Influence of Landscape and Climate Conditions on the Urban Fabric of Philippopolis in Antiquity

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Abstract: The main task of the research project that I present here is to identify possible settlement areas of permanent residence in Antiquity in the vicinities of the Roman town Philippopolis. In order to achieve a more complete picture of the ancient hinterland, I have conducted a comparative study and additionally developed graphical reconstructions of the hinterland of two other Roman settlements – Serdica and Augusta Traiana. All three towns were situated in the Roman province of Thrace and are now located in the territory of Bulgaria. The research project results in 12 drawings – territorial schemes. Three of them show the identified areas, while the remaining 9 drawings correspond to three factors according to which the areas were located. These factors are altitude, soil fertility and river networks in the hinterland of Philippopolis, Serdica and Augusta Traiana. The project's significance is in its methodology and the fact that it addresses broader theoretical questions on Roman territorial settlement structure. The discourse of the study is influenced by the works of the French historian Fernand Braudel, where he argues for the importance of continuity, for the sustainable conditions of environment: landscape, water and climate. Braudel prioritizes the longue durée changes, rejects periodization in history and thus opens space for an entirely new interpretation of the past.

Key words: urban planning, Antiquity, Serdica, Philippopolis, Augusta Traiana, Roman province, Thrace, Roman towns, heritage of Bulgaria, Roman hinterland, landscape, climate.

Introduction

My research is positioned in the discourse of environmental history and urban planning where my professional expertise is. In the influential publications of the French historian Fernand Braudel and his discourse for a new historical interpretation there is little space for revolutions and epic moments. Instead, he is focused on the “anonymous history, working in the depths and most often in silence” (Braudel 1980, 7). What is fundamentally new in his ideas is based on the understanding of continuities in history over very long periods of times. He is opposed to event-based history, the one resulting from heroic individuals and sudden breaks for short time spans. As Harris puts it, “in much of his [Braudel's] work his preference for deep, long term temporality, the almost motionless quality of the longue durée is a way of writing against the grain of conventional periodization” (Harris 2004, 161). The importance of Braudel's philosophy is that it establishes the frame for new interpretations of already known archaeological discoveries. Thus, in my opinion, the importance of places where the Roman
towns of Philippopolis, Serdica and Augusta Traiana were established, their geographical destiny as a crossroad of East and West, and of North and South, had existed before they were founded. This is due to the favorable combination of natural conditions – more specifically, landscape and climate. The sites bear sustainability that allowed these urban structures to survive and pass through the following historical epochs to nowadays when they are livable contemporary urban structures. The presented study aims to determine the characteristics of the urban hinterlands which made them sustainable. I attempt to find the answer to the issue how different altitudes, climate conditions, soil fertility, landscape of the territory influence the genesis and development of urban structures. The paper for the conference “Cities, Territories and Identities” includes graphic reconstructions of the ancient urban landscape of Philippopolis, a major urban structure in the province of Thrace, and its adjacent territory. The project realization was motivated by my intention to explore the relationship between climate and landscape on the one hand, and the cultural changes in the face of architecture on the other. The subject of research is the urban fabric of Antiquity, and more specifically, I seek to find out how landscape and climate conditions influenced urban size, building density and boundary lines.

The importance of environment in Roman urban planning when selecting a site for the foundation of a new town is reflected in the 1st century BC writings of the architect Vitruvius (Vitr. De arch. 1.4.1-8). He devotes text from Book 1 on the methods for inspecting the air, and comments on different features of place salubrity, for example: “firstly, the choice of the most healthy site. Now this will be high and free from clouds and hoar frost, with an aspect neither hot, nor cold, but temperate”. Throughout all of his “Ten books on architecture” the Roman architect integrates, among other issues, advice on selecting a site with proximity to clean water, away from marshes, natural security, provided by heights, sea and rivers, and especially emphasizes on features like winds, humidity, sunlight and sunshades (Vitr. De arch. 1.4.11-12).

