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Zemun's Architectural Evolution: A Comparative Analysis of Ottoman and Austro-Hungarian Impact

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Abstract

Situated at the crossroads of the Sava and Danube rivers, Zemun has long stood as a gateway between East and West, a meeting point of empires, and a site of profound cultural and architectural transformation. Its strategic location rendered it not only a contested frontier but also a melting pot of influences, where the distinct legacies of Ottoman and Austro-Hungarian rule left indelible marks on its urban and architectural landscape.

The architectural composition of Zemun reflects its complex history, clearly illustrating the transformative impacts of Ottoman and Austro-Hungarian rule. From the organic, labyrinthine streets and modest edifices characteristic of Ottoman urbanism to the more proactive urban planing and grandiose structures emblematic of Austro-Hungarian architecture, Zemun embodies a rich mosaic of styles and ideologies.

This thesis explores how Zemun's unique geographic and geopolitical position shaped its architectural evolution. By examining the urban planning strategies, building typologies, and regulatory frameworks of both empires, this study seeks to uncover the ways in which their overlapping legacies converge and diverge. Through this analysis, the thesis highlights Zemun's role as a dynamic microcosm of the broader historical and cultural shifts that have shaped Southeast Europe.

Kurzfassung

An der Mündung der Flüsse Save und Donau gelegen, war Zemun seit jeher ein Tor zwischen Ost und West, ein Treffpunkt der Imperien und ein Schauplatz tiefgreifender kultureller und architektonischer Transformationen. Seine strategische Lage machte es nicht nur zu einer umkämpften Grenzregion, sondern auch zu einem Schmelztiegel verschiedenster Einflüsse, in dem die markanten Vermächtnisse der osmanischen und österreichisch–ungarischen Herrschaft deutliche Spuren in der urbanen und architektonischen Landschaft hinterlassen haben.

Die architektonische Zusammensetzung von Zemun spiegelt seine komplexe Geschichte wider und verdeutlicht die prägenden Einflüsse der osmanischen und österreichisch–ungarischen Herrschaft. Von den organischen, labyrinthartigen Straßen und bescheidenen Bauwerken, die typisch für die osmanische Urbanistik sind, bis hin zu der proaktiven Stadtplanung und imposanten Strukturen, die den österreichisch–ungarischen Städtebau kennzeichnen, verkörpert Zemun eine reiche Überlagerung aus Stilrichtungen und Ideologien.

Diese Arbeit untersucht, wie die einzigartige geografische und geopolitische Lage Zemuns dessen architektonische Entwicklung geprägt hat. Durch die Analyse der städtebaulichen Strategien, Bautypologien und regulatorischen Rahmenbedingungen beider Imperien soll aufgezeigt werden, wie sich deren überlappende Vermächtnisse überschneiden und unterscheiden. Diese Untersuchung hebt Zemuns Rolle als dynamischen Mikrokosmos der umfassenderen historischen und kulturellen Wandlungen hervor, die Südosteuropa geprägt haben.

Apstrakt

Smešten na raskršću reka Save i Dunava, Zemun je dugo bio kapija između Istoka i Zapada, mesto susreta carstava i prostor dubokih kulturnih i arhitektonskih transformacija. Njegov strateški položaj učinio ga je ne samo spornom granicom već i tačkom susreta različitih uticaja, gde su jedinstveni tragovi osmanske i austrougarske vladavine ostavili neizbrisive otiske na urbani i arhitektonski pejzaž.

Arhitektonska struktura Zemuna odražava njegovu složenu istoriju, jasno ilustrujući transformativni uticaj osmanske i austrougarske vladavine. Od organskih, lavirintskih ulica i skromnih građevina, karakterističnih za osmansku urbanističku tradiciju, do proaktivnog urbanističkog planiranja i grandioznih struktura koje su obeležje austrougarske arhitekture, Zemun predstavlja bogatu mešavinu stilova i ideologija.

Ovaj rad istražuje kako je jedinstveni geografski i geopolitički položaj Zemuna oblikovao njegov arhitektonski razvoj. Analizom strategija urbanističkog planiranja, tipologija zgrada i regulatornih okvira oba carstva, studija nastoji da otkrije načine na koje se njihova preklapajuća nasleđa susreću i razlikuju. Kroz ovu analizu, rad naglašava ulogu Zemuna kao dinamičnog mikrokosmosa širih istorijskih i kulturnih promena koje su oblikovale prostor jugoistočne Evrope.

Contents

Introduction

Zemun, located at the confluence of the Sava and Danube rivers, has served as a vital intersection between East and West for centuries. Its geographical location designated it as a pivotal gateway and battleground, attracting the interest of emperors, traders, and settlers. Over time, Zemun's urban and architectural landscape mirrored its complex history, influenced by the subsequent rule of the Ottoman Empire and the Austro-Hungarian Empire. The city currently exemplifies the interaction of diverse cultural, political, and architectural influences.

Under Ottoman rule, Zemun exhibited many hallmarks of Islamic urban planning, including narrow, winding streets and practical yet modest building designs. This era marked the city's evolution into an administrative and commercial center, characterized by a heterogeneous populace coexisting within the organic structure typical of Ottoman towns. In contrast, Austro-Hungarian rule brought sweeping changes, introducing grid-like layouts, monumental public buildings, and European architectural styles that symbolized modernization and order. These two distinct periods not only reshaped the city physically but also redefined its cultural and social character.

The evolution of Zemun's urban form and architecture is emblematic of the broader historical dynamics in Southeastern Europe. The overlapping legacies of Ottoman and Austro-Hungarian rule created a unique urban mosaic, where layers of contrasting styles and philosophies coexist. Narrow alleys and modest houses stand alongside structured boulevards and grand public squares, illustrating the city's role as a meeting point of civilizations.

Zemun's transformation also underscores the impact of governance and urban policies on its development. Ottoman building traditions emphasized functional simplicity and adaptability, while the Austro-Hungarian approach prioritized regulation, symmetry, and aesthetic grandeur. These approaches reveal the broader priorities of each empire, reflecting their political ideologies, cultural values, and technological advancements.

As a dynamic border town, Zemun became a melting pot of cultures, religions, and traditions. Its architecture and urban planning mirror this diversity, capturing the essence of its role as both a frontier and a bridge between worlds. This unique blend of influences makes Zemun a fascinating case study in the history of urban and architectural development in the Balkans, offering insights into how cities can evolve at the crossroads of empires and eras.

This thesis examines how the unique geographic and strategic significance of Zemun at the crossroads of empires facilitated a rich dialogue between these contrasting architectural and urban planning paradigms. By analyzing building typologies, street layouts, and building regulations from both periods, this study highlights the ways in which Ottoman and Austro-Hungarian legacies converged, diverged, and ultimately contributed to the city's distinctive identity. In doing so, it seeks to understand Zemun as a microcosm of the broader historical and cultural dynamics that have shaped Southeast Europe.

The transformation of Zemun under Austro-Hungarian rule is a major focus in the study of the

city's architectural development. Authors such as A. M. Dabižić (A. M. Dabižić, 1999) and Milenković et al. (S. Milenković et al., 2014) have analyzed the impact of the Austro-Hungarian Empire's modernization policies on Zemun's urban planning. A. M. Dabižić (A. Dabižić, 2005) and Marinković (Marinković, 2020) have explored the overlapping legacies of these two empires, highlighting the tensions between the traditional Ottoman urban layout and the more modern, grid-based structures introduced under the Austro-Hungarians.

Recent studies also focus on the cartographic analysis of Zemun's urban growth. Historical maps and plans from the Ottoman and Austro-Hungarian periods, such as those presented by Dabižić (A. M. Dabižić, 2016), provide crucial insights into the physical evolution of the city. These studies demonstrate how the city's expansion followed a process of organic growth during the Ottoman era, with winding streets and compact housing blocks, followed by more structured growth in the Austro-Hungarian period, marked by the introduction of new urban regulations and monumental buildings.

The methods used in this Thesis include a comprehensive literature review, with a strong emphasis on the works of A. M. Dabižić and her father M. Dabižić whose research provided foundational insights into Zemun's historical and architectural development. A significant amount of information on Zemun has been compiled by A. M. Dabižić and is available on a CD from the Institute for Protection of Belgrade Monuments of Culture (A. M. Dabižić, 2006).

In addition to the literature review, I analyzed historical maps from the Finance and Court Chamber Archives and the War Archive in Vienna, which offered valuable cartographic data to trace the evolution of Zemun's urban layout. To further enrich the research, I visited Zemun personally in January 2024, allowing for a deeper understanding of the city's current architectural state. During this visit, I also photographed key locations to document and compare the city's contemporary appearance with historical references.

The Thesis begins by providing a historical overview of Zemun in Chapter 1, starting with its prehistory and continuing through its time under Ottoman rule, followed by its transformation during the Austro-Hungarian period. Next, the work examines Zemun's strategic geographical location, its socio-cultural landscape during both Ottoman and Austro-Hungarian rule, and the evolution of healthcare systems in the city in Chapter 2.

The study then explores the city's urban evolution, looking at its architectural character, building types, and development under the Ottomans and Austro-Hungarians in Chapter 3. It includes a detailed comparison of the urban planning practices of both empires, as well as the changes that occurred after World War I.

Finally, the Thesis provides a comparative analysis of building regulations in Zemun throughout the two empires and concludes with a synthesis of the findings, reflecting on the city's architectural and urban transformation in Chapter 4.

1 Historical Background

The historical evolution of Zemun presents a compelling narrative marked by continuous occupation and strategic importance across various eras. This Chapter aims to provide an overview of Zemun's extensive history, beginning with its prehistoric origins, characterized by early agricultural practices and settlement structures. It then examines the town's significant transformation during the Roman era, followed by major changes in the structure and functioning of the city. The Chapter further delves into Zemun's critical role within the Ottoman Empire and its subsequent integration into the Austro-Hungarian Empire. The chapter concludes with a brief analysis of the period that followed the end of Austro-Hungarian rule in 1918. By analyzing archaeological evidence and historical records, this chapter seeks to elucidate the multifaceted development of Zemun, thereby contributing to a deeper understanding of its enduring historical significance in the region.

1.1 Prehistory

The Prehistoric Settlement

Archaeological discoveries abundantly demonstrate the ongoing presence of inhabitants over several historical periods, establishing the settlement in the present-day Zemun area as highly ancient. During the Middle Ages, Zemun held significant importance as a settlement with a profound historical background, but one that remains incompletely investigated and understood. Other prominent cities that attracted greater attention may have overshadowed Zemun, resulting in insufficient knowledge of its history (Kalić, 1971, p. 27). Zemun emerged discreetly in close proximity to major urban centers that served as the centers of political, economic, and cultural influence. Zemun often found itself overshadowed and falling behind its neighboring areas, particularly Belgrade, which held a prominent position in the region (Amedoski, 2005, p. 198), (Kalić, 1971, p. 27).

Despite Zemun's historical importance, there is a lack of specifically dedicated literature, especially when compared to other cities of comparable or lesser significance. The small number of historical records may account for the limited attention given to its history. Despite these challenges, Zemun has made a significant impact on the history of the region, which can be better comprehended through additional research (Kalić, 1971, p. 27). In the sixth century BC, the inhabitants of southeastern Srem engaged in a diverse range of agricultural activities. People built pit houses, one of the first types of housing, on the raised loess terraces that bordered rivers. The above-ground sections of the houses were constructed using logs, reeds, and straw, with some of them being completely buried (Zirojević, 2015, p. 97–98). The Vinča civilization, a Neolithic culture that existed in Southeastern Europe from 5400 to 4600 BC, held great importance. Multiple archaeological sites have provided numerous examples of above-ground houses, including mud-stick houses, providing clear evidence of this occurrence. These areas contained architectural

structures and diverse artifacts that provided documentation of the inhabitants' activities. These include domestic appliances, ornamental artifacts, and religious and spiritual items. The Vinča culture members were involved in agriculture, cattle raising, and fishing, which contributed to the development of their diverse economic structure and the growth of their villages (Zirojević, 2015, p. 97–98).

Archaeological examinations conducted on Gardoš have uncovered evidence of a complex and multilayered ancient settlement that endured throughout different historical epochs. The findings consist of village remains from not only the Neolithic era but also the Eneolithic and Iron Ages. Furthermore, the existence of objects associated with Celtic culture serves to underscore the significance of Celtic colonization in this region. These archaeological discoveries offer a more profound understanding of the ongoing presence of human habitation and the development of the community across time, while underscoring the significance of Gardoš as a historically important archaeological site (A. M. Dabižić, 2016, p. 15–16), (Jovanović, 1958; Vranić, 1985).

The examination of the archaeological remains on Gardoš revealed the presence of a Celtic opidum, a fortified village constructed by the Celtic people on raised plateaus overlooking the rivers. These plateaus' strategic location provided natural defensive benefits, while circular fortifications increased the opidum's security. These studies also emphasized the importance of topographical landscape characteristics, such as high plateaus and rivers, in both the development and functioning of Celtic communities. This improves our understanding of the prehistoric settlement progression in this region (A. M. Dabižić, 2015, p. 97).

Roman Influence on Zemun

During the era of Roman dominance, Zemun underwent significant changes and growth. Zemun, formerly known as Taurunum, has seen significant development since the arrival of the Celts in the 3rd century BC. It became an important fortified location and a crucial port for the river fleet. The Celts introduced advanced agricultural methods, combat weapons, and a monetary system that promoted trade with other culture (Zirojević, 2015, p. 97–98). Following the Roman conquest of the Celts, Taurunum became an important military base for the Romans along the Danube River. The establishment of the Roman province of Pannonia around 10 AD marked the Danube River as the northern boundary of the Roman Empire. The positioning of the fortification system along the borders of the Roman Empire had a significant impact on the city's urbanization and Romanization processes (Zirojević, 2015, p. 97–98). Taurunum underwent significant urbanization and organization under Roman rule (M. Dabižić, 1988, p. 182), (A. M. Dabižić, 2016, p. 15–16), (Jovanović, 1958). Through the implementation of an urban layout on the slopes, the city transformed into a compact urban center, featuring a harbor and a military fortress as part of the Roman defense system (Bajalović Hadžipešić, 1977, p. 83). Taurunum, a significant archaeological site, sheds light on the rich cultural history of this region in Srem (Zirojević, 2015, p. 97–98).

Zemun's Strategic Role in the Middle Ages

The invasion of the Huns, a nomadic population originating from Central Asia in 441, represented a significant event in the historical narrative of Zemun and the surrounding area. The attack on Zemun resulted in the collapse of the Roman defensive barriers on the frontier, enabling the Huns to gain control of the city. This event signified the conclusion of Roman rule in the region. The

Hunnic invasion had a significant effect on the geopolitical landscape, leading to further migrations and conflicts among the various ethnic groups inhabiting the region during that time (Zirojević, 2015, p. 97–98).

After the Hun Empire collapsed, several barbarian tribes turned Zemun's region into a battleground. While Byzantium had official control over the city, its power over the area frequently shifted due to attacks and conquests by other tribes. During Emperor Justinian's reign in the 6th century, the region experienced further invasions, this time by Slavs and Avars. Other ethnic groups, such as Bulgarians, Franks, and Hungarians, also participated in the conflict, fighting for control of the territory. The conflicts were characterized by a complex combination of interests and rivalries among different nations and empires striving to enhance their power and geographical control (A. M. Dabižić, 2015, p. 97), (M. Dabižić, 1988, p. 182).

In the 12th century, Zemun was the scene of a conflict between Byzantium and Hungary, leading to the city's destruction and subsequent reconstruction. By the end of the same century, the Hungarian monarchy had fully overtaken the Byzantine power over Zemun (Zirojević, 2015, p. 99). After a period of relative peace until the late 14th century, opposing groups frequently seized the main metropolitan centers in the vicinity of Belgrade and Zemun, leading to the most intense conflicts (A. M. Dabižić, 2016, p. 15–16).

During the early Ottoman invasions, Zemun played a crucial role in defending the southern borders of Hungary. The Ottomans' increasing threat prompted the reconstruction of the forts along the Sava and Danube rivers in the late 14th and early 15th centuries. Zemun was one of these fortresses. The fortified city of Zemun played a crucial role in defending Belgrade, particularly during the renowned resistance of Hungary against the Ottoman invasion in 1456. During the siege of Belgrade in 1521, Zemun also came under attack. Due to the massive Ottoman forces, the inhabitants of the Zemun village died, and the final act of resistance probably occurred on Gardoš (Bajalović Hadžipešić, 1977, p. 83).

1.2 History of Zemun Under Ottoman Rule (1521–1717)

The medieval fortress of Zemun, situated on Gardoš overlooking the Danube, served a very significant function in defending the city. Despite its relatively small size compared to other defenses at the time, the fortress was highly efficient in defending Zemun from enemy attacks. Robust walls and towers encircled the fortress, ensuring a high degree of defense. A deep canal encircling the fortress further strengthened it, posing a significant obstacle to any opponent attempting to breach its defenses (Amedoski, 2005, p. 198). The remains of this fortress have been preserved up to the present time. Over time, as the city of Zemun expanded and progressed, the fortress gradually lost its importance (M. Dabižić, 1988, p. 182).

Since the late 14th century, the fortress in Zemun has been exposed to continuous attacks from the Ottoman military forces. The first instance of its destruction occurred in 1397, signaling the beginning of its decline due to the influence of the Ottoman armies. The battle served as a precursor to a series of other conflicts that occurred in the 14th and 15th centuries, resulting in the castle's inevitable decline and weakening. The extended siege of Belgrade in 1440 left Zemun, a neighboring city, vulnerable to assaults. The siege resulted in the destruction of Belgrade and caused significant damage to Zemun and its fortress. Despite its significance as a symbol of defiance during the prolonged period of conflict, the fortress saw slow degradation due to repeated

Ottoman sieges and attacks. The ultimate capture of Zemun on July 12, 1521, marked the end of its opposition and the beginning of the era of Ottoman rule over this city center (Amedoski, 2005, p. 199).

Starting in 1521, there were notable alterations in the tactics of defense and administration of territories along the Danube under the rule of the Ottoman. During that period, fortifications that were previously crucial defensive positions experienced a decline in their previous significance. The shift in perspective is also evident in travel memoirs from 1553 and 1557, which provide evidence of the progressive neglect and decay of the fortifications along the Danube river. Maximilian Brandstätter, an Austrian diplomat, visited Zemun and documented the condition of the fortifications on Gardoš. In his report, Brandstätter observed that the fortress had suffered partial damage, but three distinct round towers with conical metal roofs remained visible, see Figure (1.1) (A. M. Dabižić, 2015, p. 98). In 1663, the Ottoman journey writer Evlija Čelebija offered additional information about the condition of the fortress in Zemun. His records document a consistent sequence of degradation of the fortress, as well as its steady decline in significance as a military facility (Čelebija, 1957, p. 109). These findings provide evidence of the ongoing deterioration and degradation of the fort, which is caused by changes in military strategy and defense technology.

