschichte der römischen Provinzen Moesien und Thrakien* I. – Amsterdam.

GEROV, B. 1997, *Beiträge zur Geschichte der römischen Provinzen Moesien und Thrakien* II. – Amsterdam.

GUTTERIDGE, A., A. HOTI, R. H. HURST 2001, The walled town of Dyrrachium (Durres): settlement and dynamics. – *Journal of Roman Archaeology* 14, 391–410.

HANSON, J. 2016, *An urban geography of the Roman world, 100 BC to AD 300.* – Roman Archaeology 18, Oxford.

HODDER, I. 1986, *Reading the Past. Current approaches to interpretation in Archaeology.* – Cambridge.

HORVAT, J. et al. 2003 = J. Horvat, M. Lovenjak, A. Dolenc Vičič, M. Lubšina Tušek, M. Tomanič Jevremov, Z. Šubic 2003, Poetovio, development and topography. – In: M. Šašel-Kos, P. Scherrer (eds.), *The Autonomous Towns of Noricum and Pannonia / Die autonomen Städte in Noricum und Pannonien. Pannonia* I, 153–189, Situla 41.

IVANOV, R. 2003, Durostorum. – In: R. Ivanov (ed.), *Rimski i ranovizantijski selišta v Bâlgarija* II, 75–86, Sofia.

JEFFERSON, M. 1939, The law of the Primate City. – *Geographical Review* 29, 226–232.

JOHNSON, G. A. 1977, Aspects of regional analysis in Archaeology. – *Annual Review of Anthropology* 6, 479–508.

JOHNSON, G. A. 1980, Rank-size convexity and system integration. A view from archaeology. – *Economic Geography* 56/3, 234–247.

KREKOVIČ, E. 2001, Some comparisons between Germanic and Sarmatian limes in Pannonia. – *Acta Archaeologica Academiae Scientiarum Hungaricae* 52/1–3, 103–107.

KRONBERGER, M., M. MOSSER 2002, Vindobona-legionary fortress, canabae legionis and necropolis. – In: P. Freeman, J. Bennett, Z. T. Fiema, B. Hoffmann (eds.), *LIMES* XVIII: *Proceedings of the XVIIIth International Congress of Roman Frontier Studies held in Amman, Jordan,* 573–584, Oxford.

KRUGMAN, P. 1996, Confronting the mystery of urban hierarchy. – *Journal of the Japanese and International Economies* 10, 399–418.

KUZMOVÁ, K. 2005, Samian ware on the north Pannonian frontier and behind it. – In: Z. Visy (ed.), *LIMES* XIX. *Proceedings of the XIXth International Congres of Roman Frontier Studies held in Pécs, Hungary, September 2003,* 979–986, Pécs.

LAMBOLEY, J-L. et al. 2011 = J-L. Lamboley, F. Drini, F. Quantin, S. Shpuza, S. Verger, A. Skenderaj, E. Follain, M.-H. Barrière, P. Lenhardt, V. Bereti, A. Islami 2011, Apollonia d'Illyrie (Albanie). – *Mélanges de l'École française de Rome* 132/1, 242–262.

LENGYEL, A., G. T. RADAN (eds.) 1980, *The Archaeology of Roman Pannonia.* – Budapest.

LOCK, G. R. (ed.) 2000, *Beyond the map: archaeology and spatial technologies.* – Amsterdam.

MANGO, C. 1985, *Le développement urbain de Constantinople (IVe–VIIe siècles).* – Travaux et memoires du centre de recherche d'histoire et civilization de Byzance 2, Paris.

MANGO, C., G. DAGRON (eds.) 1995, *Constantinople and its hinterland: papers from the Twenty-Seventh Spring Symposium of Byzantine Studies, Oxford, April 1993.* – Aldershot.

MARTEMIANOV, A. P. 2012, Vici i komai pervih vekov nashei eri na teritorii trakiiskih zemel. – *Drevnosti 2012,* 40–52.

MARZANO A. 2011, Rank-size analysis and the Roman cities of the Iberian Peninsula and Britain. – In: A. Bowman, A. Wilson (eds.), *Settlement, urbanization and population,* Oxford Studies in the Roman Economy 2, 196–228, Oxford.