The town of Philippopolis from the 1st to the 3rd century AD overlaps with the central parts of the contemporary town of Plovdiv. It was an existing urban structure from the pre-Roman period (Topalilov 2012, 364), situated on the heights next to the navigable river Hebros, now Maritsa. Although the residential and religious areas were located ca. 300 m above sea level, when the Romans came, they added new urban structures on the empty and flat land of an average altitude of 130 m, situated to the South of the existing settlement. Thus the Roman town was formed and consisted of two nuclei. The boundaries were defined respectively: in the first nucleus, by the existing wall on the Three Hills, and in the second – by the end of the orthogonal street grid, and the northern urban boundary set by the Hebros River.

The second ancient town which I include in the research is Serdica, situated in the past in the province of Thrace and now located in the downtown area of Sofia, the capital of Bulgaria. There is no archaeological evidence of an urban structure before the Romans and even recent excavations date the oldest finds to the 1st – 2nd century AD. For the new town of Serdica an area which was on a terrain at an average altitude of 530 m was selected, bordered by heights to the East, with
an altitude of 560 m. A shallow river, now called the Vlady ska, passed to the North and determined the north town area boundary. In the immediate vicinity there were mineral springs whose waters were not captured and, therefore, formed lakes. Serdica was located on the major provincial road – the so-called Via Militaris. The end of the street network, reconstructed graphically and published by the archaeologist V. Dinchev (Динчев 2011, 69), the mineral lakes to the North, and the heights to the East marked the urban nucleus boundaries of Serdica.

Augusta Traiana is the third urban structure and case study for this research. It was founded in a fertile land with an altitude of 196 meters above sea level. Just like the development of the Roman urban structures of Philippopolis and Serdica, the transformation of the town borders of Augusta Traiana passed firstly through natural boundaries like heights and rocks, until later, about 60 years after the town’s foundation, fortress walls were constructed in the AD 170s (Kaltschev 1998, 72).

**Methods**

I have created and tested a research method by which I can identify the areas with the highest probability for permanent residence. The applied method is derived from contemporary methods for developing regional design maps and on the premise that human evolution over the last 10,000 years has been cultural and not biological. Human biology sets certain limits on permanent livable environment and therefore I have developed the maps on the data provided by three basic factors that are crucial for permanent dwelling, namely: altitude, proximity to water and soil fertility. The location of the determined areas might be used for other scholarly work concerning different historical eras, since they are based on biological features. The feasibility of the project is that it might identify possible areas of archaeological investigations of permanent dwellings in Antiquity.

Secondly, I have conducted a comparative analysis through which I aimed to overcome the disadvantages of the limited data on the landscape and climate conditions in Philippopolis’ hinterland from the 1st to the 3rd century. Additionally, I have reconstructed graphically the urban structure of two other important urban structures in Antiquity – Serdica and Augusta Traiana, covering the same time span.

Since the information on landscape and climate around Philippopolis, Serdica and Augusta Traiana in the 1st – 3rd century is very incomplete and fragmented, the only possibility to reconstruct graphically the ancient hinterland was to use all the evidence, maps, and images dating from other periods, mainly from the 19th and early 20th centuries, and even data from present days. I have developed graphical reconstructions that reflect and go through time and space, from which the sustainable values can be determined. “Geography in this context is no longer an end in itself but a means to an end. It helps us to rediscover the slow unfolding of structural realities, to see things in the perspective of the very long term. Geography, like history, can answer many questions. Here it helps us to discover the almost imperceptible movement of history, if only we are prepared to follow its lessons and accept its categories and divisions” (Braudel 1975, iv).

The presented maps in **fig. 1**, **fig. 2** and **fig. 3** show the hinterlands of Philippopolis, Serdica and Augusta Traiana. I have narrowed down
quantitatively the hinterland as an area around the town with a radius of 30 km because it corresponds to one day of walking or an oxen-driven cart's distance covered at an average speed of 4 km per hour.