Figure 1.1: Painting of Zemun by Maximilian Brandstätter, 1608 (A. M. Dabižić, 2016).

Following its integration into the Ottoman Empire, Zemun began a slow process of development and transformation. Following its new status as an administrative center, Zemun's cultural and religious infrastructure experienced significant growth. The establishment of schools demonstrated the development of cultural infrastructure, while the construction of mosques indicated the growth of religious infrastructure. While Zemun is primarily populated by Muslims, it also has a Christian population. The Christian religious communities had their own dedicated worship structures, which reflected the area's religious diversity. Zemun's architecture mirrored the characteristics of the towns in the Pannonian region. According to Ottendorf, the construction of houses often relied on weak materials such as wood and mud. Brandstätter's painting of Zemun (Figure 1.1) depicts a settlement that was mostly enclosed by a wall made of pointed pillars firmly inserted into the ground. The appearance of the settlement likely remained constant throughout the entire period of Ottoman governance (Zirojević, 2015, p. 98).

The bridges linking Zemun and Belgrade were crucial infrastructure facilities, particularly during military conflicts and campaigns. However, their construction was exclusively for military operations, making them essentially short-term. Designed for military operations, these bridges were frequently prone to destruction or impairment during times of conflict. Due to their delicate nature and vulnerability, travelers frequently had difficulties when attempting to cross the river. The destruction or unusability of bridges necessitated the use of alternative options like scaffolding and boats. During the conflict period, the transportation of people and products between Zemun and Belgrade became even more challenging. When opposing forces traveled through these lands, the Ottoman army frequently halted and established a base at Zemun. Zemun served as a central location for gathering and stationing armed forces, confirming its significance as a crucial military and geopolitical center in the region (Zirojević, 2015, p. 101).

Zemun's economy underwent substantial growth in the 16th century, which significantly impacted the city's development and its surrounding areas. Agriculture was the primary sector of the economy, with grain production and vine cultivation being dominant activities. These agricultural products not only met the local food requirements but also established the foundation of the entire region's food system. Furthermore, alongside agriculture, livestock farming experienced significant growth, expanding the economic diversity and offering additional income opportunities for the local inhabitants. Trade represented a significant sector of the Zemun economy, particularly during the latter part of the 16th century. Subsequently, the city gained a significant role as a key regional center for trade, bringing in traders and consumers from the surrounding area. The rise in trading activity led to significant trade profits, supporting the economic growth and prosperity of the town. The time was marked by a high volume of products and services flowing through the city, which created an energetic business environment and facilitated the exchange of goods and ideas. The economic boom in Zemun not only increased the material wealth of the city but also facilitated the cultural and social growth of the community. This has laid the foundation for the future success and prosperity of the city (Amedoski, 2005, p. 220).

Zemun's residents enjoyed certain benefits from owning their homes and gardens, which significantly contributed to their economic and social stability. Citizens had the property rights to use their houses and yards for personal needs, ensuring the stability and continuity of their households. However, when using state-owned land, such as pastures or agricultural parcels, residents were required to pay a specific amount. The fee, referred to as a tithe, which was one tenth of the income, served as a tax that individuals paid for the utilization of public land. While this imposed an extra financial obligation on the inhabitants, it also facilitated the management and administration of government assets, guaranteeing their long–term viability and a fair distribution of wealth within society (Amedoski, 2005, p. 209).

1.3 History of Zemun Under Austro-Hungarian Rule (1717–1918)

Following the signing of the Peace of Požarevac in 1718 and the Peace of Belgrade in 1739, the Ottoman influence was ultimately eliminated from the southeastern region of Srem, including Zemun. Zemun, situated on the border of the Austrian and Ottoman empires, was no longer under Ottoman control. Being a part of Austria, Zemun was granted the status of a free military committee on the Austrian border. As a result, a military-civil administration was established in the area (A. M. Dabižić, 1999, p. 145), (Marinković, 2020, p. 1).

Upon their entry into Zemun in 1717, the Austrian army found the fortress on Gardoš ruined

and in a state of decay. While the reconstruction of the fortress was not done at that time, the elevated part of Gardoš was used as an observation post, see Figure 1.2 (A. M. Dabižić, 2016, p. 17–18), (A. M. Dabižić, 2015, p. 99).

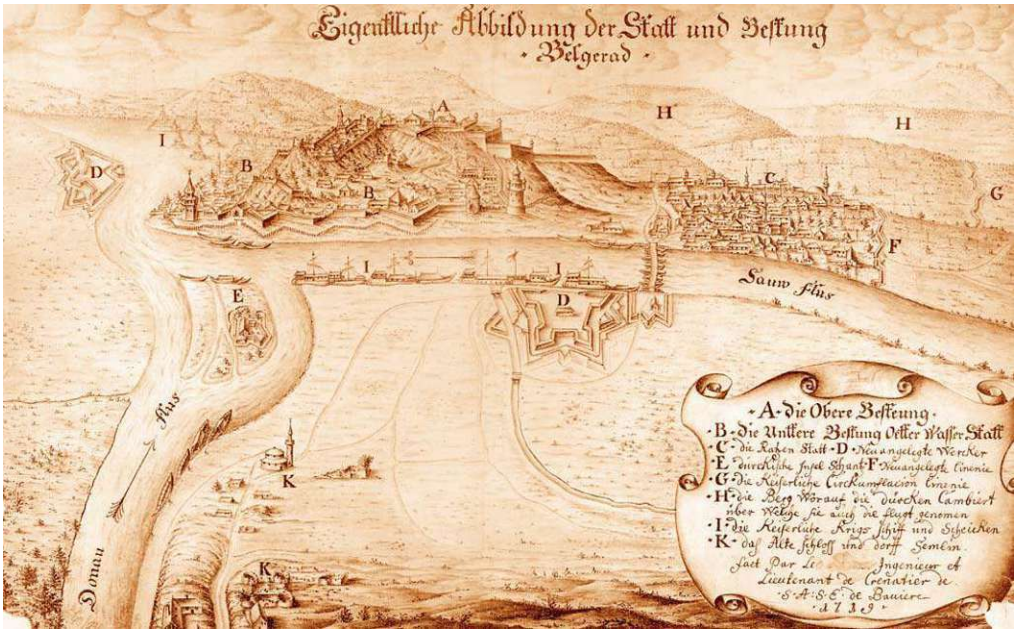


Figure 1.2: Illustration of the city and fortress of Belgrade, with Zemun and the Zemun fortress marked, 1719 (A. M. Dabižić, 2016).

The arrival of the Austrian troops in Zemun in 1717 marked the beginning of a significant era in this town's history. Subsequently, Zemun was incorporated into the Austrian Empire and later, starting in 1867, the Austro-Hungarian Empire, where it underwent further development until 1918. Over the course of more than two centuries, Zemun has experienced consistent growth and transformation, evolving into an important urban entity that has been formed through several stages influenced by historical events.

Zemun's initial stage of development took place during the first half of the 18th century, following its incorporation into the Austrian Empire. In 1739, the Peace of Belgrade strengthened the border between Austria and the Ottoman Empire along the Sava and Danube rivers, resulting in a significant increase in the importance of the border town of Zemun. The peaceful era of the 18th century, after the difficulties that the city faced, had a beneficial impact on its economic and social progress.

The population that fled from Belgrade after it was recaptured by the Ottoman contributed to the increase in the number of inhabitants in Zemun. As a result, Zemun became one of the main border towns towards the Ottoman Empire, as well as an important center for the transit of goods between the east and west. This was mostly facilitated by the main river roads (A. M. Dabižić, 2014, p. 127), (A. M. Dabižić, 2006). The Serbs became the predominant ethnic group in Zemun, while an immigration of Greeks, Jews, and later German-speaking people from Austrian Empire contributed to the city's diverse population. Zemun has evolved into a vibrant multicultural town as a result of its role as a meeting point for various cultures and traditions.

Following its incorporation into the Austrian Empire, Zemun quickly emerged as a major border center, facilitating trade between Austria and the Ottoman Empire. This had a significant impact on the city's economic progress, creating new business opportunities and stimulating economic growth. Simultaneously, the construction of Zemun with spacious and linear streets began, facilitating its urban transformation. These modifications had significant aesthetic value, as well as improved the functionality and practicality of the urban area. In 1730, a quarantine was established in Zemun as a reaction to the need for protection against contagious diseases (M. Dabižić, 1988, p. 182). This institution played a key role in protecting the city against epidemics while also having an important impact on trade development. Contumaz facilitated the monitoring and management of the flow of products in and out of the city, thus improving trade security and increasing the financial status of Zemun. Nevertheless, the time for renewal and growth was limited by the Peace of Požarevac and the Peace of Belgrade (Zirojević, 2015, p. 101), (Vučković and A. M. Dabižić, 2022, p. 7).

Zemun was included in the Military Border in 1746, which was a system established by the Austrian Empire to exercise administrative and military authority along the boundary with the Ottoman Empire. Zemun held a unique position within the military border, being part of the military administration and having specialized security measures in place to protect against any enemy assaults (A. M. Dabižić, 2014, p. 127).

In the first phase of development, due to its geographic location and the need for further economic development, Zemun was granted a certain level of self-government to boost economic development and improve trade relations. In 1749, Zemun gained autonomy as a military settlement, marking the transition away from total military control. The establishment of the Magistrate in Zemun in 1751 marked a particularly noteworthy event. Throughout the 18th century, Zemun was primarily populated by craftsmen and served as an important trading center for the agricultural communities living along the border. Zemun played an essential role in facilitating the customs clearance of goods from the Ottoman Empire for the Austrian Empire. These events marked the transition of Zemun into a new stage of growth, granting it a higher level of independence and autonomy (M. Dabižić, 1959, p. 20), (A. M. Dabižić, 2014, pp. 127–128).

The city's second phase of development took place in the second half of the 18th century. During that time, Zemun undergoes progressive growth and establishes its urban core area. This period is characterized by a progressive expansion of urban growth within the city as Zemun adjusts to changing political and socioeconomic conditions. Nevertheless, progress stopped due to the outbreak of the Austro-Ottoman and Napoleonic conflicts, which occurred between the late 18th and early 19th centuries (Vučković and A. M. Dabižić, 2022, p. 7). The process of liberating a part of the population from military dependency and shifting to another type of dependence marked an important turning point towards liberation and an elevated level of civil freedom. The urban landscape of Zemun was influenced by social and economic activities. The military authorities separated Zemun from their jurisdiction and established it as an independent military community with its own city administration, creating the conditions for the development of civilian life and the establishment of an appropriate urban area. The statute was obtained in 1755, which was an important step towards the urbanization of Zemun. The statute would function as the fundamental legal structure for overseeing the city and establishing legal relationships between citizens and authorities. During that period, the city accommodated 428 families who owned their own homes, while 91 families lived in rented apartments. These households' composition was primarily urban, although partially rural as well. Zemun had a total of 168 craftsmen, 13 merchants, 55 winegrowers, and 39 farmers throughout that period. These numbers show Zemun's diverse economic activities at the time (A. M. Dabižić, 2006), (Ilić, 1955, p. 24).

Zemun underwent its third phase of development throughout the 19th and early 20th centuries. The Revolution of 1848 and the Austro-Hungarian settlement of 1867 were significant political events that took place in the mid-19th century. The revolution of 1848 initiated a series of political transformations in Austria. Zemun, a member of the Habsburg Monarchy, felt the impact of these changes in the form of demands for increased political autonomy and public engagement. The Austro-Hungarian settlement of 1867 signified the conversion of the Habsburg Monarchy into a dual state, known as Austria-Hungary, accompanied by significant political changes. These events, in conjunction with other causes, indirectly influenced the changes in Zemun's status. Specifically, the demise of the Military Border, a structure responsible for overseeing administrative and military operations along the Austria-Hungary border with the Ottoman Empire, was a turning point that changed the status of former military communities, such as Zemun. The military border was terminated, signaling the end of military dominance and authority in that particular area. This change marked a new stage in the governance and advancement of the city, with wider implications for its political, cultural, and architectural dynamics (M. Dabižić, 1959, p. 5), (A. M. Dabižić, 2014, p. 138), (Bogdanov, 1929, p. 26).

In 1871, Zemun acquired the status of an autonomous city, indicating the shift from military to civilian governance. This modification established a system in which citizens directly participate in the administration of municipal matters by electing a mayor to serve as the city manager. The ruling had an important impact on the civil administration, particularly in Zemun, since it strengthened the city's autonomy as an independent municipality. This modification granted local authorities more freedom in managing municipal issues and making decisions that aligned with the community's requirements. Therefore, Zemun gained further authority to independently manage its affairs and pursue its growth. Zemun underwent significant industrial growth in the latter half of the 19th century. The establishment of the first factories signified the era that led to the growth of several sectors of industry, including the wood, leather, metal, and chemical industries. Furthermore, the city witnessed the establishment of the first financial institutions and the inauguration of modern hotels, both of which played an important role in supporting the city's social and economic development. In 1883, the construction of a railway line with Budapest was an important step in connecting Zemun with other regions. One year later, the construction of the bridge over the Sava River, which linked Zemun to Belgrade, enhanced the city's infrastructure connections, creating fresh opportunities for trade and economic growth (Vučković and A. M. Dabižić, 2022, p. 7–9), (Zirojević, 2015, p. 102–104).

At the end of the 19th century, in 1896, when Hungary celebrated its national jubilee, the Millennium Monument was built in the center of the walls in the form of an observation tower with state symbols-the coat of arms and an eagle with spread wings on top (Figure 1.3). The Hungarian authorities commemorated the millennium of their statehood and the one thousandth anniversary of their arrival in the Pannonian Plain in this border region (A. M. Dabižić, 2015, p. 99–100). Zemun remained under the control of the Austro-Hungarian Empire until it fell apart in 1918, as a result of significant political transformations in Europe caused by the First World War. Dynamic political events occurring on the European continent posed significant challenges for the city during this era. Following the abrupt disintegration of the Austro-Hungarian Empire and the subsequent establishment of new independent nations, such as the Kingdom of Serbs, Croats, and Slovenes, Zemun experienced a transformative period that significantly influenced its future course. Zemun played a crucial role as a base for Austro-Hungarian military activities during World War I. Its strategic location and rich infrastructure resources made it an essential base along the Danube and Sava rivers. However, the war's devastation and subsequent financial crisis severely impacted the city's infrastructure and population (Marinković, 2020, p. 1–2).

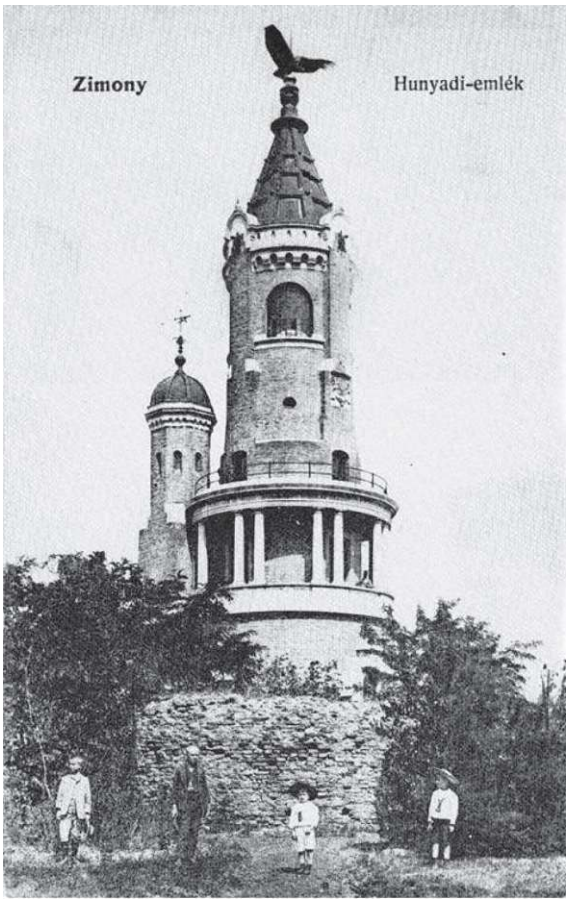


Figure 1.3: Millennium tower with fortress, postcard from 1906 (A. M. Dabižić, 2015)

1.4 The Post-History

On November 5, 1918, the Serbian army liberated Zemun, integrating it into the newly established Yugoslavia state. This significant event symbolized the end of centuries of Austro-Hungarian dominance in this region and established the foundations for a fresh governmental structure in the Balkans. Following the conclusion of the First World War, the Austro-Hungarian Empire dissolved, leading to the emergence of new governments in the Balkans. Zemun consequently became a part of the Kingdom of Serbs, Croats, and Slovenes. The city is confronted with the challenge of adjusting to the new political landscape while also preserving its significance as an important center for business and industry. Although the political boundaries of Zemun have undergone changes, its economic vitality has stayed constant. Zemun remained the center of economic activity and trade routes, adjusting to changing political circumstances and facilitating connections between various regions of the newly formed Yugoslavia state (Zirojević, 2015, p. 103–104).

During the period between the two World Wars, Zemun underwent significant industrial growth, leading to the establishment of multiple factories in the city. In 1934, Zemun became integrated into the capital city, resulting in significant changes to its economic and administrative dynamics. Furthermore, the relocation of the Faculty of Agriculture and Forestry from Belgrade to Zemun in

1932 not only improved the city's educational opportunities but also its intellectual status (Zirojević, 2015, p. 103–104). On April 12, 1941, German forces occupied Zemun, after which this part of Srem has been incorporated into the boundaries of the Independent State of Croatia. Throughout the war, Zemun played an important role as the center of opposition and revolt against the occupying forces in the southern and eastern regions of Srem. Zemun was liberated on October 22, 1944, marking the turning point in its history during the Second World War (Zirojević, 2015, p. 103–104).

Zemun, in its current form, is a city with an industrialized urban center. A considerable portion of its industrial sector is integrated into the larger industrial network in Belgrade. This city serves as the municipality's main center, identifying itself as a significant economic and cultural epicenter. The major educational establishments include the Faculty of Agriculture, the Institute of Livestock Agriculture, and the Institute of Mining, in addition to many secondary and primary schools. Zemun places a high value on culture, as evidenced by the presence of several cultural and sports institutions such as the Opera and Theater, Puppet Theater, Zemun Chamber Orchestra, Native Museum, Library, Cultural and Sports Center, and Aviation Club. These institutions make a significant contribution to the city's dynamic cultural life and unique personality (Zirojević, 2015, p. 104).