MIKULČIĆ, I. 1971. Teritorija Skupa. – *Živa Antika* 21, 463–484.

MOSSÉ, C. 1973, *Athens in decline, 404–86 B.C.* – London.

OLTEAN, I. 2007, *Dacia. Landscape, colonization and Romanization.* – London.

ORTON, C., I. HODDER 1976, *Spatial analysis in Archaeology.* – Cambridge.

OSARAGI, T. 2002, Classification methods for spatial data representation. – *Centre for Advanced Spatial Methods Analysis. Working Papers,* 3–19.

PAPAZOGLOU, F. (ed.) 1999, *Epiri, Macedoniae, Thraciae, Scythiae.* – Inscriptiones Graecae X II.2, Berlin.

PISO, I. 1991, Die Inschriften vom Pfaffenberg und der Beriech der Canabae legionis. – *Tyche* 6, 131–169.

PISO, I. 1995, Le territoire de la colonia Sarmizegetusa. – *Ephemeris Napocensis* 5, 63–82.

PLOYER, R. 2009, Veteranen im Hinterland von Carnuntum: das Gräberfeld von Mannersdorf am Leithagebirge und die Besiedlung des Leithagebietes in römischer Zeit. – In: A. Morillo, N. Hanel, E. Martín (eds.), *LIMES* XX: *Estudios sobre la frontera romana (Roman Frontier Studies),* 1437–1446, Madrid.

POPOVIĆ, V. 1967, Uvod u topografiju Viminaciuma. – Starinar 18, 29–49.

POUNDS, N. J. G. 1969, The Urbanization of the Classical World. – *Annals of the Association of American Geographers* 59/1, 135–157.

RICH, J., A. WALLACE-HADRILL (eds.) 1991, *City and country in the ancient world.* – Leicester-Nottingham Studies in Ancient Society 2, London.

SANTORO, S., A. MONTI 2008, The city of Durres and its history, between environmental evolution and cultural transformations. – In: J. Erzsébet, F. Redő, V. Szeverényi (eds.), *On the Road to Reconstructing the Past. Computer Applications and Quantitative Methods in Archaeology (CAA). Proceedings of the 36th International Conference. Budapest, April 2–6, 2008,* 491–495, Budapest.

SMITH, C. A. 1985, Theories and Measures of Urban Primacy: A Critique. – In: M. Timberlake (ed.), *Urbanization in the World Economy,* 121–167, New York.

SUIĆ, M. 1981, *Zadar u starom vijeku.* – Zadar.

TAČEVA, M. (ed.) 2004. *Vlast i socium v rimska Trakija i Mizija.* – Sofia.

TILLEY, C. 1994, *A phenomenology of landscape: places, paths and monuments.* – Berg.

TIMBERLAKE, M. (ed.) 1985, *Urbanization in the World Economy.* – New York.

TOMAS, A. 2007, Inter Moesos et Thraces. A contribution to the studies of the rural hinterland of Novae in Lower Moesia. – *Archaeologia* 58, 31–47.

VAN LEUSEN, M., V. GAFFNEY 1995, Postscript – GIS, environmental determinism and archaeology: a parallel text. – In: G. Lock, Z. Stančić (eds.) *Archaeology and Geographic Information Systems: a European perspective,* 367–382, London.

VAPNARSKY, C. A. 1969, On Rank-Size distributions of cities: an ecological approach. – *Economic Development and Cultural Change* 17/4, 584–595.

VERHAGEN, P. 2018, Spatial Analysis in Archaeology: Moving into New Territories. – In: C. Siart, M. Forbriger, O. Bubenzer (eds.), *Digital Geoarchaeology. New Techniques for Interdisciplinary Human-Environmental Research,* Natural Science in Archaeology, 11–25.

WHEATLEY, D. 2004, Making space for an archaeology of place. – *Internet Archaeology* 15. [https://eprints.soton.ac.uk/28800/].

WHITTAKER, R. C. 1994, *Frontiers of the Roman Empire: a social and economic study.* – Baltimore.