My first task was to identify areas near Philippopolis, Serdica and Augusta Traiana that have the highest probability for permanent habitation, which means the areas with the best combination of sustainable conditions. As already mentioned, there are biological limits to permanent livable environment. Thus, I have set some basic factors that are crucial for permanent dwelling. They are divided thematically and with the intention to illustrate how different altitudes, water availability, soil fertility, in combination with the landscape of the territory influence the genesis and development of urban structures. The first one is altitude (sea level). Now the majority of world population settles permanently in territories with an altitude up to 200 meters above sea level, which fact I have accepted as the most favorable altitude for humans. The second range is from 200 up to 500, and the next one from 500 to 900. Above 900 meters above sea level there are mountain areas very rarely inhabited by people. Therefore, the lower the altitude and the closer to sea level, the more likely it was inhabited by humans in Antiquity. The second criterion is soil fertility, which is related to agriculture. In anthropology there is a term, “carrying capacity”, which means the maximum population size supported in a given environment. When food is more limited, the population breaks into smaller groups for feeding. So the most fertile soils cause the concentration of bigger groups of population; for example, in a very fertile land, it is very likely that production and consumption of wheat is higher than that of barley which provides a low-calorie diet. The content of diet reflects directly on the number of population (Sanders 1984, 253). For the research I selected 3 levels of best soil fertility in the hinterlands of Philippopolis, Serdica and Augusta Traiana. The third criterion is water resources, which means the river networks in the vicinity of the three Roman towns. I have set a proximity of 2,500 m distance from the rivers, which means access to water on everyday basis. Proximity to river provides also close access to food (fish), as well as easy communication. The intersection of all these factors determines the area with the highest probability of permanent settlements.

The implemented data on climate, soil and river networks represent pre-modern maps from the end of the 19th century, where the state of the landscape and river networks was documented. I have gathered data from the first urban master plans of Sofia and Plovdiv from the end of the 19th century (Пищачев 1912; Шнитер 1896). Contemporary data that contain information about altitude were obtained from a Sofia Atlas (Атлас 1993) and geographical maps of soil types distribution in Bulgaria (Александров 2006, 10).

The territorial schemes in figs. 1, 2 and 3 are arranged in one and the same pattern and show: in the upper left picture, the altitude schemes into 3 levels of altitude; in the upper right – the soil fertility maps present 3 levels of soil fertility; in lower left, the river maps show 2 levels of proximity to rivers. The areas with intersection of the most favorable conditions are presented in the final maps in the lower right illustration, and these are the graphical results of the first task: the three maps with the location of the area with highest probability of permanent dwelling in Philippopolis, Serdica and Augusta Traiana.
The results obtained in this project, namely the graphical reconstructions of the hinterland in Antiquity and the identification of areas with the highest probability for the existence of settlements in the urban hinterland, show that around Philippopolis the area was spread along the Hebros (Maritsa) and is about 306 km²; in the vicinity of Serdica

**RESULTS**

The results obtained in this project, namely the graphical reconstructions of the hinterland in Antiquity and the identification of areas with the highest probability for the existence of settlements in the urban hinterland, show that around Philippopolis the area was spread along the Hebros (Maritsa) and is about 306 km²; in the vicinity of Serdica
the area with the highest probability of Roman settlements is 356 km² and is located in one big spot and several tiny ones; around Augusta Traiana the area is fragmented and in total amounts to 106 km². Comparing both structures, the initial leading factors for Serdica’s foundation were civilization factors, such as communication and com-
merce, while for Philippopolis they were natural ones, such as climate and landscape. The results led to some other questions for further research.

From this point on, we might continue the study by finding out the border line between the urban periphery and the hinterland, and how

Fig. 3. Maps of Augusta Traiana’s hinterland (author: D. Popova)
its location influenced the urban structure. The distinctions between Roman town and its countryside were not definite. In her book, “The Roman city and its periphery”, P. Goodman (2012, 27) states that the Roman town was rural and its adjacent countryside was urban, as the landscape was dominated by the villa estate culture. The *villa* and *vicus* were connected with the *municipium* which had merged into the countryside. In this context, some questions arise for the Roman urban planning of Serdica and Philippopolis. For example: to what extent was the location of markets and *horrea* in Serdica and Philippopolis determined by the more developed peri-urban agricultural territory? Why Serdica’s urban structure grew to the North, since the South is more favorable in terms of geographical and climate conditions?

Through the identification of the boundary between the urban nucleus and its hinterland in the selected case studies, its changes can be followed in its dynamic. Spatial markers of town boundaries before town walls are: heights, cliffs, rivers and lakes; the end of orthogonal street network; *necropoleis* and tombs (Goodman 2012, 225).