The administrative structure of the city of Belgrade has recognized Zemun as a city municipality since 1945. Throughout this period, Zemun had significant growth, particularly in the southern and southwestern directions, as it increasingly merged with New Belgrade. The integration led to a strong transit connection between Zemun, New Belgrade, and the central area of Belgrade, enhancing the mobility of people across these city districts. Furthermore, during this time, Zemun continued to function as a prominent industrial center, hosting a variety of companies and institutions. Simultaneously, it also supported the growth of its cultural and sports image, offering its residents numerous options for education, culture, and leisure activities (Zirojević, 2015, p. 104).

Summary

The Middle Ages in Zemun were characterized by a turbulent past, marked by conflicts, shifts in governance, and a prominent defensive role, all of which are integral to its historical narrative. These events shaped the city's identity and had an impact on the organization and function of the region. Zemun has been a strategically significant location throughout history, serving as an intersection for several civilizations and forces dating from the Roman era to Ottoman rule. The conflicts over the city's governance mirror the broader political and military developments in the Balkans during that period. Zemun served as both a military fortress and a center for trade, which played a significant role in its economic and cultural development. Therefore, understanding the medieval history of Zemun provides us with a more profound grasp of its significance in the local area and beyond, as well as its gradual development throughout the years.

The Ottoman Empire's breakthrough in 1521 was a significant turning point in the history of Zemun. This event initiated a long period of Ottoman rule that endured for nearly two centuries. During Suleiman's military invasion against Belgrade, which culminated on July 12 of that same year, Zemun was taken over for the first time, thereby becoming an essential part of the Ottoman Empire's territory. This event not only symbolized the military triumph of the Ottomans, but also altered the course of life and the organization of Zemun. Zemun was incorporated into the Ottoman Empire, resulting in alterations to its political structure and administration. During this

period, significant economic changes, such as the development of trade and commercial activities, influenced the area's financial structure. Furthermore, the Ottoman Empire's dominance had a significant impact on Zemun's social structure. The city exhibited multiculturalism, as several religious communities coexisted and made significant contributions to its cultural mosaic. Islamic culture, customs, and architecture also influenced the city's image.

The Austro-Hungarian rule from 1717 to 1918 had a significant impact on the history of Zemun. Zemun witnessed various phases of growth and progress over an extended period, which were influenced by political, economic, and social transformations. Significant milestones in the history of Zemun during Austro-Hungarian rule include the city's growth as a crucial border town and business center, the growth of its urban layout, the establishment of military and civil governance, and an increase in industrial activity during the latter half of the 19th century. These historical events not only influenced the city's physical landscape and economic framework but also had a significant social and cultural effect. The establishment of a diverse society, the city's self-governance as an independent community, the growth of the economy and industry, and improvements in infrastructure all played a significant role in shaping Zemun's rich history and unique identity. Therefore, comprehending the changes and events that took place under the Austro-Hungarian leadership is essential for understanding the essence of the city's identity and its significance in the historical context of the region.

The historical overview of Zemun clearly demonstrates its capacity to consistently adjust and endure amidst diverse political and social transformations, spanning from prehistoric times, through the periods of Ottoman and Austro-Hungarian rule, up to the modern era. Zemun's rich history is evidence of its enduring significance as a political, economic, and cultural center. The concept of continuity plays a crucial role in comprehending the city's character, emphasizing its capacity to adjust to evolving conditions and maintain its vitality throughout the centuries. Zemun has always preserved its significance as an important center for economic, cultural, and administrative activities over centuries. This has enabled it to not only observe but also actively contribute to the development of the historical and cultural character of the region.

2 Zemun: A City at a Crossroads

To fully understand the history of urban development In the region where Zemun is located, it is essential to consider the geopolitical factors that influenced transformations over the centuries, particularly in the context of the Austrian and later Austro-Hungarian empires. Zemun's core, from its creation in the early 18th century to the present day, represents an ongoing narrative of urban growth, including various aspects such as geographical influence, demographic composition, cultural and social dynamics. Throughout a span of four centuries, the city underwent adaptation and transformation, reflecting different eras through construction and architectural changes (A. M. Dabižić, 2014). Zemun's role as a historical crossroads is defined by its function as a boundary town, where empires met, cultures merged, and trade flourished. This history not only shaped its urban and cultural character but also gave it a lasting identity as a place where diverse influences converged. This Chapter begins by examining the strategic geographical position of Zemun, which is the foundation of its economic, cultural, and military development. Following that, the Chapter analyzes the socio-cultural dynamics in Zemun during the periods of Ottoman and Austro-Hungarian rule. It highlights the significance of treaties and the migration of various ethnic groups. Finally, this Chapter examines the development of healthcare services in Zemun, specifically during the period of the Habsburg Monarchy. This Section further analyzes the impact of geographical and strategic factors on healthcare organization.

2.1 Geographical and Strategic Significance of Zemun

Zemun's geographical and strategic significance have played a crucial role in its growth over the course of its long history. Located on the banks of the Sava River, this city, one of the oldest in Serbia, gained importance as a significant settlement during the earliest stages of human civilization. The extremely beneficial geographical position, characterized by its close proximity to the river and the fertile surrounding fields, played an important part in the establishment of the settlement and the ongoing prosperity of the city. This spawned the first inhabitants as far back as the Paleolithic era. Throughout the ages, the settlement in this location has remained uninterrupted, indicating its remarkable stability and vitality. Because of its strategic location at the confluence of the Sava and Danube rivers, the city became an essential center for trade and an important station on the route connecting the east and west. This attracted merchants, explorers, and conquerors. The Sava and Danube rivers facilitated convenient passage to Central Europe and the Black Sea, thereby allowing extensive trade with numerous regions. Zemun emerged as a center for the exchange of various products, ideas, and cultures, leading to its economic and cultural growth and establishing itself as a significant city in the Balkans. The city's geographical location facilitated the thriving development of transport infrastructure. The presence of rivers allowed Zemun to establish itself as an important location for navigation routes, facilitating the transportation of commodities and individuals along the river courses. Furthermore, the close proximity of rivers facilitated the growth of the shipbuilding and fishing industries, thereby strengthening Zemun's economy. The military significance of Zemun as a fortress cannot be overlooked. Its location at the junction of

the Sava River and the Danube River provided it with the ability to control important waterways. Consequently, the city has frequently been the center of military clashes and conquests throughout its history, spanning from ancient to contemporary times (Zirojević, 2015, p. 101–102).

The elevated plateau of Gardoš and its location on the Danube river primarily influence the appearance of Zemun. Over time, the city's unique geographical structure has had a significant impact on its appearance and character. The structures in these regions attracted the interest of painters and cartographers, resulting in lasting impressions on artistic and cartographic references. Today, these notable structures remain essential landmarks of the city, reflecting its distinct character, visual aesthetics, and function. The urban terrain of Zemun clearly illustrates its gradual development, particularly evident along the Danube riverbanks and the Zemun promenade, extending all the way up to the top of Gardoš, where the prominent Millennium Tower stands. The visual aspect of the city serves as evidence of its historical evolution and strategic significance, highlighting the crucial role of Zemun's geographical location in determining its identity and physical arrangement (A. M. Dabižić, 2016, p. 18–19).

At Gardoš, a prominent elevated plateau overlooking the downtown of Zemun and the Danube, the remains of fortifications serve as a testament to the settlement's history and the strategic significance of Zemun, see Figure 2.1. Human communities have settled here because of its favorable

Figure 2.1: Remains of the fortifications on Gardoš, 2024, photographed by author.

location, fertile soil, and flood protection. The fortress on Gardoš was constructed as a defensive base in proximity to the Belgrade fortress, marking the boundary between the East and West. It was strategically positioned at a site of constant conflicts and wars, where the Great War Island is situated, compare Figure 2.2. The toponym of the island's name reflects the historical context and character of the location, highlighting the geostrategic significance of Belgrade and Zemun throughout the course of a millennium. The current location of Belgrade and Zemun, which were merged into a single city in 1934, is characterized by two notable fortresses that each bear witness to important historical stages of growth (A. M. Dabižić, 2015, p. 97).

Zemun's geographical location had a significant impact on the establishment and growth of important structures, including Contumaz. Contumaz , which served as a quarantine facility, held significant historical importance in Zemun, and its presence is closely related to the town's geographical position. The Contumaz complex and its layout will be examined in detail later in this document. Zemun's strategic position along an important trade route connecting the east and west made it an ideal location for the installation of quarantine facilities like Contumaz. Due to its strategic location at the intersection of major transportation routes and its close proximity to the

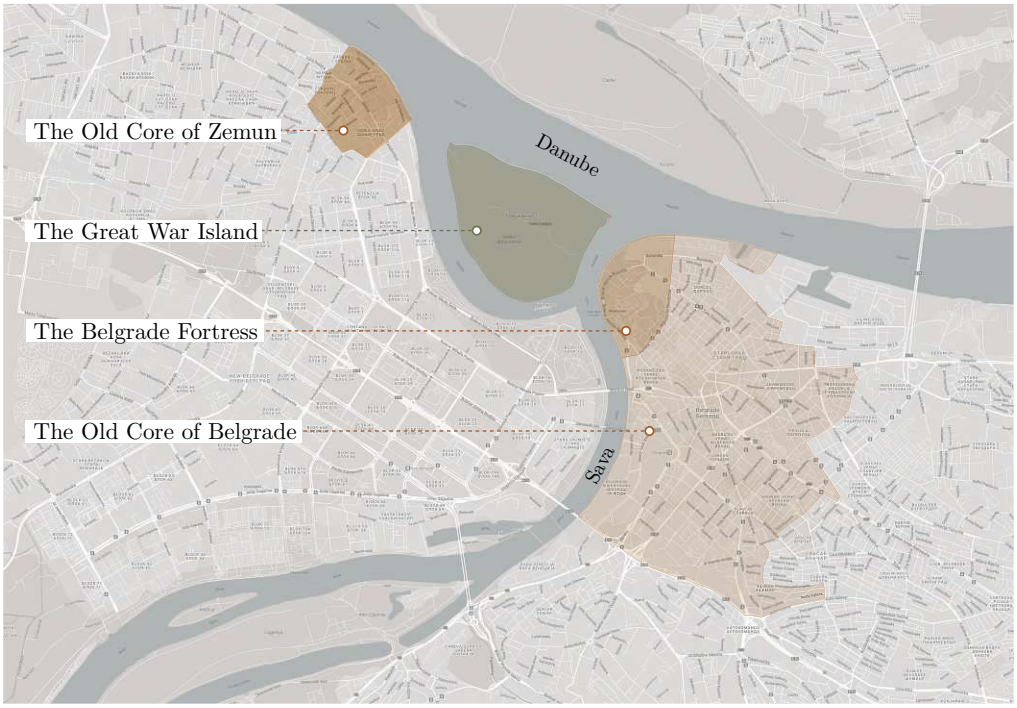


Figure 2.2: Position of Zemun's Old Core to other strategic locations, created by author.

city of Belgrade, this place played a crucial role as an essential center for trade and communication. As a result, Contumaz was regulating the transit of people and goods, particularly during times of intense trade and frequent disease outbreaks. The Contumaz building, fortified with strong and imposing walls and encircled by water, illustrates the need to ensure efficient protection of the city from the increasing number of diseases and other potential threats coming from the external environment (A. M. Dabižić, 2013, p. 145–147).

2.2 Socio-Cultural Context of Zemun During Ottoman and Austro-Hungarian Rule

The Peace of Požarevac (1718) and the Peace of Belgrade (1739) signaled the end of Ottoman dominion in the region, resulting in significant consequences for Zemun, such as a shift in governance and the transfer of authority to Austro-Hungarian sovereignty. The following peaceful period in Zemun allowed for faster economic expansion and the growth of its inhabitants, traders, and craftsmen. The growth of the border town can be seen by the rise in population, the establishment of both public and private buildings, and the extension of settlements occupied by Serbs, Austrians, Jews, and other ethnic groups (A. M. Dabižić, 1999, p. 145).

Twenty Jewish families fled to Zemun across the Danube in 1739 after Belgrade fell under the Ottoman rule. They moved to Zemun permanently in 1753 after Empress Maria Theresa approved their stay. Zemun provided the Jews with a sense of security and the opportunity to establish their own place of residence. In 1755, a population census confirmed the presence of fifteen Jewish

families in Zemun. This demonstrates their involvement in the town's founding as well as their contributions to Zemun's social and cultural life (A. M. Dabižić, 1999, p. 145), (Ćelap, 1957, p. 59). According to the 1777 population census, which provides information on the ethnic composition of the time period, Zemun had a total of 3,918 residents. The Serbs formed the majority population, accounting for 77.48% of the total population, indicating the significant influence of the Serbian community during that period. The German-speaking people constituted the second-largest group, at 19.29% of the overall population. The Jewish population constituted a smaller yet still noteworthy portion, with only 47 individuals, or 1.1% of the overall population (Ilić, 1955, p. 25), (A. M. Dabižić, 2006). Following Zemun's incorporation into the Habsburg Monarchy, the level of German-speaking people immigration increased (A. M. Dabižić, 2006), (S. Milenković et al., 2014, p. 506).

During this period, the Zemun Jews faced numerous difficulties. They encountered political limitations and social exclusion. Specifically, the community administration prohibited them from carrying out official duties, thereby placing them at a disadvantage in society. Only after the end of the Austro-Hungarian settlement in 1867 did new principles protect personal freedom and equality for all people, including Jews. In the following year, Jews gained equal privileges as members of other religious groups, and all previous limitations relating to their housing, land ownership, property rights, and trade and craft activities were abolished. In the same year, the mayor of Zemun made a formal request to exclude thirty-three Jewish families from paying a protection tax, which would further contribute to their economic freedom. In 1871, Zemun achieved the status of an independent city with elected municipal officials and a mayor. This development represented significant progress towards democratic self-governance and equal rights for all residents, including the Jewish community (A. M. Dabižić, 1999, p. 145), (Ćelap, 1957, p. 71). The establishment of the Zemun Synagogue, currently the oldest preserved synagogue in Serbia, demonstrates the significance of the Jewish community in Zemun during this period (Marinković, 2020, p. 4). It was a vital part of the Jewish religious complex, which also encompassed the school and the municipality (A. M. Dabižić, 2006). This building, shown in Figure2.3, characterized by its simplistic design and resemblance to the town houses of that time, seamlessly blends into the environment due to its modest dimensions (Marinković, 2020, p. 11). The Zemun Synagogue is a well-preserved Jewish monument in the city, highlighting the significance of the Jewish population, which impacted the economic and urban growth of the Old Core of Zemun (A. M. Dabižić, 2006).

In 1751, when the Magistrate ruled over Zemun as an independent military community, craftsmen formed unions. The magistrate relieved these unions of their military obligations and placed them under his authority. After 1768, craftsmen received a craftsman arrangement, while their business obligations were precisely prescribed by the Union Rules (A. M. Dabižić, 2006), (Ćelap, 1958, p. 77).

According to the 1768 report by the Magistrate of Zemun, the town had a total of two brick masons, 10 carpenters, and 13 construction workers at the time. It is evident that the number of brick masons has remained the same over the past three decades, although there has been substantial growth in the number of carpenters. This tendency indicates that throughout that time in Zemun, there was a larger number of buildings constructed with wooden materials rather than hard materials, suggesting a predominance of wooden housing over brick ones. By the late 18th century, the central area of Zemun had already developed into an integrated urban entity, complete with a network of streets that still exists today. During that time period, there was a noticeable rise in the number of construction workers in comparison to the previous period (A. M. Dabižić, 2006).

Figure 2.3: The Zemun Synagogue (A. M. Dabižić, 2006).

Despite the lack of documentation on constructors in Zemun during the 18th century, we can conclude that a small number of craftsmen carried out the majority of the construction. These craftsmen received training at union schools and gained many years of experience as apprentices. These craftsmen stood out for their skill and expertise, as seen by the lasting construction accomplishments they have left behind. Studying the preserved plans from that period, it becomes evident that these skilled craftsmen brought modern architectural styles, which contributed to the transformation of Zemun into a metropolis that aligned with European standards. Examples such as Ičko's house or the house of the Karamata family, together with churches and public buildings from the 18th century, are an example of decent construction techniques and skill in shaping architectural elements, created by the masters of that era (A. M. Dabižić, 2006).

The Zemun population census provides valuable information about the demographic and ethnic transformations that have occurred throughout time. For instance, the town had 73 Christian families and 21 Muslim households in 1566. During the later era of 1745–46, the total number of homes increased to 350. Serbian families represented the majority of these households with 216, while German-speaking families accounted for 115. This data illustrates the changes in migratory patterns and the ethnic composition of the population in Zemun throughout various time periods (Zirojević, 2015, p. 103). The rise of Zemun as a city and the improvement of living conditions are evident from the demographic changes and population movement. For instance, the city's population increased from 2700 in the year 1755 to 4559 in the year 1780 (M. Dabižić, 1959, p. 33). Additionally, according to the 1802 census data, Zemun had a population of 7,089 individuals. This indicates that the population has nearly doubled in a span of twenty-five years, starting in 1777 (A. M. Dabižić, 2006).

We can come to many conclusions by analyzing demographic data on the population of Zemun over a number of years. Continuous population expansion was observed throughout the 19th and

20th centuries, indicating the active urban development of this area. The significant decrease in the population in 1915 is likely a result of the conflicts during the First World War, which had a major impact on the city's demographic profile. Following the Second World War, Zemun witnessed an increase in population, which persisted throughout the 20th century. The ongoing rise in population during the 1970s is particularly noticeable, indicating the region's consistent urban expansion. This data provides a comprehensive understanding of the demographic shifts that have influenced Zemun's development as a city over the centuries.

2.3 Health Care in Zemun Through the Ages

From an economic perspective, Zemun thrived as a significant border town and trade center whenever the Sava and Danube rivers defined its border. Zemun's strategic location was particularly significant during the 18th century, as it was halfway between Vienna and Istanbul, which were the capitals of two rival empires (Marinković, 2020, p. 1). Furthermore, it was situated in close proximity to a vast network of river and land transportation, facilitating the connection between Central Europe and the Balkans, as well as regions further to the east. Zemun served as an active port for trade, with goods from Italy traveling via the Sava River and goods from Hungary, France, and England arriving via the Danube (Škalamera, 1966, p. 14), (A. M. Dabižić, 2014, p. 133).