WIELOWIEJSKI, J. 1990, Carnuntum als Umschlagplatz römischer Importe nach dem Norden. – In: H. Vetters, M. Kandler (eds.), *Akten des 14. Internationalen Limeskonresses 1986 in Carnuntum,* 753–763, Wien.

WILKES, J. J. 1969, *Dalmatia.* – London.

WILKES, J. J. 2002, A roman colony and its people (c. 50 B.C. – c. A.D. 150). – In: E. Marin (ed.), *Longae Salonae* I, 87–105, Split.

ZOTOVIĆ, L., Č. JORDOVIĆ 1990, *Viminacium*1. *Nekropola 'Više Grobalja'.* – Belgrade.

ZSIDI, P. 2003, Aquincum. Ergebnisse der topographischen und siedlungshistorischen Forschungen in den Jahren 1969–1999. – In: M. Šašel-Kos, P. Scherrer (eds.), *The Autonomous Towns of Noricum and Pannonia / Die autonomen Städte in Noricum und Pannonien. Pannonia* II, 209–230, Situla 42.

Najpomembnejša antična mesta balkanskih provinc in obeh Panonij

Povzetek

Naselbine, predvsem urbani sistemi, predstavljajo temeljno izhodišče za preučevanje antičnega urbanizma. Takšen pristop ponuja teoretičen okvir za analize razmerij med posameznimi mesti, hkrati pa omogoča povezovanje mestne geografije z ekonomskimi razmerami na preučevanem območju. Kljub nekaterim očitnim težavam, na katere so naleteli sodobni ekonomski geografi pri uporabi tovrstnega koncepta za pretekle družbe, številne študije vendarle dokazujejo ustreznost in vrednost takšnega koncepta. Čeprav niti arheologija niti antična zgodovina ne ponudita dovolj podrobnih informacij, kot jih pisni viri modernih družb, smo nekatere analitične pristope sodobnih geografov vendarle vključili v analizo antičnega urbanizma. Cilj naše razprave je pokazati, da lahko sistematično preučevanje urbanih sistemov privede do pomembnih zaključkov o antičnih družbah in njihovem gospodarstvu.

Predmet našega prispevka so urbani sistemi balkanskih in donavskih provinc v času severske dinastije; iz analize sta izključeni provinca Ahaja in Deseta italska regija na severnem Jadranu. Ker pa je popolnoma nemogoče, da bi v tako kratkem prispevku obdelali celoten mestni sistem obravnavanega območja, je študija osredotočena na prvorazredna mesta. Primerjava velikosti posameznih provincialnih mest, kmetijski potencial njihovega zaledja ali njihovo mesto v mestni mreži celotnega rimskega imperija jasno odsevajo naravo celovitih mestnih sistemov.

Vendar pa obravnavano območje naše študije za analizo ne predstavlja povsem smiselne celote. Mejne province se v nekaterih pogledih povsem razlikujejo od provinc, v katerih ni bilo legij, niti ni jasnih dokazov o gospodarskih stikih med njimi. Nedvomno je torej, da obstajajo pomembne razlike med posameznimi provincami, zato je edini možen pristop za preučevanje prvorazrednih naselbin njihova obravnava v okviru urbanih geografij posameznih provinc.

Podatke smo črpali predvsem iz topografskih študij, deloma pa iz informacij, ki jih ponujajo zračni posnetki. Podatki še zdaleč niso popolni in zahtevajo veliko mero domnevanja, kar pa ne oslabi glavnih zaključkov študije.

Primerjava velikosti naselbin s statusom ali videzom mesta je razkrila tri do štiri naselbinske razrede za vsako posamezno provinco na obravnavanem območju. Ni presenetljivo, da število mest od najnižjega do prvorazrednega upada. V večini provinc je prvo stopnjo mestne hierarhije zasedalo le po eno mesto. Pa vendar sta zaradi posebnih razmer v nekaterih mejnih provincah najvišji razred dosegli dve legijski mesti. Glede na to, katere ocene velikosti smo vključili v analizo, so bila v Zgornji Panoniji kar tri najpomembnejša mesta, kar pa je odsev statičnosti urbanih siste-

mov v obmejnih provincah, kjer so bili v ospredju predvsem vojaški in strateški interesi.