Thrace became a Roman province in AD 46 during the reign of the Roman emperor Claudius (Ботева 2017). In the first half of the 2nd century AD, Serdica’s urban fabric was developed (Динчев 2010) and increased to the North, following the direction of the provincial road. The periphery absorbed the land around the mineral lakes. Probably at this time the mineral waters were captured, which initiated the urbanization of this area of Serdica.

Philippopolis grew especially during the reign of Emperor Domitian (AD 81-96). The *agora* was reorganized. The urban core on the Three Hills, which formed the *acropolis* following the Hellenistic urban model, did not change its borders. The second nucleus that belonged to the Roman quarters grew northward to the foot of the hill (Topalilov 2012, 364-390).

Between the years AD 100 and 150, the boundaries of Serdica and Philippopolis reached a level of development that proved their potential to play the role of urban centers. As a result of their successful development, Emperor Trajan raised their status (Boteva 2014, 196). They were cities which managed a given territory. In Serdica, mineral spring waters were captured and the land around them drained, which allowed construction. The urban nucleus was expanded northwards by the addition of new quarters. Philippopolis became larger in territory and population. The Roman theatre is dated to the reign of Emperor Trajan (AD 114-117), while the stadium was built during the reign of Emperor Hadrian (AD 117-138). The urban nucleus included the *acropolis* and the Roman town in the valley to the south. The river remained on the border.

Between the years AD 150 and 200, the urban development of Serdica (Kirova 2012, 210) and Philippopolis (Topalilov 2012, 370) was characterized mainly by the construction of the city walls. From the late 2nd century, in the period AD 176-180, the urban nucleus was outlined by town walls. Instead of natural barriers as borders, the Romans constructed 10 m high structures. Residential quarters, temples and a necropolis became part of the urban periphery. Philippopolis’ city wall was built in AD 172 (Topalilov 2012, 396) and two or three rows of urban quarters – *insulae* remained outside
the town walls and formed its periphery. Excavations show that the newly built city wall passed through older residential quarters and part of them remained in the periphery.

The urban development outlined in the changes of the urban boundaries of Philippopolis, Serdica and Augusta Traiana shows a unique identity. My point is that although, to a great extent, towns were established according to the unified rules of Roman urban planning, the natural conditions, namely the landscape and climate, modelled the shape, road approaches, building density of the selected towns and thus they were the generators of building adaptations to the sites.

**Discussion**

To what extent the used pre-modern and contemporary data about climate and landscape of Philippopolis’ hinterland are informative about Antiquity and how reliable are the results? In contrast to modern times, there is very little data about climate in Antiquity, and in the very rare cases when they exist, they are qualitative and descriptive, such as rainy year, dry year, cold winter, etc. For example, the ancient architect Vitruvius gives instruction to what climate and landscape conditions an area must correspond in order to be favorable land to found a town (Vitr. *De arch.* 1.4.1-8).

One of the arguments for the reliability of the results is the continuity and sustainability of climate and landscape in a given region over centuries. Local climatic changes are random, they are not dominant in a region for a long period of time. The geographer Holm confirms that: “co-variation of data on a temporal scale is very likely to be purely coincidental, so very long-term data series are important for the robustness of any observation that rests on observation of movements” (Holm 2015, 77). Another group of researchers (McCormic et al. 2012, 174) of climate in Antiquity concludes that “The climate is always changing, but the degree, frequency, and location of the changes vary significantly. Relative to the Late Holocene period, multiproxy indicators point to a low range of variability from 100 BC to 800 AD”. The French historian Fernand Braudel’s analysis on environment is derived from the geography of mountains, plains and waters of the Mediterranean, which did not change for centuries. Therefore, my opinion is that it becomes easy to see how factors of geology and climate might influence urban fabric. “In other words, climate history has moved into a sphere of relatively stable knowledge and historians should therefore consider such information as just as relevant to the *longue durée* as other physical phenomena” (Holm 2015, 75).

A key instrument in order to overcome fragmentary information is to apply a comparative approach to other urban hinterlands from antiquity. This is the reason why the case studies of the hinterlands of Serdica and Augusta Traiana were added to the research of Philippopolis’ hinterland. Another method is through adding more climate factors into the reconstruction of Philippopolis’ hinterland environment, which will add higher precision to the general picture, but it seems illogical that the overall pattern would change much.
Bibliography


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