The establishment and growth of healthcare facilities in Zemun are a reflection of the larger framework of healthcare organization within the Habsburg Monarchy, particularly considering Zemun's position as a border settlement. Zemun's approach to healthcare changed after its integration into the Habsburg Monarchy in 1717, when the city underwent certain modifications. The focus shifted to improving sanitary and medical infrastructure in order to preserve the population's well-being, particularly due to the city's border status and frequent movement of people and products. As is typical in border areas, the military government established new institutions and facilities to provide health services. Aside from providing crucial medical services for soldiers and the general population, there was also an important focus on monitoring travelers and goods arriving from the Ottoman Empire. This service was crucial in preventing the transmission of contagious diseases and protecting public health. Through these procedures, Zemun's medical facilities were able to adapt to the specific challenges of the border town while also reflecting the needs and peculiarities of the local community and the larger Habsburg Monarchy health care system (S. Milenković et al., 2014, p. 505).

Constructed in 1730, Contumaz occupied the current location of the City Park in the southwestern region of Zemun, see Figure 2.4. Contumaz was entirely encircled by a massive brick and stone wall, further fortified by palisades. It was surrounded by the city moat, measuring roughly 6 meters in depth and 8 meters in width, which was always filled with water (A. M. Dabižić, 2013, p. 148), (Ilić, 1955, p. 19). Access to the quarantine zone was possible at four entry points, each of which was equipped with bridges that could easily be torn down (Vasiljević, 2020).

Contumaz was divided into an outer and inner part. The outer area consisted of six smaller houses, known as huts, each containing four rooms. These huts were used to accommodate travelers from the Orient who were required to undergo quarantine. Additionally, there was a building with four rooms for individuals of high social status, a lazaret (hospital), two large warehouses for storing and cleaning goods, a facility for burning letters and small packages, a parlor for supervised conversations, buildings for ventilating goods, and a morgue. Within the central area, there were structures designated for administration and accommodation of officials and their families, a

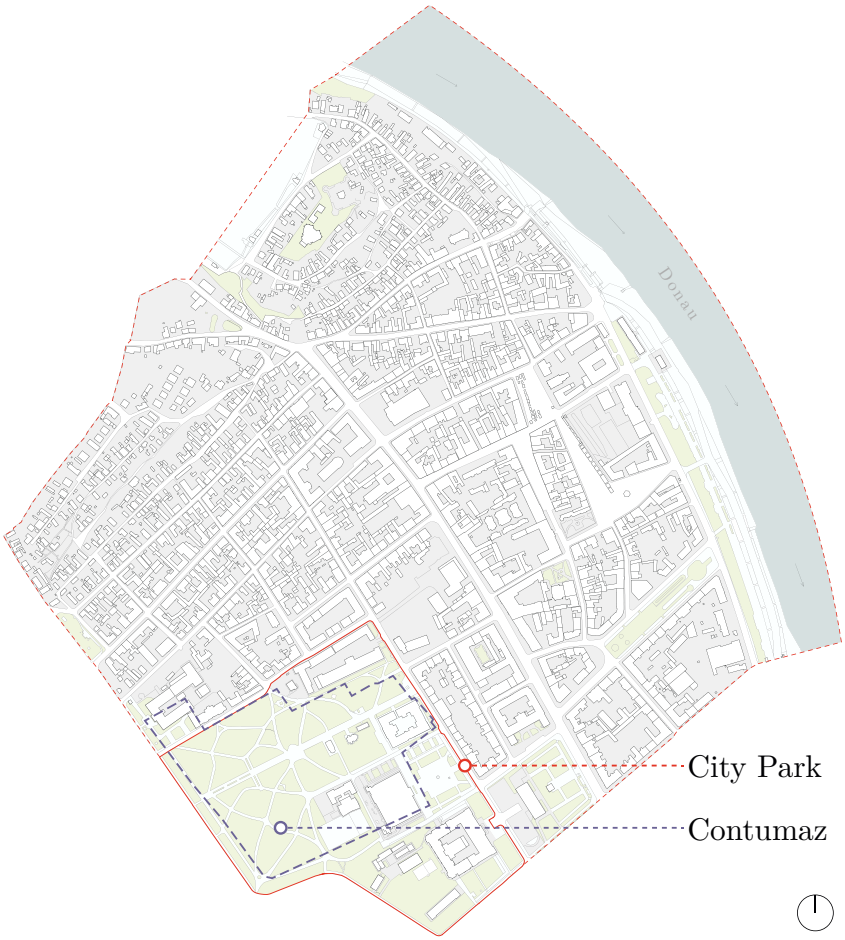
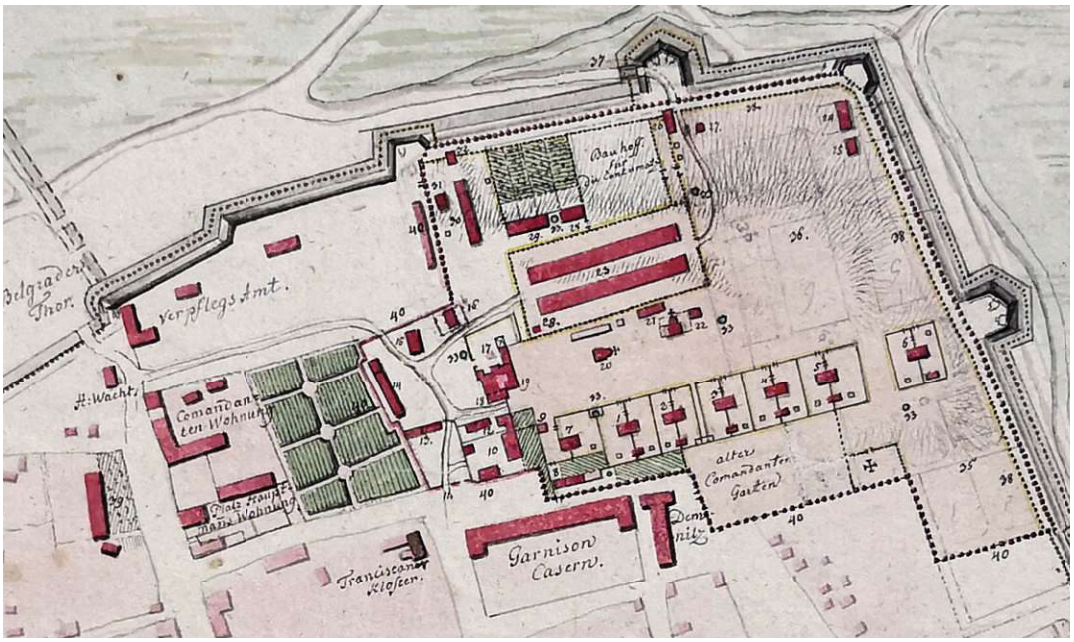


Figure 2.4: Location of Contumaz within Zemun, created by author.

single-story house for the doctor and his assistant, an Orthodox church, a Roman Catholic church, and facilities for the storage of carts, horses, and food (A. M. Dabižić, 2013, p. 148), shown in Figure 2.5.

The geographical position of Zemun played a crucial role in shaping and advancing the healthcare services in the city. During outbreaks of contagious diseases, the first regulation, sometimes referred to as the "plague patent", limited cross-border movement to contain their spread. However, it quickly became evident that this solution was insufficient, forcing the implementation of additional laws. The legal basis for the Habsburg Empire's sanitary defense became even more specific with the introduction of "Contumaz – and its respective cleaning regulations" in 1731. These regulations provided detailed instructions on how to handle individuals suspected of carrying diseases. Further regulations, including the famous patents of 1738, controlled the process of passing through quarantine and the procedures involving passengers and commodities in the years that followed (S. Milenković et al., 2014, p. 505).

Initially, the duration of the quarantine at Zemun was 52 days, but starting in 1780, it ranged from three to 21 days. The travelers were accommodated in huts, each equipped with four chambers and two fireplaces. These huts were located close to the park's current main avenue. Specialized



1-6. Huts and stables
10. The post o ice
11. Main gate
12. Controller's Apartment
13. Stables
18. Guard
20. Church
22. Catholic Church
23. Hambar and warehouse
25. Surgeon's apartment
26. Monastery
33. Water wells
35. Cotton warehouse
37. Entrance of goods
40. Scope of the entire Contumaz

Figure 2.5: Buildings in the Contumaz area in Zemun (N.N., 1788).

people held the received goods and letters in designated warehouses and carried out the cleaning process. Coffee, rice, and other grain goods were exposed to the open air for a duration of three weeks. Textile sacks were soaked in water, and if sufficient disinfection could not be achieved, they were burned. Items such as wool, furs, raw silk, cloth, leather, and other similar materials, which were believed to be prone to the transmission of disease, were placed under quarantine for a period of up to six weeks. Gold and solid objects underwent disinfection by being washed in salty, soapy water (Vasiljević, 2020). All goods, containers, and passengers originating from the Ottoman Empire were redirected to the outer Contumaz. If individuals exhibited symptoms of contagious illnesses, they were apprehended and placed in quarantine in a designated barrack located alongside the Danube River. If the patient experienced a less severe sickness, they were relocated to the infirmary, situated at the same site as the present-day hospital (Najhold, 1998; Vasiljević, 2020).

Zemun was among the first cities to equip itself with a quarantine health facility due to its favorable geographical position. This hospital, referred to as Contumaz in historical records (Marinković, 2020, p. 2), played a crucial role in protecting the entire empire. The Zemun Contumaz opened in 1730, marking the beginning of successful efforts to contain epidemics. This institution continued operating until 1872, providing protection to the populace over a span of 142 years. The population of Zemun encountered significant problems during the plague outbreaks of 1738–1739 and 1763, as well as typhus epidemics. These events underlined the crucial role and effectiveness of health services during that time (S. Milenković et al., 2014, p. 505), (Risto, 1937).

On November 17, 1770, the Habsburg Monarchy enacted the first comprehensive health law, known as the "Sanitary Main Normative". The law represented an important turning point in the organization of healthcare, recognizing the state's obligation to ensure the well-being of its citizens. Every citizen is entitled to equal access to healthcare, and the law regulates the responsibilities of doctors, pharmacists, and other medical professionals, as well as the officially set prices for medical services. Additionally, the law provided structured protection for the population from large epidemics, establishing the foundation for modern public health infrastructure within the empire (S. Milenković et al., 2014, p. 506), (Živković, Milanković, and Prica, 1969, p. 175–180), (Risto, 1935), (Risto, 1940, p. 133–134).

Over time, Contumaz warehouses started to empty as fewer and fewer goods entered them. The termination of Contumaz in 1842 marked the end of this period in Zemun's history. This facility, which previously covered about 20% of the town and held an important position in the city landscape, currently only exists as a historical memory due to the absence of a concrete purpose for its existence. The majority of the buildings in Zemun were destroyed during the 1870s and 1880s. The Orthodox and Catholic chapels, which are still preserved, are the only remains of this once-thriving area (A. M. Dabižić, 2006).

Summary

The geographical and strategic significance of Zemun have played a crucial role in its growth and development throughout history. Its location on the banks of the Sava and Danube rivers has made it an important center for trade and transportation, attracting merchants and explorers. The presence of rivers has also facilitated the growth of diverse industries, strengthening the city's economy. Additionally, Zemun's strategic position as a fortress at the confluence of two rivers has made it a site of military clashes and conquests. The city's unique geographical structure, particularly the elevated plateau of Gardoš, has influenced its appearance and character, with notable structures serving as landmarks.

Zemun's sociocultural context significantly influenced the city's urban landscape, social structure, and cultural diversity. The Peace of Požarevac (1718) and the Peace of Belgrade (1739) represent significant events that marked Zemun's shift from Ottoman to Austro-Hungarian rule, enabling rapid economic development and settlement expansion. An important factor is the movement of the Jewish population from Belgrade to Zemun, which had a significant impact on the city's cultural and economic dynamics. The Zemun Synagogue's establishment in 1850 serves as evidence of the importance and presence of the Jewish community in the city. Demographic data on population numbers across various time periods reveals significant shifts in ethnic composition and increasing urbanization. Craftsmen and builders, whose proficiency and knowledge were evident in the notable construction accomplishments of that era, also influenced the urban landscape. Undoubtedly, their contribution to Zemun's transformation into a prominent European center with distinctive design is undeniable. The examination of the socio-cultural environment of Zemun demonstrates a complex network of factors and activities that molded the city's identity while under Ottoman and Austro-Hungarian governance.

Zemun, a city at a crossroads with a rich history spanning several regimes, is home to stories of not only political and economic changes but also a deeply rooted tradition of medical care. The healthcare system of Zemun, a border town in the Habsburg Monarchy, has adapted over time in response to the specific needs of the population and the difficulties associated with being a trade center. The development of health institutions, such as the Contumaz quarantine zone,

was crucial for protecting public health and preventing the transmission of infectious diseases. The geographical position of Zemun also influenced the development of healthcare services, with regulations and laws implemented to control cross-border movement and ensure the population's well-being. Contumaz's termination in 1842 marked the end of this era in Zemun's history; however, the lasting legacy of its healthcare system and infrastructure remains.

3 Urban Development of Zemun Under Ottoman and Austro–Hungarian Rule

This Chapter explores the urban development of Zemun, focusing on the city's evolution under the Ottoman and Austro–Hungarian empires. Zemun, with its rich history and strategic location, underwent significant transformations during these periods, which are critical to understanding its present urban character. The Chapter begins with an overview of Zemun's urban character in Section 3.1, providing context for the city's architectural and social structure. Following this, Section 3.2 presents an overview of the city's building typology and general characteristics, highlighting the architectural styles and urban features that define its appearance. In Section 3.3, the Chapter explores Zemun's development during Ottoman rule, examining how Ottoman urban planning influenced the city's structure. Section 3.4 shifts focus to the Austro–Hungarian period, analyzing the urban planning policies and infrastructure projects that redefined Zemun's layout. Section 3.5 presents a comparative analysis of urban planning under both empires, assessing the similarities and contrasts in their approaches. Finally, Section 3.6 addresses the changes in urban development following the First World War, marking the beginning of Zemun's modern growth. This chapter provides a thorough historical analysis of Zemun's urban development, highlighting the enduring impact of the Ottoman and Austro–Hungarian eras on the city's contemporary urban landscape.

3.1 Introduction to Zemun's Urban Character

In general, the city structure is defined by an orthogonal street network, which has replaced the previous organic, unplanned layout typical of earlier periods. A detailed analysis of Zemun's topographical development, including the growth of complex urban patterns and regulations, the construction of defensive structures, and the changes in the number and condition of buildings, can be conducted using cartographic sources such as plans and associated documentation. These documents provide an overview of the city's evolution over time, revealing changes in the city's urban landscape, economic flows and cultural opportunities (A. M. Dabižić, 2014, p. 125), (Marinković, 2020, p. 2). The following Sections will provide a more comprehensive analysis of these topics in order to take a deeper look at various aspects of the city's urban development and evolution over time.

In order to establish an accurate picture of the size of Zemun and its urban planning, an analysis of five urban areas and the most significant city squares will be conducted. This analysis will provide us with an insight into the current city's characteristics and challenges, enabling us to examine its current state and establish a foundation for future research and analysis.

Zemun is an urban area in Serbia and one of the 17 municipalities in Belgrade, see Figure 3.1. It is situated in the southeastern part of Srem, at the confluence of the Sava and the Danube.

According to the 2022 census, it has a population of 179,368 residents (Statistical Office of the Republic of Serbia, 2022). It consists of a number of urban local communities, including Zemun polje, Grmovac, Ugrinovci, Busije, Batajnica, 13. Maj, and Zemun, where the Old Core of Zemun, marked in red on the left map in Figure 3.2, is located. This work focuses on the historical part of Zemun, known as the "Old Core of Zemun", shown in the right map in Figure 3.2, which represents a significant cultural and historical entity.

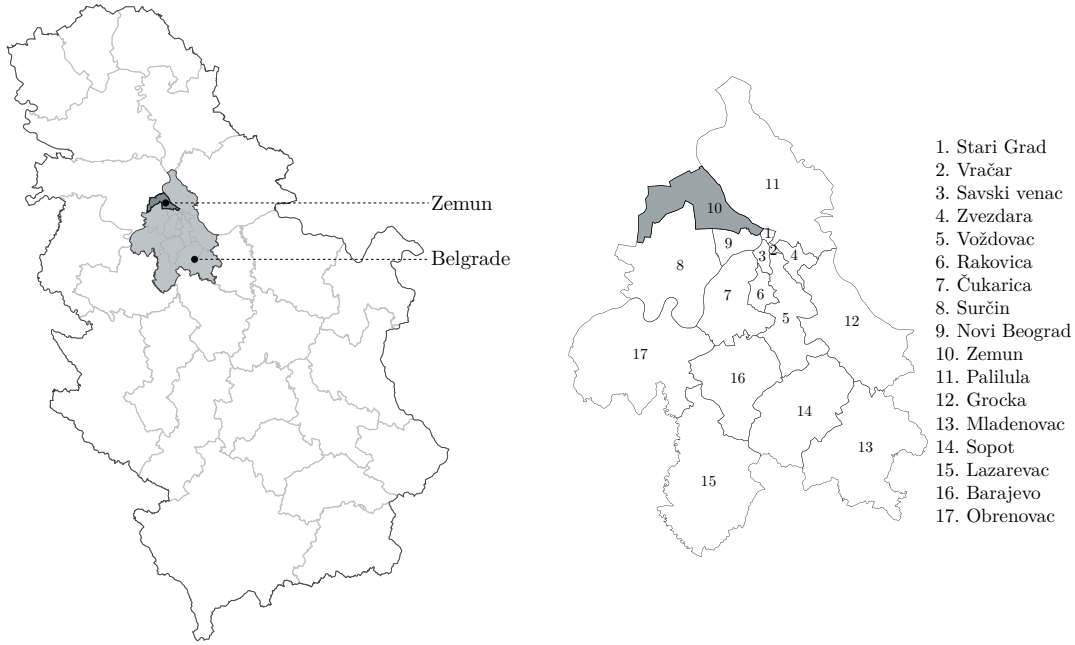


Figure 3.1: Location of Belgrade and Zemun within Serbia (left) and the municipalities in Belgrade (right), created by author.

Urban Areas Within the Spatial Cultural-Historical Unit Old Core Zemun

The area of the Old Core of Zemun covers about 80 hectares (Städtisches Institut von Belgrad, 2003, p. 4). By examining its natural characteristics, historical context, typology, and urban structure, five distinct urban areas were identified. These units contain a total of 75 building blocks, highlighting the complex spatial organization of this historical core (Grozdanić, 2010, p. 160).

Figure 3.2: Location of Zemun's Old Core in the Zemun municipal (left) and detailed map of Zemun's Old Core (right), created by author.