Po ocenah velikosti se mesta med seboj precej razlikujejo, velikostne kategorije pa se gibljejo od 50 do skoraj 200 hektarjev. Prvorazredne naselbine, obravnavane v tej študiji, niso posebno velike, če jih primerjamo s prvorazrednimi mesti celotnega cesarstva; v tem oziru so balkanske in podonavske province bliže severnoevropskim kot pa sredozemskim provincam. Z izjemo Bizanca so prvorazredna mesta v mejnih provincah običajno večja od prvorazrednih mest v provincah brez vojske.

Analiza absolutnih velikosti prvorazrednih mest nam torej omogoča le omejene zaključke. Da pa bi razumeli strukturo celovitega mestnega sistema, je ključno velikost prvorazrednih mest primerjati z velikostjo nižje umeščenih mest. Gre za ugotavljanje indeksa prednosti (*primacy index*) posameznih mest. V študiji smo uporabili dva načina ugotavljanja indeksa prednosti: najprej smo izračunali razmerje velikosti prvorazrednega mesta z drugim največjim, nato pa še razmerje velikosti največjega mesta s celotnim mestnim območjem. Dobljene rezultate smo primerjali z ocenami t. i. zakona porazdelitve rangov naselij (*rank-size rule*) in tako dobili izmero centralizacije v mestni geografiji. Po prvi analizi so bili rezultati nekoliko nepričakovani, saj so pokazali, da sta bili največji mesti obravnavanega območja, Karnunt in Akvink, najmanj vodilni v njunem mestnem sistemu, za bistveno pomembnejšo pa se je nepričakovano pokazala najmanjša med prvorazrednimi naselbinami, Salona, ki je imela dominantno vlogo. Nadaljnja analiza velikosti drugo- in tretjerazrednih mest in izračun razmerja med največjim mestom ter celotnim mestnim območjem pa sta pokazala, da je prvi rezultat zgolj posledica dejstva, da je več mest umeščenih v zgornje razrede hierarhije poselitve. Razlika med najmanjšim mestom v rangu najpomembnejših mest province in mestom naslednje stopnje je enako velika ali celo večja kot v provincah z enim prvorazrednim mestom, medtem ko največje prvorazredno mesto zaseda večji delež celotne mestne površine v primerjavi z manjšimi mesti. Kljub temu rezultati prve analize niso nezanemarljivi. Mestni sistem rimske province Dalmacije morda ni imel prvorazrednega mesta, a Salona je zagotovo bila najpomembnejše mesto v tej provinci in bi se, če ne bi bila podrejena interesom Rima in Italije, najverjetneje razvila v prvorazredno mesto.

Relativna enotnost indeksov prednosti posameznih provinc se lahko nanaša na različno velikostno hierarhijo mest v mejnih in nevojaških provincah. Prvo- in drugorazredna mesta v mejnih provincah so bila večja kot istorazredna mesta v provincah brez vojske. Mesta so bila v slednjih številnejša, največja mesta pa so zasedala manjši delež celotne urbanizirane površine.

Čeprav imajo nekatera mesta Spodnje Panonije ali Dalmacije določene vodilne značilnosti znotraj mestne hierarhije, nobeno od prvorazrednih mest v tej študiji ne dosega stopnje vodilnega mesta. Neenakomerni kontakti z Rimom, vojaški značaj mestnih sistemov mejnih provinc in čezmerna urbanizacija v nekaterih nevojaških provincah so bili glavni dejavniki, ki so zavirali razvoj vodilnih mest na obravnavanem območju.