The Downtown of Zemun

The location of the downtown of Zemun is marked in red in Figure 3.3. The primary characteristic of this area is the presence of an irregular network of streets, see Figure 3.4, as the terrain was not leveled previously. Despite that, an orthogonal shape can be observed at the base. The main street splits the area into two sections: one in the northeast heading towards the Danube, and the other in the southwest heading towards New Belgrade. This division further defines and organizes the structure of this urban area (Grozdanić, 2010, p. 160–161).

The oldest streets and squares in Zemun, shown left in Figure 3.5, located within this urban complex, are not only integral components of the city's infrastructure but also contain a valuable architectural assemblage consisting of numerous cultural monuments and objects of exceptional cultural-historical and architectural-urban significance, see the right picture in Figure 3.5. This unit features various types of residential buildings that are typical of the ambiance found in the Old Town. Modified rural dwellings and small-town buildings are found in the northern and northwestern regions, whereas tall, single-story residential buildings, as well as residential and commercial structures, are found in the central and southern areas. Additionally, this area contains the highest concentration of public buildings in the Old Core, spanning from the ground floor plus two stories to the ground floor plus four stories (Grozdanić, 2010, p. 161).

The arrangement of different functions, particularly residential and public activities, in this area of the city is characterized by a traditional overlapping, a common feature of historic urban cores. The streets marked on the map in Figure 3.6 exhibit urban characteristics and serve specific functions, such as administrative and commercial activities. The remaining parts of this urban complex primarily serve residential purposes while also accommodating a variety of activities (Grozdanić, 2010, p. 161).

Figure 3.3: Location of the downtown of Zemun, created by author.

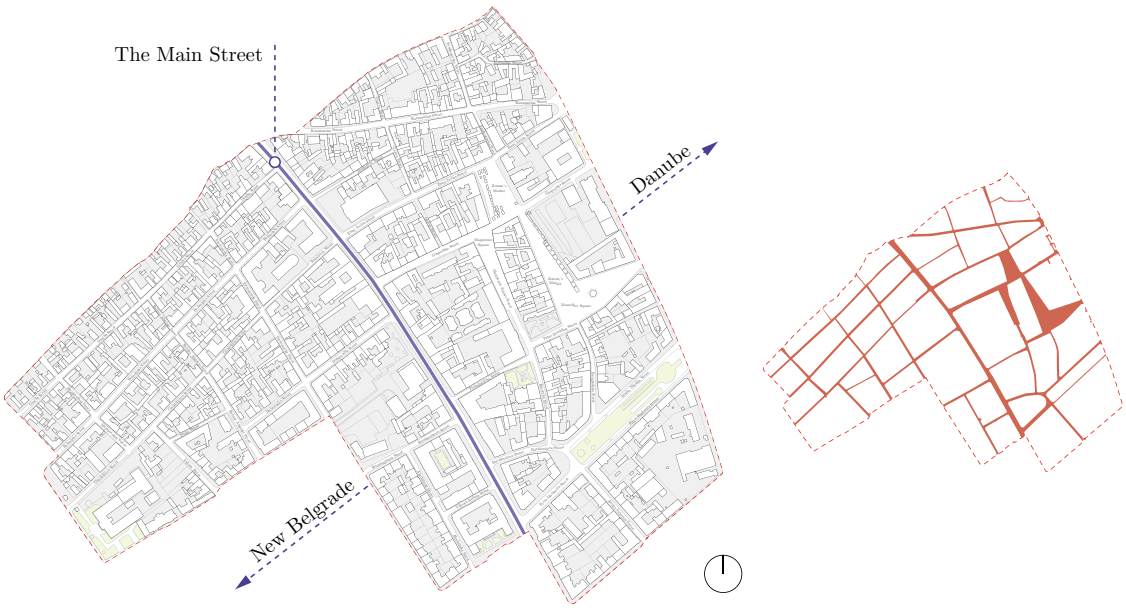


Figure 3.4: Map of the downtown of Zemun (left) and schematics of the street network of the downtown of Zemun (right), created by author.

Figure 3.5: Magistrate Square in Zemun (left) and the Zemun native museum (right), 2024, photographed by author.

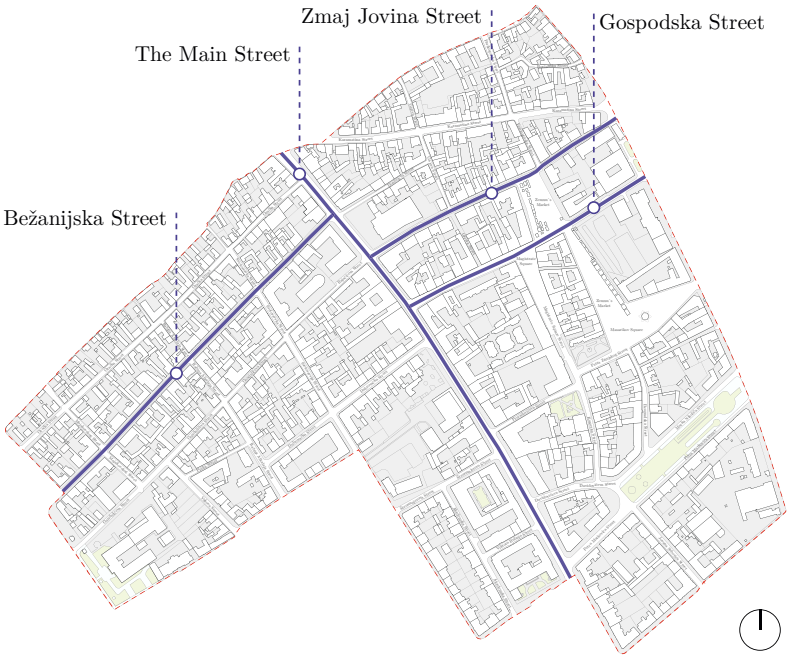


Figure 3.6: Map of streets with mostly administrative and commercial activities, created by author.

Gardoš

The location of Gardoš is marked in red in Figure 3.7. Gardoš has been an attractive settlement

Figure 3.7: Location of Gardoš in Zemun, created by author.

location since ancient times due to its advantageous position on the highest elevations of the Loess plateau and its slopes above the Danube. This region is rich with significant archaeological evidence that shows the historical existence of diverse populations at the confluence of the Sava and the Danube rivers. Gardoš is primarily a residential area. The street network follows the loess slope, giving a distinct character to the urban layout, as shown in Figure 3.8. The construction fund primarily includes modified versions of rural Pannonian and small-town single-story buildings. These houses are situated along the regulation lines in an interrupted sequence with a characteristic rhythm (Grozdanić, 2010, p. 161).

Within the urban area of Gardoš, there are smaller environmental units referred to as micro-ambients that hold significant value. This includes the Church of St. Nicholas complex, along with the Zemun's Fortress complex with the Millennium Tower (Figure 3.8). The vertical elements of the Church of St. Nicholas and the Millennium Tower, in contrast to the small and low-lying ground structure of Gardoš, significantly contribute to the silhouette of Stari Zemun, as shown in Figure 3.9 (Grozdanić, 2010, p. 161).

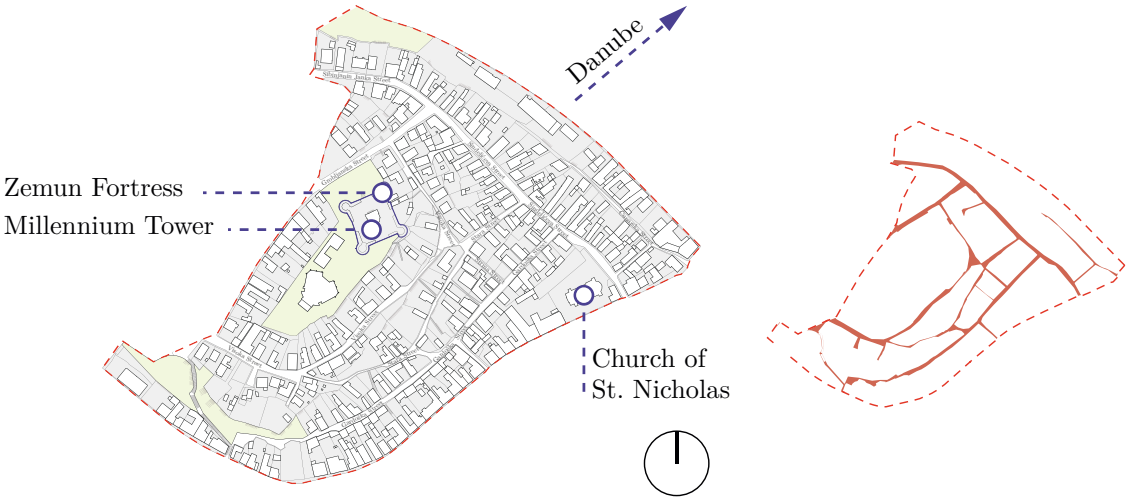


Figure 3.8: Map of Gardoš (left) and schematics of the street network of Gardoš (right), created by author.

Figure 3.9: The view of the silhouette of Zemun from the Danube (TripAdvisor, 2024).

Ćukovac

The location of Ćukovac is marked in red in Figure 3.10. The Ćukovac area predominantly consists of residential properties, characterized by streets that lack proper regulation and a diverse range of buildings with varying quality, as shown in Figure 3.11. The prevailing architectural style in rural areas is the modified Pannonian type of house, characterized by single-story structures with an elongated base. Typically, the narrow side of these houses faces the street, and their arrangement in a discontinuous sequence creates a unique rhythm. Ćukovac, similar to Gardoš,

Figure 3.10: Location of Ćukovac in Zemun, created by author.

provides remarkable panoramic views of the natural and historical regions of Zemun and Belgrade, see the left picture in Figure 3.12, owing to its advantageous natural attributes, including its location and geomorphological conditions (Grozdanić, 2010, p. 162). Within this complex is the

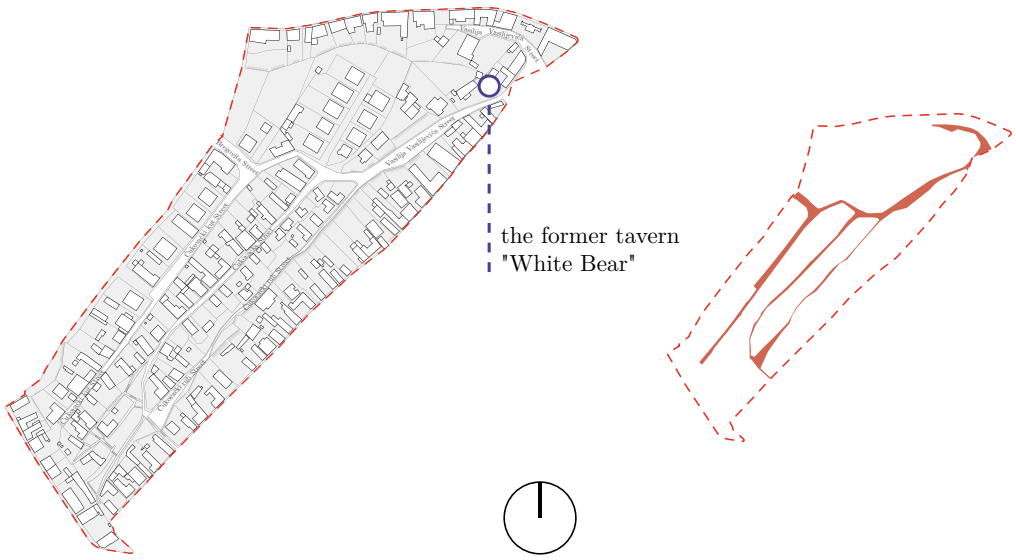


Figure 3.11: Map of Ćukovac (left) and schematics of the street network of Ćukovac (right), created by author.

oldest house in the Old Core of Zemun, which dates back to the Ottoman period. The building is a single-story structure that formerly served as the residence of the "White Bear" tavern, shown

in the right picture in Figure 3.12. Literature frequently references this building as Eugene of Savoy's residence in 1717 (Grozdanić, 2010). A significant part of this area suffered widespread

Figure 3.12: Gardoš and Donji grad, view from Ćukovac (Zemun.org, 1935), 1935 (left). The "White Bear" tavern (right), (Zemun.org, 2023).

devastation as a result of unplanned construction, leading to the erection of buildings lacking urban-architectural significance. As a result, the area of Ćukovac lost its monumental and historic features (Grozdanić, 2010, p. 162).

City Park Complex with Public Facilities

The location of the City Park Complex is marked in red in Figure 3.13. The City Park Complex was established in the southwestern area of the Old Core of Zemun, resulting in significant changes to the city's urban layout, compare Figure 3.14. In 1842, the abolition of Contumaz led to the transfer of the land's ownership to the city, which was then required to use it for public needs. The only two preserved buildings, shown in the left picture in Figure 3.16, in Contumaz are the Orthodox Quarantine Chapel of the Holy Archangels Michael and Gabriel (Figure 3.15 (right)), which dates back to 1786, and the Catholic Quarantine Chapel of St. Roch (Figure 3.15 (left)), which was built in 1836 (Grozdanić, 2010, p. 162).

In 1876, the municipality of the city of Zemun, being the owner and primary initiator, commenced the construction of the City Park on Kontumac land. The project was ultimately completed in 1886. This park was the first landscaped area in the city, as well as the first promenade for the city's inhabitants, shown in the right picture in Figure 3.16. Over time, the majority of public buildings in this area have undergone various modifications and improvements to meet the increasing demands of the community. These buildings reflect the expertise of local architects and demonstrate the advanced level of the Zemun administration's development in various areas, particularly education. Each of these buildings, with its content and architectural composition,

Figure 3.13: Location of the City park complex in Zemun, created by author.

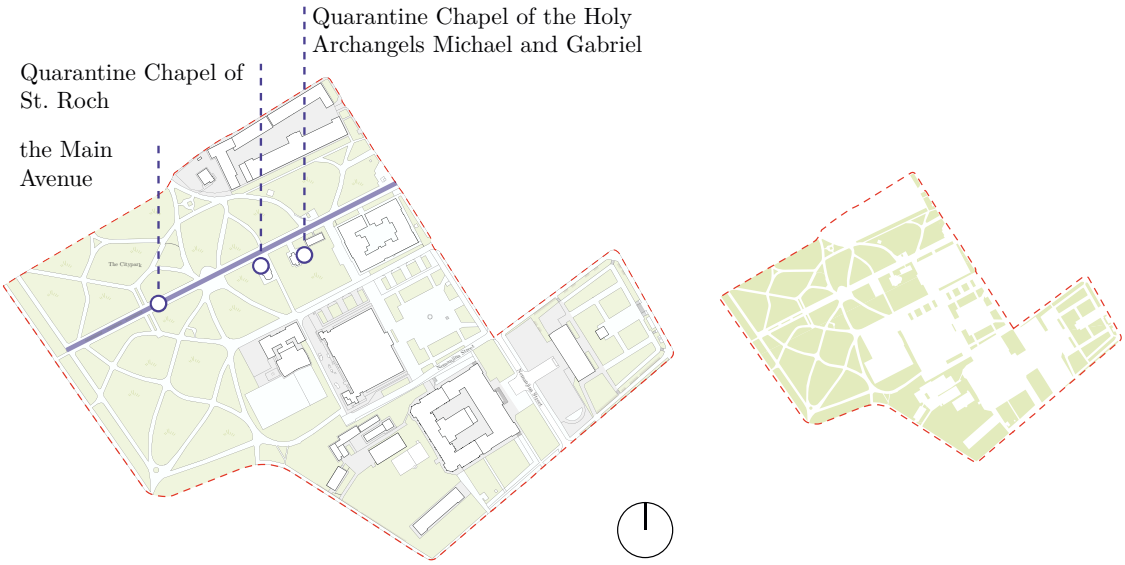


Figure 3.14: Map of the City Park Complex (left) and schematics of the green areas in the City Park Complex (right), created by author.

forms a unity with other public buildings and makes its own specific contribution to this urban complex in the Old Core of Zemun (Grozdanić, 2010, p. 163).

Figure 3.15: Catholic Quarantine Chapel of St. Roch (Institut für die Erhaltung des kulturellen Erbes von Belgrad, 2010) (left). Appearance of the Orthodox Quarantine Chapel of the Holy Archangels Michael and Gabriel (Institut für die Erhaltung des kulturellen Erbes von Belgrad, 2010), around 1935 (right).

Figure 3.16: Churches as seen from the city park, 2024, photographed by author (left). The city Park promenade, 2024, photographed by author (right).

The Coastline

The Coastline, marked in red in Figure 3.17) does not serve as a residential space. Instead, this area is a unique space that reflects the traditional character and spirit, along with extraordinary environmental qualities. The main promenade, shown in the right picture in Figure 3.18, which runs directly next to the historic core and parallels Main Street, is the most attractive section of the waterfront. Located in this part of the city is a significant cultural monument, the Old Port Master's Office, shown in the left picture in Figure 3.18, along with the renowned restaurant

Figure 3.17: Location of the Coastline in Zemun, created by author.

"Venice", which is a very popular place for tourists (Grozdanić, 2010, p. 163).

Figure 3.18: The Old Port Master's Office (Institut für die Erhaltung des kulturellen Erbes von Belgrad, 2010) (left). Zemun quay promenade (Kaplanec, 2014) (right).

The main connection between the promenade and the urban core was established at the intersection of the promenade and Masarikov Square, see Figure 3.19. Located at the intersection of Karamatina, Zmaj Jovina, and Gospodska streets in Kej oslobodenja Street, there is a zone that used to be a river passenger pier. The effective use of the coastline, which encompasses the establishment of piers and anchorages, presents a remarkable opportunity to emphasize the importance of the Danube River and its historic role (Grozdanić, 2010, p. 163).

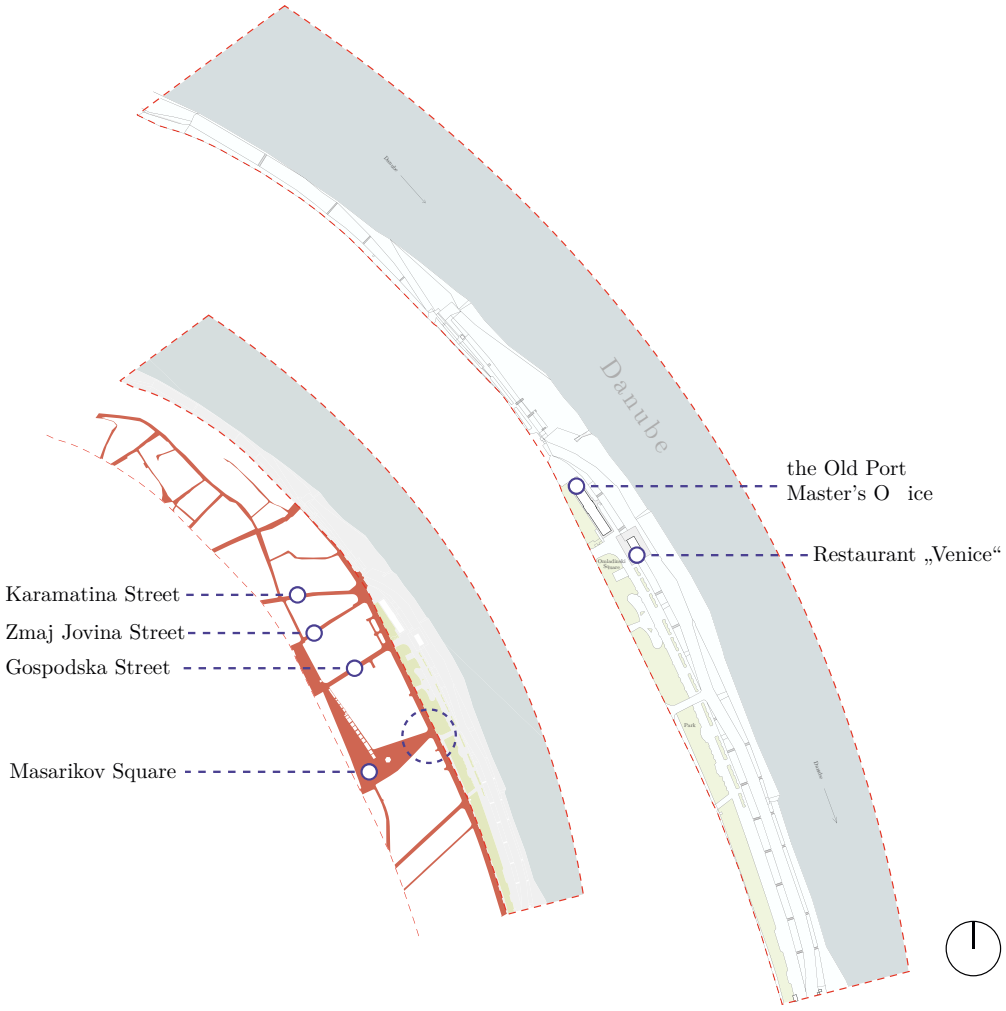


Figure 3.19: Connection between the Costline and the urban core (left), and map of the Coastline (right), created by author.

City Squares in the Spatial Cultural-Historical Complex of the Old Core of Zemun

The city squares, shown in Figure 3.20, within the spatial cultural-historical complex of the Old Core of Zemun are valuable artifacts that developed in the 18th and 19th centuries. They have remained significant up to the present day, documenting the changes in Zemun's urban structure. These city squares hold significant value in terms of cultural-historical, architectural-urbanistic, and ambiental aspects, thereby contributing to the development of distinct characteristics and atmospheres in Zemun's unique spatial entity (A. Dabižić, 2005, p. 191), (M. Dabižić, 1995).

By studying the map created by Theodor von Werthenpreis and Wenzel von Wolgenmuht in 1780, shown in Figure 3.21, the first larger spaces in the central part of Zemun can be identified (A. Dabižić, 2005, p. 183). This map depicts Zemun as an established urban entity, with over thirty streets and three trapezoidal areas, which served as the foundation for the present Big, Masarikov

Figure 3.20: City squares in the Cold Core of Zemun, created by author.

and Magistrate square, as presented in the illustration in Figure 3.21. This Section will focus on these three city squares, which are considered the most significant in Zemun.

The Big Square

The Big Square, shown in Figure 3.22 is the oldest and most significant area in the cultural and historical complex of the Old Core of Zemun, representing a unique spatial concept. It is highly valued from a cultural and historical perspective (M. Dabižić, 1995).

The period of more intensive construction in Zemun's downtown led to the development of the oldest city square, which now serves as the marketplace (A. Dabižić, 2005, p. 183). In the late 18th century, the northwestern facade of the Big Square was constructed. The facade's design and layout were spatially well-designed and successfully solved. A one-story residential and commercial

Figure 3.21: Development of the City Squares, marked as red trapezoidal areas. Current situation (left), created by author. Situation from 1780 (middle), (Ćelap', 1967). Overlay of the current position and area of the City Squares on the map of the situation from 1780 (right), (Ćelap', 1967).

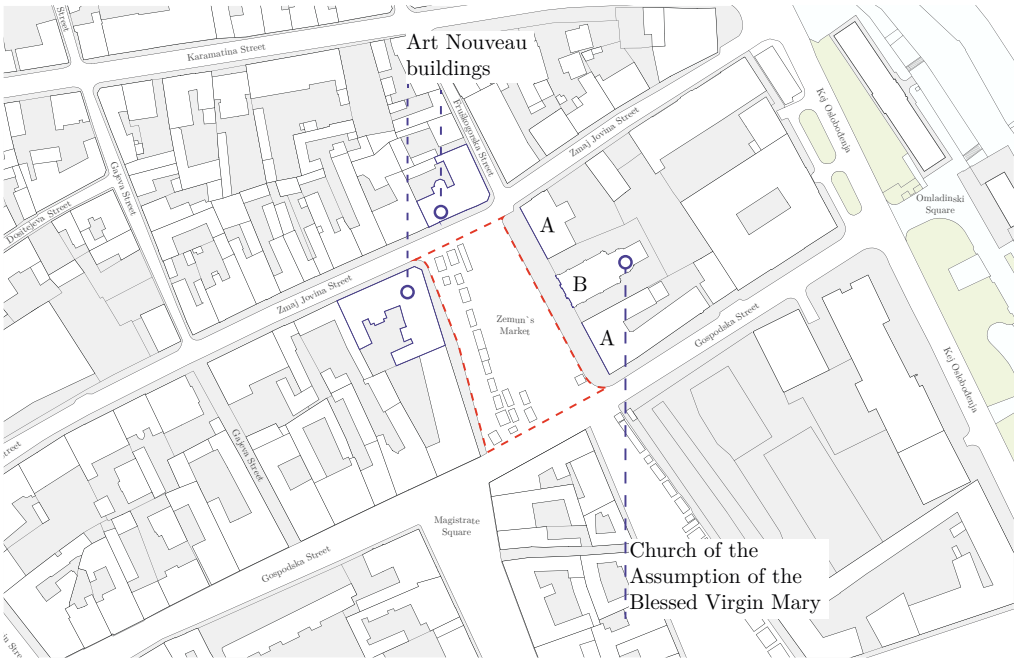


Figure 3.22: Map of the Big Square, created by author.

building, shown in the left picture in Figure 3.23, was constructed in 1911 at the intersection of Zmaj-Jovina Street and the Big Square. This building, designed in the Art Nouveau style, forms a harmonious whole with another Art Nouveau building located at the corner of Zmaj-Jovina and Fruskogorska streets, see right picture in Figure 3.23 (A. Dabižić, 2005, p. 183–184).

By analyzing the Big Square, we can notice the appearance of the 'A-B-A scheme', which expresses the harmonious balance and rhythm of the built volumes. In this scheme, the element 'A' is repeated identically at both ends, while the central element 'B' differs from them. An example of the 'A-B-A scheme' can be seen on the eastern front of the Big Square, where the Church of the Assumption of the Blessed Virgin Mary is situated between the two single-story buildings, see left picture in Figure 3.24, creating a symmetrical rhythm. Today, construction of a two-story building on one side of the church has disrupted this scheme, compare right picture in Figure 3.24 (A.

Figure 3.23: Art Nouveau buildings on the Big Square, 2024, photographed by author.

Dabižić, 2005, p. 183), (M. Dabižić, 1995).

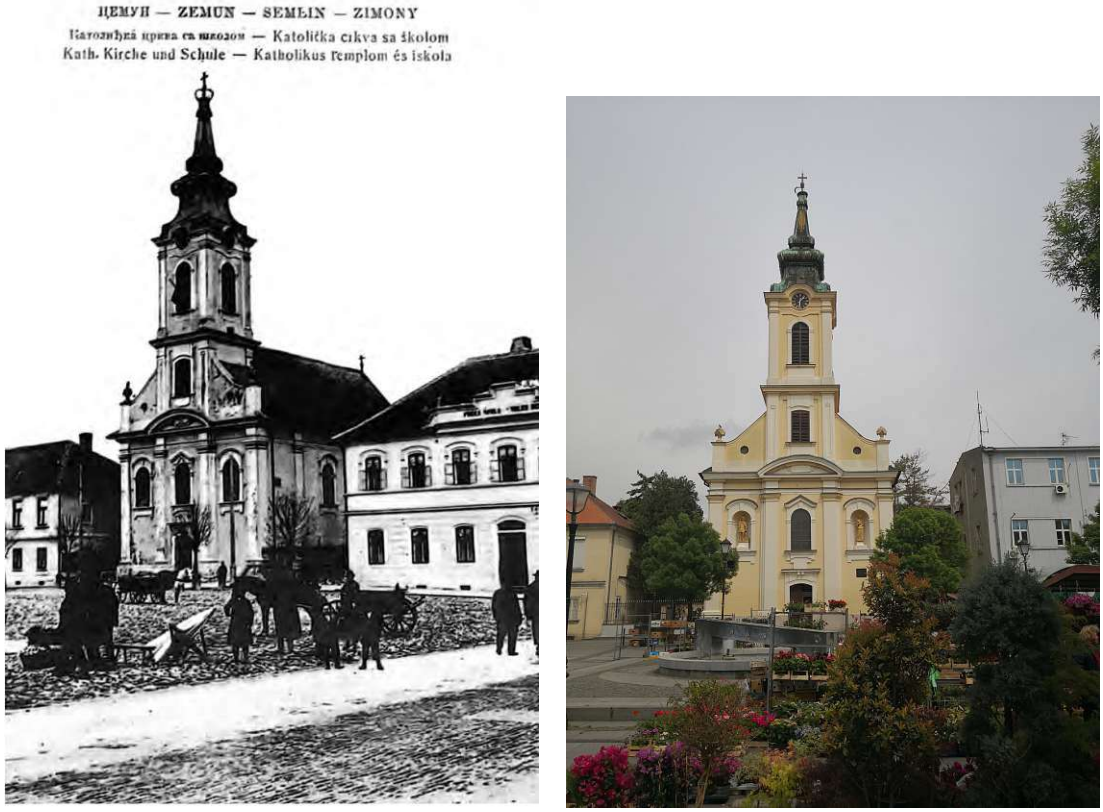


Figure 3.24: The Church of the Assumption of the Blessed Virgin Mary (left), (A. Dabižić, 2005). The Church of the Assumption of the Blessed Virgin Mary in a disrupted scheme (right), 2024, photographed by author.

Masarikov Square

Masarikov Square, shown in Figure 3.25, which was originally known as the Small Square, was established in the vicinity of the Big Square. The names of the square were derived from the type of goods sold and its size, such as the Flour Square, the Wheat Square, and the Small Square. In 1935 , the square was officially referred to as Masarikov Square (A. Dabižić, 2005, p. 185), (M. Dabižić, 1995).

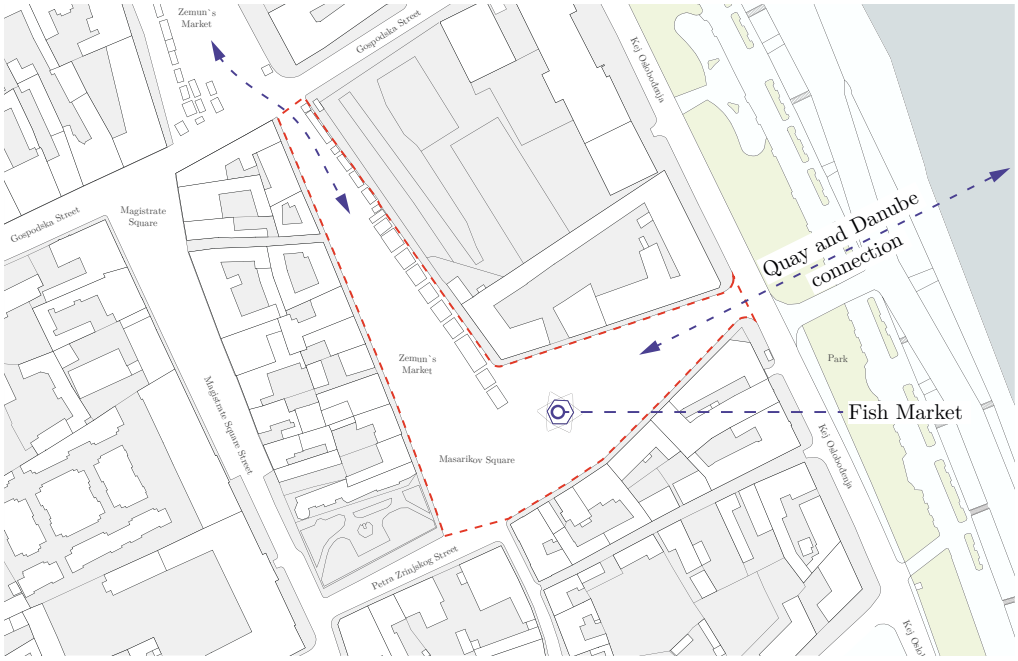


Figure 3.25: Map of the Masarikov Square, created by author.

Considering its size and significance, the square's initial name did not reflect its steady growth and transformation into the largest square in the center. When the Danube reached high water levels in the 18th century, the southeast part of the square frequently flooded. The hospital building was located on the square according to old plans, such as the one from 1740. Later plans, such as the ones from 1780 and 1830, showed the construction and subdivision of the southeast part of the square, compare Figure 3.26. Around 1900, the square was home to residential structures from the 18th and 19th centuries, along with commercial and residential buildings, and accommodations for travelers and carriages. The free-standing, octagonal building that houses the fish market is the most well-liked structure in the area among the locals (A. Dabižić, 2005, p. 185), (M. Dabižić, 1995).

Masarikov square consists of two trapezoids forming an 'L' shape, with the lower trapezoid overlooking the Danube and facing the Quay. It can be considered an extension of the Big Square, as they organically merge, compare Figure 3.27, thereby creating a unique whole in the very heart of the core. The square's central position and connection with the Quay reflect its architectural and urban significance, despite the lack of concrete evidence to confirm its urban planning (A. Dabižić, 2005, p. 185), (M. Dabižić, 1995).

Figure 3.26: Developement of Masarikov Square shown in maps from different times: 1740 (left), (N.N., 1749), 1780 (middle), (Ćelap', 1967), and 1830 (right), (N.N., 1913).

Figure 3.27: The merging of the Masarikov Square and the Big Square, recorded after 1900 (A. Dabižić, 2005).

Magistrate Square

Magistrate Square, shown in Figure 3.28, is essentially an extended street. The even-numbered side of the street predominantly contains modest suburban houses of lower value. On the opposite side of the street, there are stylized buildings with residential and business purposes from the 19th century, as shown in Figure 3.29 (A. Dabižić, 2005, p. 188–189), (M. Dabižić, 1995).

The Magistrate's building, shown in Figure 3.30, located on this city square, is a prime example of classicist architecture. It serves as the main office for the city administration and holds great historical significance. The structure stands as a living proof of the ongoing growth and development of the Zemun municipal administration, which dates back to 1751. The building is the most prominent feature in the square, from which it derives its name (A. Dabižić, 2005, p. 188–189), (M. Dabižić, 1995).

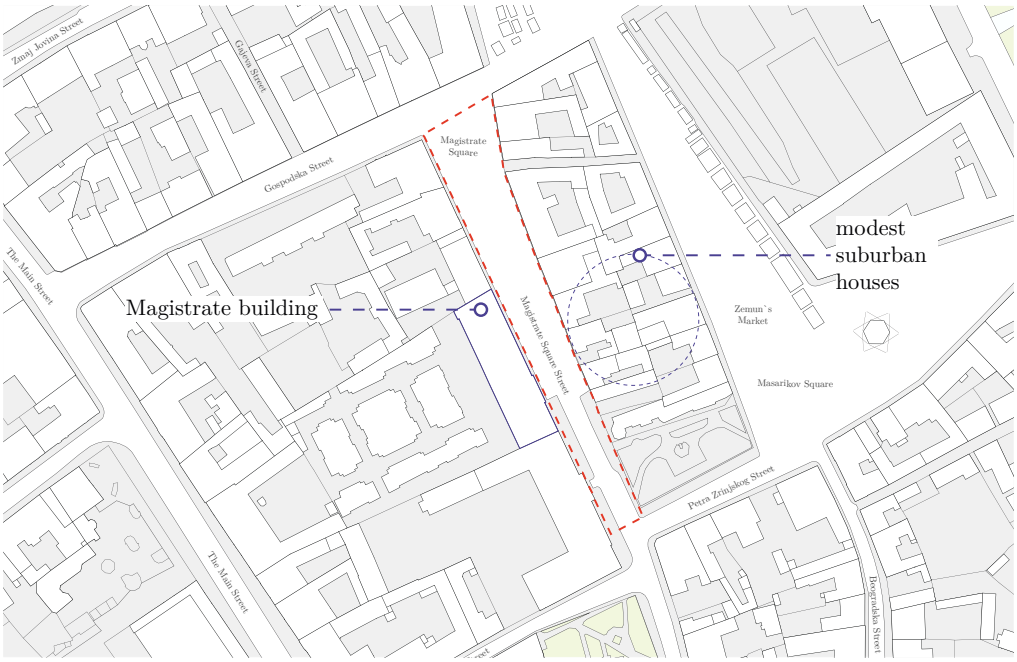


Figure 3.28: Map of the Magistrate Square, created by author.

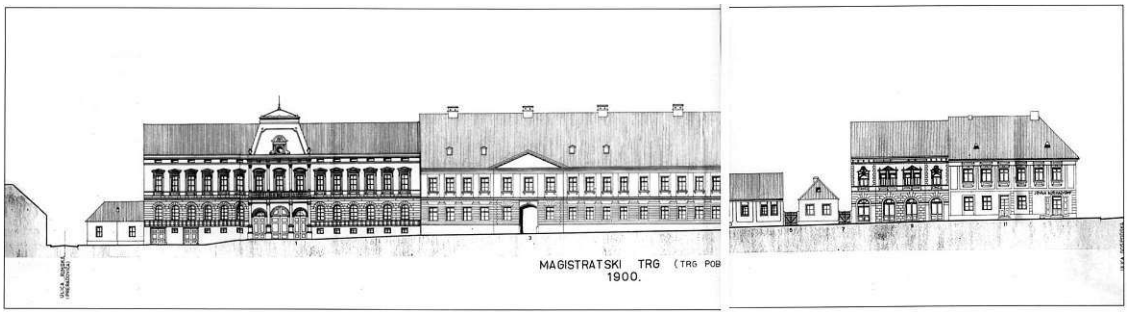


Figure 3.29: Front street view of the Magistrate Square street in 1900 (A. Dabižić, 1997).