Že ob hitrem pregledu tu obravnavanih mest opazimo tesno povezavo med upravnim statusom in vlogo mest ter njihovo velikostjo. Vsa prvorazredna mesta, z izjemo Bizanca, so bila legijski tabor, glavno mesto province ali pa oboje. Po eni strani to kaže, da je imel Bizanc pred preoblikovanjem v cesarsko prestolnico v 4. stoletju pomembno vlogo, najverjetneje zaradi svoje lege v globalni mestni mreži. Po drugi strani pa njegov primer kaže na relativno togo naravo mestnega sistema obravnavanih provinc. Rast mest je bila neločljivo povezana s formalnim statusom in privilegiji, ki so bili mestom dodeljeni glede na politične in strateške vidike. Manjša mesta so se zato le stežka razvijala in rasla. To je jasno razvidno tudi v velikostni razliki med avtonomnimi mesti in podrejenimi centralnimi kraji. Brez statusa avtonomnega mesta nobena naselbina ni mogla doseči drugo raven mestne hierarhije. In v istem smislu tudi povprečno provincialno mesto ni moglo konkurirati mestom, ki so ležala ob legijskem taboru ali provincialnem središču in sedežu finančne uprave.

Glede na lego in določene vidike mestne topografije lahko veliko prvorazrednih naselij obravnavanega območja označimo kot prehodna mesta, ki so znana iz novoveških, kolonialnih kontekstov. Vzporednice lahko povlečemo ne samo zaradi formalnih podobnosti – lokacije, velikosti in mestne topografije – ampak tudi zaradi podobne vloge prehodnih skupnosti in tu obravnavanih prvorazrednih mest. Oboji so bili ustanovljeni, da bi posredovali med Rimom in provincami ali med Rimom in barbarikom. Primerjava prvorazrednih mest obravnavanega območja s prehodnimi mesti novega veka morda ni povsem ustrezna, vendar meče zanimivo luč na lego in vlogo obravnavanih provinc znotraj politične ekonomije visokega cesarstva.

S primerjavo velikosti prvorazrednih naselbin in njihovega kmetijskega zaledja znotraj mestnega teritorija smo ugotovili, da na obravnavanem območju ni bilo pravih prednostnih mest. Če podeželskega prebivalstva v mestnih agrih ne bi upoštevali, bi skoraj vsa mesta bila samozadostna. Njihov položaj pa postane nekoliko bolj kočljiv, če upoštevamo podeželsko prebivalstvo. Toda tudi v tem primeru je treba stopnjo urbanizacije oceniti na manj kot 30 %, preden mestno in podeželsko prebivalstvo postane preveliko za lokalne kmetijske vire. Dokler stopnja urbanizacije ni manjša od 15 %, so ocenjeni primanjkljaji razmeroma majhni. Menimo, da je treba ocene lokalne urbanizacije razlikovati od stopenj splošne urbanizacije in da morajo biti opazno višje od slednjih. Toda kljub nizki stopnji urbanizacije v mestnih zaledjih so imela ta mesta na razpolago številne mehanizme, s katerimi so nadomestila primanjkljaj zemljišč v agru. Velika upravna ozemlja, dostop do žita, pridelanega v drugih delih cesarstva, naklonjenost cesarja ali provincialnih oblasti ali posestva zunaj mestnih ozemelj je samo nekaj rešitev za morebitno pomanjkanje žita v zaledju prvorazrednih naselbin.

Velikost, status in lokacije prvorazrednih naselbin zrcalijo naravo celovitih mestnih sistemov v provincah obravnavanega območja in njihovo vlogo v gospodarstvu v času principata. Urbanizacija balkanskih in donavskih provinc je neločljivo povezana z rimskim osvajanjem tega območja, ki je prišlo pod upravo rimske države, k osvajanju pa so cesarje vodili predvsem vojaški in strateški razlogi. Glavna naloga mest je bila zaščita in upravljanje novoosvojenih ozemelj ter pobiranje davkov in izkoriščanje naravnih virov. V času visokega cesarstva so balkanske in donavske province ležale na periferiji imperija s središčem v Italiji in Rimu. Te razmere pa niso bile posebno ugodne za razvoj zelo velikih mest. Korenita sprememba regionalnega mestnega sistema v pozni antiki dodatno podpira tezo, da so bila prvorazredna mesta v obravnavani regiji na vrhu razvejenega mestnega sistema, ki je vse do 4. stoletja gravitiral k Rimu in Italiji.

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