Summary

This Section provides an in-depth examination of the urban character and historical development of the urban areas and city squares of the Old Core of Zemun. The spatial cultural-historical entity of the Old Core of Zemun represents a valuable part of the urban heritage, including five urban entities of exceptional importance. The research on these urban areas reveals a rich tapestry of residential, public, and commercial spaces that reflect the city's historical and cultural evolution. The distinctive features and functions of city squares such as the Big Square, Masarikov Square, and Magistrate Square highlight Zemun's complex spatial organization and heritage. They are evaluated from a cultural-historical and architectural-urbanistic point of view, preserving the authenticity and spirit of past centuries. Through detailed cartographic and historical documentation, we can appreciate the dynamic interplay of natural, architectural, and cultural elements that define Zemun's unique urban landscape.

Figure 3.30: Magistrate building, photo from 1930 (A. Dabižić, 1997).

3.2 Building Typology and General Characteristics

The preserved architectural history in the Old Core of Zemun includes nearly all progressive stages of building construction and design from the late 18th century, when the core was established, until the current day. Among the present-day building stock, the majority of unaltered structures from earlier eras originate from the late 18th century and beyond, while buildings constructed prior to the 1780s are exceedingly few or have entirely vanished (Vučković and A. M. Dabižić, 2022, p. 4).

The older building stock in the Old Core of Zemun is characterized by structures constructed from less durable materials like as rammed earth and timber frames, alongside those produced from stronger substances like brick. The utilization of natural construction materials, including wood, soil, reeds, and straw, was formerly more common. Wooden houses have nearly vanished over time. The utilization of concrete in construction became prominent only at the beginning of the 20th century. Wood, iron, and concrete serve as structural components or decorative elements on the exterior of building (A. M. Dabižić, 2006), (Vučković and A. M. Dabižić, 2022, p. 4–5). These varied materials illustrate the progression of construction methods and indicate shifts in architectural tendencies throughout the Old Core of Zemun.

Residential buildings are the fundamental architectural structure of the Old Core of Zemun. These buildings survived the numerous forms and modifications that developed from the second half of the 18th century. Early buildings, like timber houses, lagumice (underground dwellings), and the most simple forms of present-day residences, have nearly vanished. The last wooden house was torn down in 1912, see left picture in Figure 3.31, and the Štaremberg House, shown in the right picture in Figure 3.31, a notable example of advanced timber building in old Zemun, was demolished in 1916. The refurbished bar “Beli Medved” (White Bear) is the only remaining preserved example of former timber structures, see left picture in Figure 3.32. Lagumice, a type of residential cave carved in the hills, were symbolic of Zemun’s soft earth. Subsequently, people constructed houses

atop the lagumice, while the caverns were utilized for the storage of commodities. These legumes have likewise entirely vanished (A. M. Dabižić, 2006), (Grozdanić, 2010, p. 162), (Škalamera, 1967, p. 11).

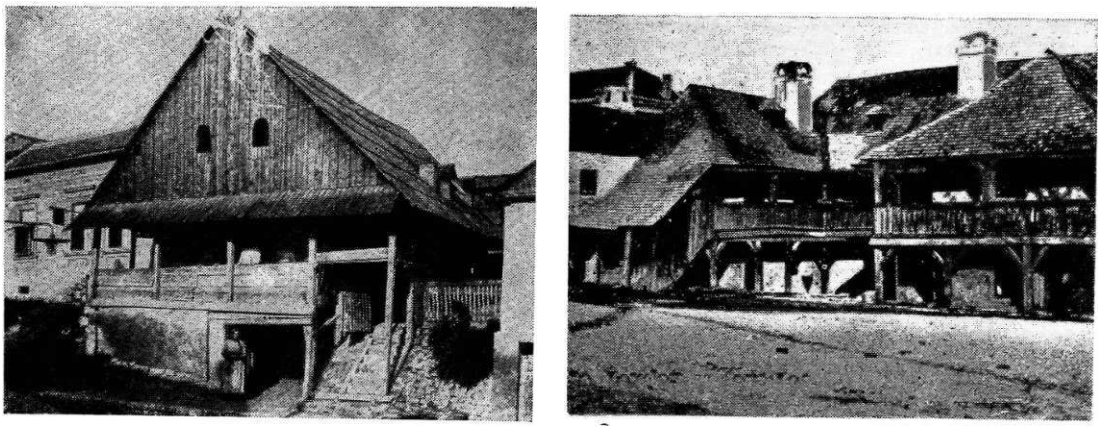


Figure 3.31: "Divana", a house from Njegoševa Street demolished in 1912, illustrates the once widespread type of houses in the Old Center of Zemun (Škalamera, 1967), (left). Štaremberg House, one of the most developed examples of wooden architecture of old Zemun, was demolished in 1916 (Škalamera, 1967), (right).

The houses located in the Old Core of Zemun are categorized into four fundamental groups, based on criteria relating to the social structure of their residents and the exterior characteistics of the buildings themselves (Škalamera, 1967, p. 12).

The modified Pannonian (rural) type one (T1) represents the oldest and most common architectural style in Zemun. These houses evolved as rural dwellings and were converted into urban residences once their initial rural use were abandoned. These single-story, tripartite houses show an elongated structure, with the narrower facade directed towards the street, complemented by a gabled roof and a porch extending along the longitudinal side that faces the courtyard, see right picture in Figure 3.32.

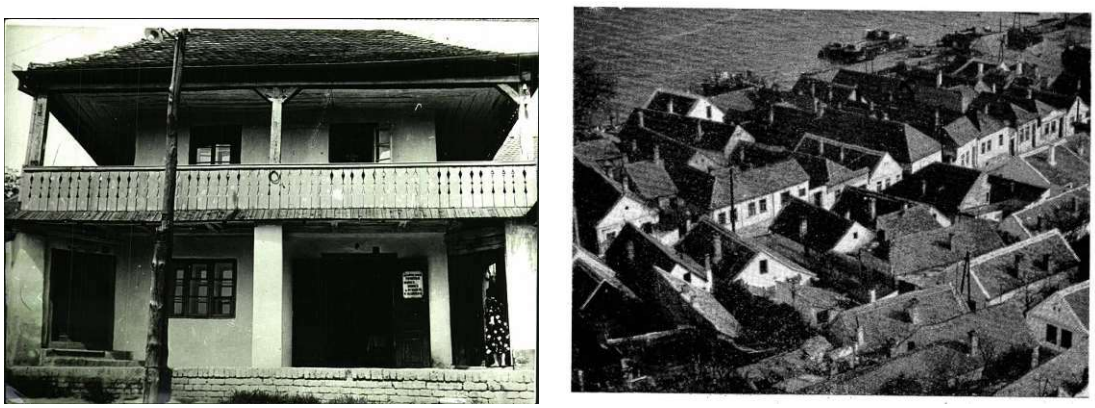


Figure 3.32: Old tavern White Bear (Institut für die Erhaltung des kulturellen Erbes von Belgrad, 2010), (left). Group of typical one-story houses with an elongated base, oriented with the narrow side to the street, located on Gardoš (Škalamera, 1967), (right).

This type of house typically does not evolve into a multi-story building and is located in interrupted rows. The design of these houses is simple, with layouts tailored to the requirements of former residents, such as fisherman (A. M. Dabižić, 2016, p. 41). A good example of such a structure is the residence of mason Borovac, shown in the right picture of Figure 3.33, constructed in the early 19th century, with dimensions of 5x10 meters. Subsequently, it was expanded with an additional room adjacent to the main entrance (Grozdanić, 2010, p. 167), (Škalamera, 1967, p. 28).

The Malovaroškha house, type 2 (T2), is a single-story building characterized by an extended configuration, with its broader side directed towards the street. This type of design is characteristic of small-town urban architecture rather than adapted rural architecture. These houses are generally situated near regulatory lines and are interconnected, giving an urban component.

They are typically double-tract, featuring one or two wings extending towards the courtyard. Initially, their roofs featured a lighter slope; however, from the late 18th century onward, they embraced a steeper pitch. The number of rooms increased throughout time, and the configurations grew increasingly intricate. The Hariš House, see right picture in Figure 3.33, constructed in the late 18th century, is one of the rare remaining and most exemplary examples of this kind. Composed of resilient materials, it is of the double-tract type and possesses a notable high, sharply inclined roof (A. M. Dabižić, 2006), (Grozdanić, 2010, p. 167), (Škalamera, 1967, p. 29–30).

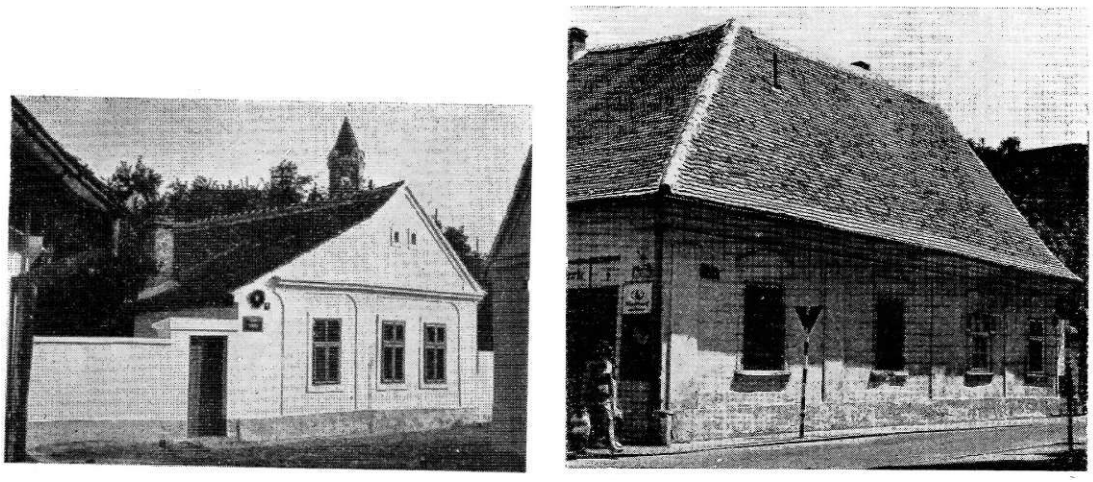


Figure 3.33: Mason's Borovac House, Visoka street, 9 (Škalamera, 1967), (left). Hariš House, Zmaj Jovina street, 14 (Škalamera, 1967), (right).

The Visokopartena house, type three (T3), represents single-story houses in small towns and urban areas, characterized by a distinct urban essence, typical of the central regions of Zemun's Old Core. These houses are also located with their broader side facing the street, although they distinguish themselves from the prior type through their greater proportions, superior materials, and more elaborate craftsmanship.

Typically, they include a basement and an attic, with more gradual roof slopes. The heights of these houses are significantly taller, occasionally attaining the elevation of older two-story structures. The Đoka Marković House, see left picture in Figure 3.34 exemplifies a single-tract Visokopartena residence, constructed in the late 19th century. It is symmetrically designed and features an extravagantly decorated facade, in contrast to the preceding styles (Grozdanić, 2010,

p. 167), (Škalamera, 1967, p. 13–14).

The single-story residential and mixed-use building, type four (T4), typically follows to a double-tract layout featuring steep, high-pitched roofs that subsequently evolved to a more moderate slope. These houses feature wide carriage entrances centrally located on the facade axis, a characteristic that had been abandoned by the late 19th century in favor of small, asymmetrical entries to facilitate expanded shop spaces.

On main roads, these buildings fulfill dual functions: the ground level is usually reserved for shop and commercial uses, whereas the upper level is intended for residential use. They were built using resilient materials like brick, with concrete being utilized from the early 20th century onwards. An illustrative example of this category is the Afrodita Bialo House, shown in the right picture of Figure 3.34. Constructed from resilient materials, it features a distinctive high roof and a symmetrically arranged front with the primary carriage entry centrally located. This house illustrates dual-purpose design, providing both residential and business areas (A. M. Dabižić, 2006), (Grozdanić, 2010, p. 167), (Škalamera, 1967, p. 43–44).

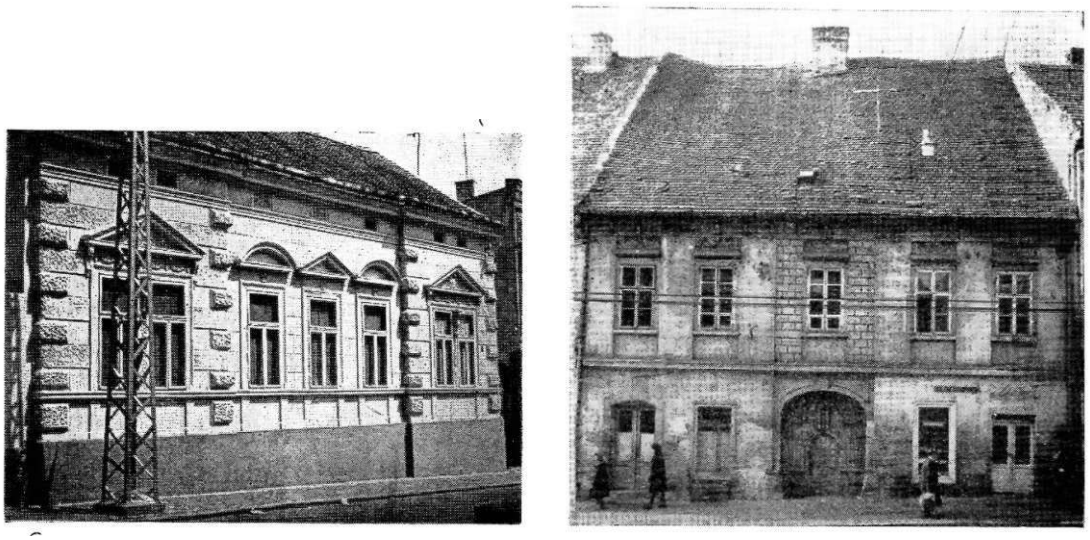


Figure 3.34: House of Đoka Marković, Njegoševa street, 3 (Škalamera, 1967), (left). House of Afrodite Bialo, Main Street, 45 (Škalamera, 1967), (right).

The core is clearly divided according to its evolution. In the northwest region, particularly in Gardoš and Ćukovac, freestanding single-story houses prevail along the regulatory line. In the southwest region, near the City Park, independent public buildings dominate, while the other regions consist of interconnected buildings that vary in both width and length. The majority of these buildings are organized in rows, with some partially aligned to the building line, while a lesser number of public constructions are entirely free-standing (Vučković and A. M. Dabižić, 2022, p. 6).

The organization of residential and public spaces, with few exclusions, is quite simple. More complex solutions emerged solely in the early 20th century. In the courtyard wings, single-tract or double-tract arrangement patterns were simply duplicated. The architecture of Zemun illustrates tradition, indicating that the evolution to more advanced forms occurred gradually, with even the

more sophisticated structures consistently preserving elements of earlier styles (A. M. Dabižić, 2017).

The Old Core of Zemun includes more than 900 buildings inside its urban framework. Approximately 590 of these structures are single-story houses, rendering the core primarily a single-story composition. The height of single-story structures varies, reaching up to two meters during the transition from the 18th to the 19th century, although high-ceilinged houses from the late 19th and early 20th centuries can reach heights of up to five meters.

The core contains 174 two-story buildings, predominantly erected along the main roads in the center of the town. Nearly the vast majority were constructed in the 19th and 20th century. The height of these two-story buildings is inconsistent: early 19th-century buildings are smaller, while later 19th-century constructions are often taller. In the 20th century, their height reached its peak at the century's outset but subsequently diminished in the latter half.

Two-story buildings were primarily built post-1880s, whereas 23 three-story buildings and 7 four-story constructions were established subsequent to 1930. The heights of the buildings shown in this diagram in Figure 3.35, coupled with additional attributes, offer insights into the historical progression of area (Škalamera, 1967, p. 8–9).

Functionally, single-story houses comprise the primary segment of the residential stock, and the remainder comprises craft and trade establishments. Two-story edifices primarily fulfill dual functions, featuring homes on the higher levels and commercial establishments on the ground floor. Buildings over two floors are predominantly public structures, while three-story buildings are mainly intended for residential use (A. M. Dabižić, 2006).

The architectural legacy of the Old Core of Zemun, comprising more than 900 houses, can be chronologically categorized into seven groups, shown in Figure 3.36. The buildings in the first group were constructed up to 1700, or more precisely, until 1688, when the first Austrian occupation of Zemun took place. This group includes solely the remains of medieval fortifications at Gardoš – the Zemun Fortress. The second group includes buildings constructed between 1700 and 1800, i.e., during the 18th century. The third and fourth groups consist of buildings erected in the first and second halves of the 19th century, respectively. The fifth group includes constructions built or planned between 1900 and 1918. The last two groups form the predominant portion of the conserved architectural heritage: the sixth group comprises buildings built between 1918 and 1945, and the seventh group encompasses constructions established post-1945. Data shows that the stock constructed from 1918 onwards comprises 89.5% of the total architectural stock in the Old Core of Zemun (A. M. Dabižić, 2006; Grozdanić, 2010; Škalamera, 1967).

3.3 Development of Zemun Under Ottoman Rule

This Section explores the urban planning and architectural characteristics of Zemun under Ottoman rule in the 16th and 17th centuries. The Section begins by discussing the growth of Zemun from a small village to a recognized borough, mentioning its agricultural nature and the presence of small oriental houses. The Section then examines Zemun's fortress and mosque in Zemun, highlighting their transformation throughout time. The Section also includes depictions and plans of Zemun during this period, providing insights into its structure and dimensions. The Section further discusses Zemun's devastation and reconstruction, as well as the characteristics of its houses

Figure 3.35: I: single-story buildings, II: one-story buildings, III: two-story buildings, IV: three-story buildings, V: four-story buildings and temples.

and the challenges faced in construction. Overall, based on the available literature, the Section provides an overview of the urban planning and architectural aspects of Zemun under Ottoman rule, shedding light on its historical development and physical characteristics during this period.

In the year 1546, according to the information documented in the Ottoman registers, Zemun was a small village consisting of merely 78 households (Šabanović, 1964, p. 404). Nevertheless, after a span of 20 years, specifically in 1566/1567, Zemun was officially recognized as a "borough" composed of 21 Muslim and 73 Christian households. This indicates a notable growth in the number of residences while retaining the same fundamental attributes as before. This era is additionally distinguished by a vibrant and energetic ambiance, as evidenced by the continuous riots that took place both throughout the day and night (Šabanović, 1964, p. 404). While the

Figure 3.36: I: up to 1700, II: 1700–1800, III: 1800–1850, IV: 1850–1900, V: 1900–1918, VI: 1918–1945, VII: 1945–1967.

available data may not provide a comprehensive overview of Zemun in the 16th century, it does imply that the town was mostly focused on agriculture. It is possible to deduce this from the feudal obligations of the residents, which were tied to land and productivity, as well as the existence of small oriental dwellings.

Reinhold Lubenau's records from 1587 indicate that Zemun had a fortification that was entirely devastated, situated on the Danube riverbank. Multiple wooden dwellings and a mosque were situated adjacent to the fortress. As was typical during the conquest, the largest church in the area was transformed into a mosque to accommodate the religious practices of the new rulers. The mosque likely dates from 1521. The painting by Prandsteter (Figure 1.1), created in 1608, provides undeniable evidence of the presence of the minaret, or tower, of the mosque in Zemun during that

period. On the painting, two minarets can be seen standing out above the houses, one of which is significantly larger than the other. The mosque is characterized by its construction using hewn stone, with dimensions of 10x10 meters, three rows of windows, and a dome covered in lead. The mosque is situated at the same place as the present-day Catholic church, known as the Church of the Assumption of the Blessed Virgin Mary. The bridge linking Zemun and Belgrade was also a significant structure during that period. The historical records provide a significant part of Zemun's identity throughout that period and define its architectural and religious framework (Amedoski, 2005, p. 205).

The first known representation of Zemun can be observed in a miniature, shown in Figure 1.1 included in Prandsteter's travelogue dating back to 1608 (Horvat, 1911, p. 259–260). This miniature depicts Zemun as a fortified settlement situated behind a hill, with a castle decorated with towers above it. The artist's attention and precise depiction of the dimensions and shape of the homes in this miniature provide us with an accurate portrayal of Zemun's architecture and appearance during that period. This allows us to deduce the potential heritage of the older architectural funds from the period of the Austro-Turkish wars (A. M. Dabižić, 2006).

The travel writer Evlija Celebija's report from 1663 offers a deeper insight into the distinctive features of Zemun. He observes that the Zemun fortress degraded steadily over time (Čelebija, 1957, p. 110), while the city area, situated on a flat field along the Danube river, consisted of approximately 400 modest homes, all covered with wooden roofs. Furthermore, reports indicate the presence of one mosque, six chapels, and a primary school in the area. Celebija also observes that trade was not present in Zemun at that time, and the Zemun inhabitants had to obtain items from Belgrade, where they worked as craftsmen. In addition, Henrik Ottendorf's plan, shown in Figure 3.37, from the same year provides an illustration of the town's structure and dimensions (A. M. Dabižić, 2006).

Ottendorf's plan for Zemun integrates the techniques of perspective sketching and orthogonal projection. The painting depicts the Ćukovac and Gardoš Loess areas in the front, as well as the fortress. In the background, there is an orthogonal projection of the town, showing the mosque and its surroundings. The combined technique of the drawing fails to depict the section of the settlement situated under the loess slope. Prior to the Austro-Turkish wars, Zemun was situated in the northern section of the Old Core of Zemun, mostly stretching southwest towards Main Street and southeast towards Gospodska Street (Figure 3.38). Based on the provided sources regarding the depiction and physical characteristics of Zemun during the period of the Ottoman governance, it can be concluded that the small oriental houses made of weak material had minimal chances of survival following the destruction that occurred in the summer of 1688. While several notable structures, like the mosque and the fortress atop the hill, likely endured the initial attack, the Oriental houses were eventually destroyed (A. M. Dabižić, 2006).

In the late 16th century, Zemun saw major devastation, which had a profound impact on the city, the surrounding landscape, and the economic conditions. According to the chronicler Pečevija, in 1594, all fortresses and settlements between Belgrade and Budapest were burned. The conflict in the surrounding regions served as an incentive for the restoration of the Zemun fortress and the reinforcement of military forces to safeguard against potential future assaults. Čelebija's report from 1663 provides evidence of the restoration, as it indicates that Zemun had a city commander, a military garrison, and jurisdiction over the market at that time. Despite the destruction it faced in the late 16th century, which posed a threat to its future growth, Zemun successfully recovered and emerged as an important center for trade in the 17th century (Amedoski, 2005, p. 223).

Following the Ottoman's defeat in the summer of 1688, the Austro-German army entered Zemun,

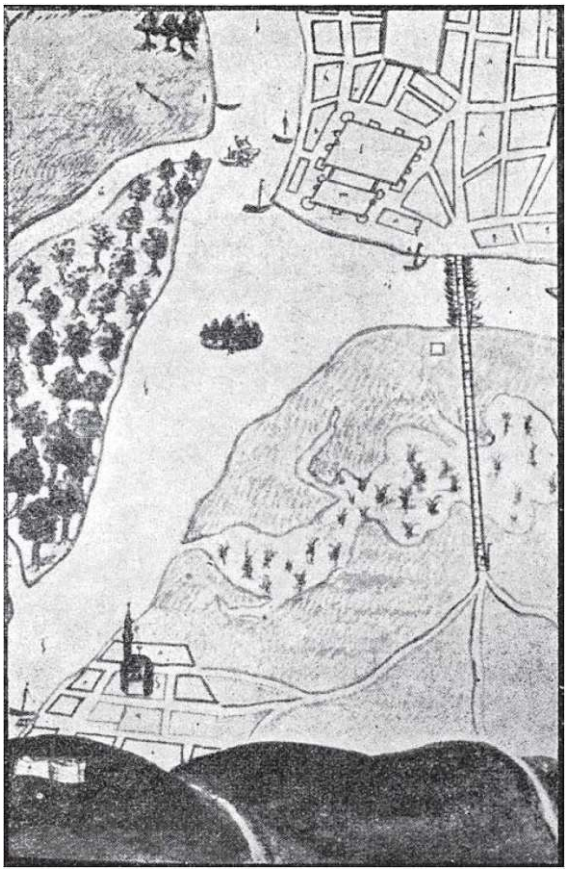


Figure 3.37: Plan of Zemun from 1663, illustration by Henrik Ottendorf (A. M. Dabižić, 2014)

discovering that the settlement was abandoned and ruined. The majority of the wooden houses, which were characteristic of the Ottoman community, have already been destroyed by fire (Marković, 1896, p. 60). Regarding the state of Zemun before the Austrian takeover in 1688, it is challenging to ascertain the specifics of any surviving structures or architectural artifacts. Despite the prevailing news of destruction and demolition, it can only be indirectly deduced that the city has preserved certain aspects of its previous structure or architecture (A. M. Dabižić, 2006).

Following the Ottoman reconquest of Zemun in 1690, there was a lack of notable construction projects at the time. Despite its significance as a harbor for the Ottoman fleet on the Danube, Zemun regressed to being a village with only a handful of partially restored and newly built houses (Ilić, 1955, p. 12). Precise data on the number of dwellings and residents between 1690 and 1717 is unavailable. However, the Austrians' observation upon their reoccupation in 1717 suggests that the settlement had diminished in size and remained concentrated in the same location as during the previous Ottoman reign. A depiction of the condition of Zemun during that period may be observed in a drawing by a Bavarian grenadier engineer lieutenant from 1719, see Figure 1.2, which showcases a panoramic view of Belgrade in the background (Museum der Stadt Belgrad, 1950). Zemun is seen from an aerial perspective in the lower section, labeled as a "village" in the legend. The image depicts multiple single-story dwellings, a larger structure, the remnants of a larger building, and a mosque. The arrangement of objects in the drawing bears a striking resemblance to Prandstetter's miniature and Ottendorf's plan. The settlement is primarily located

Figure 3.38: Map of Zemun prior to Austro-Turkish war, created by author.

in the northern section of today's Old Core. The engineering officer who created this drawing offers expertise that validates the settlement's appearance at the time it was abandoned by the Ottoman and before any reconstruction had taken place. Based on the evidence, it can be deduced that during that period, Zemun was completely devastated, both in terms of its population and its infrastructure (A. M. Dabižić, 2006).

The original Vojvodina dwellings were likely pit houses, consisting primarily of sunken pits with an above-ground part made of dirt. These buildings were built not only during the Ottoman occupation, but they also existed long before. It is believed that Zemun derived its name from these dwellings, known as Zemunice. These dwellings were constructed using mud bricks that were dried in the sun. However, after being abandoned, they had a short lifespan as they rapidly deteriorated from the effects of moisture, rain, and snow. The Ottoman era in Vojvodina was marked by a small population and uncultivated land, which was a direct consequence of the Ottoman conquests and wars in the region. There are almost no preserved architectural monuments from that period, primarily due to inadequate construction techniques that limited the structures' long lifespan. The travelogues from passengers who crossed Vojvodina while traveling between Vienna and Constantinople describe the houses of that era as partially sunken into the ground, with their eaves nearly touching the ground. The buildings were lowered to the ground for two main reasons. Firstly, burying the houses made them less noticeable from a distance, thereby enhancing the security of the inhabitants. Additionally, the severe continental environment and cold winds forced

individuals to seek more simple and cost-effective alternatives. Unfortunately, the conditions at the time prevented the development of more resilient structures. In the case that the settlement was situated on a slope, the pit houses would be dug into the side of the hill and would not have roofs (Čamprag, 2007, p. 25–26).

The interior contained just one central space with a fireplace, serving as a gathering place for both sitting and sleeping. Some buildings would feature an adjacent space specifically designated for sleeping and storage purposes, which was not so common. Food supplies were typically stored in underground pits, while livestock would be accommodated in the nearby woods or fields. Aside from pit houses serving as permanent homes, it is probable that there were also temporary structures constructed from reeds and wicker, which would have enabled seasonal activities outside the pit houses. When the people had the chance to stay in one spot for longer periods, the settlement gradually transitioned from being under the ground to being above it. Consequently, huts replaced pit houses (Kojić, 1949, p. 172–173). Dirt has been found to be an affordable and easily accessible construction material and possesses excellent insulating characteristics. This allows housing to remain warm during the winter and cool during the summer. Wood was rare and often unavailable in Vojvodina and its neighboring regions. As a result, Fachwerk buildings (half-timbered buildings), characterized by a wooden framework filled with organic material or brick, were rare due to the lack of wood. The lack of wood also had an impact on brick manufacturing. The conventional method of baking bricks in ovens necessitated a significant amount of wood as fuel. However, in situations where wood was limited or inaccessible, the production of baked bricks became both expensive and unavailable. As a result, the residents of Vojvodina predominantly used unbaked bricks for building their houses, which was a prevalent method of construction in the 16th and 17th centuries (Vukosavljević, 1965, p. 247). Although not as robust as baked brick, this material was more affordable and easily accessible, enabling inhabitants to construct houses despite limited resources. Buildings built with baked bricks emerged much later (Čamprag, 2007, p. 26–27).

Studying the urban development of Zemun during Ottoman rule provides helpful insights into the cultural factors and historical events that affected its history, as well as the city's transformation. Evidently, the city has undergone big changes across many epochs. The building's architectural and religious structure reflected the impact of Ottoman culture, with features such as a mosque serving as a central place of worship, emphasizing the cultural legacy of Ottoman rule. Furthermore, it is crucial to highlight significant events like the destruction and subsequent reconstruction of the city. Additionally, it is worth noting the changes in economic activities, namely the absence of trade in Zemun during that period, as described by Čelebija. Analyzing urban plans and travelogues provides us with a more profound understanding of the evolution of the city's structure over time, as well as the influence of the Austro-Turkish wars on architecture and methods of settlement. Although Oriental houses faced little chance of survival following battles and devastation, more robust structures, such as the mosque, likely survived the initial attack. Following a detailed analysis, we can conclude that the original residential houses in Vojvodina were shaped by three primary factors: the lifestyle and specific requirements of the inhabitants at that time, the accessibility of particular construction materials during that era, and the impact of the climatic conditions specific to that geographical region. These conditions led to the construction of houses that were usually modest in size and built using simple construction methods. Overall, these elements influenced the architectural tradition and styles that were typical of Vojvodina houses during that period. Considering all the evidence available, it can be concluded that the construction of the street grid in the Old Core of Zemun likely commenced around 1717, subsequent to the city's acquisition by the Habsburg Monarchy. Upon their arrival, the Austrians found that the Ottoman had left behind a trail of destruction, ruining nearly all of their property. All of the architectural and construction funds of the Old Core of Zemun, except for the medieval fortification on Gardoš, were built after that period. The period from the second half of the 18th century to the entire

19th century, characterized by the city's significant growth and progress, should be particularly emphasized. While certain representations and descriptions of Zemun from earlier periods may be oversimplified, it can be concluded that the city's development truly began only after the 1720s, following its incorporation under Austro-Hungarian rule. Consequently, the preservation of historical buildings in the Old Core of Zemun can be traced back to that specific era. At this point, it is not possible to historically prove the extent to which the road network along the loess slope of Gardoš and its connection to the Danube River were inherited and in what condition, despite the seemingly logical formation of the spontaneously developed streets. This is primarily because of the lack of historical descriptions and plans. However, there are indications that the current street network, particularly in the northeastern section of the Old Core of Zemun, may have been inherited from previous urban layouts, but there is not enough tangible evidence of this. Therefore, from now on, the development of Zemun is going to be solely based on available and well-documented sources and literature.

3.4 Urban Planning Under Austro-Hungarian Rule

Zemun's urban center began to take shape in the early 18th century, marking the start of its modern growth (A. Dabižić, 1997, p. 39). The changing political situation caused chaos and uncertainty during this period. However, it also witnessed the establishment of new institutions and significant changes in the settlement's structure, laying the foundation for the city's future growth. Zemun is slowly beginning the process of recovery after suffering extensive damage for decades. By approximately 1720, the city's population had already reached about 1500, marking the initial sign of recovery and population expansion (A. M. Dabižić, 2006). Changes in the structure of settlements include diverse elements such as urban design, architectural composition, infrastructure, and social organization. Throughout this era, the emergence of new organizations, such as administrative and religious institutions, as well as the establishment of the first trade and production centers, had an impact on urban development. The recovery of Zemun during the early 18th century signifies an important turning point in the city's history, marking the beginning of its rise to become a significant urban-industrial center in the Danube region. From 1717 on, when Eugene of Savoy's army arrived in Zemun, the city became incorporated into the Austrian Empire. From that point until 1918, when Zemun was under Austrian control for the last time, its continuous expansion and development can be observed, eventually forming a significant urban complex. This Section will explore the progress of that development using cartographic analysis and chronological analysis.

3.4.1 Cartographic Analysis of the Urban Development of Zemun

Cartographic sources, such as plans and related documents, provide detailed information on the topographical development, settlement regulations, condition, and number of buildings in the old core of Zemun, as well as their layout. The Vienna War Archive possesses the most extensive compilation of antiquated cartographic resources, which enable the study of the territorial development of the Old Core of Zemun. The Zemun native museum contains many plans of Zemun, with the most notable being the extensive cadastral plan from 1780 (A. M. Dabižić, 2014, p. 125).

The first known cartographic record of Zemun, shown in Figure 3.39, is currently kept in the Vienna Chamber Archive. The record, which dates back to 1740, depicts the initial results of the

ascent that took place in the early 18th century (A. M. Dabižić, 2016, p. 22), (A. M. Dabižić, 2014, p. 126), (A. M. Dabižić, 2006). The main street was constructed along the preexisting road

Figure 3.39: Semlin in Syrmien (Zemun in Syrmia), 1740. Signature: AT-OeStA/FHKA SUS KS, O-054. General Administrative Archives – Finance and Court Chamber Archives, Vienna, (N.N., 1749).

that connected eastern Srem with Belgrade, compare Figure 3.40, while the other streets linked the main street with the Danube coast. Gardoš was situated between the Danube River, the previously mentioned streets, and the highest point of the Loess plateau, which extended from the hills to the lower areas (A. M. Dabižić, 2016, p. 22), (A. Dabižić, 2001, p. 173). The routes developed in the first half of the 18th century have kept their original directions until today, as shown in the maps in Figure 3.41 (A. Dabižić, 1997, p. 39).

The topographic features of the land divided Zemun into two distinct morphological categories. The northeastern section of the city is situated on the hillside and at the base of Gardoš, with streets that follow the slope of the hill. On the other hand, the southern section of the settlement was established on plain terrain, therefore having a much more regular grid of streets. During the early stages of settlement development, it is likely that there was no formal urban planning, which resulted in a certain irregularity in the mostly orthogonal scheme of the street network (A. M. Dabižić, 2014, p. 126).

The 1740 plan of Zemun (Figure 3.39) shows the first expansions towards the southeast and along the main road. During this phase, the settlement's most significant expansion occurs in the southwestern part, in the area where Contumaz is situated. The western parts of the Old Core of Zemun remain predominantly underdeveloped. However, the beginning of construction along the left side of the main street suggests a potential expansion of the settlement in the western direction. The map shows that the presence of flood zones restricts the further expansion towards the south (A. M. Dabižić, 2014, p. 126–127), (A. M. Dabižić, 2006).

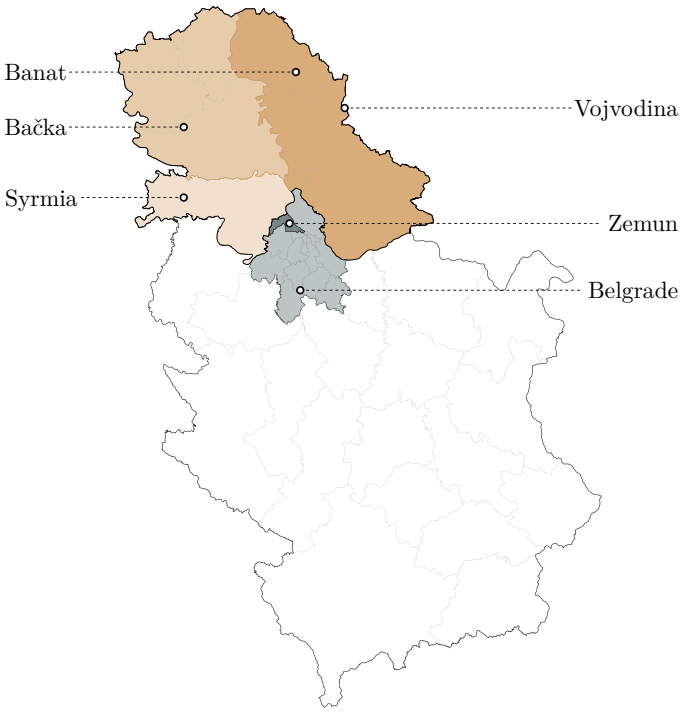


Figure 3.40: Map of Serbia, depicting location of Zemun and surroundings, created by author.

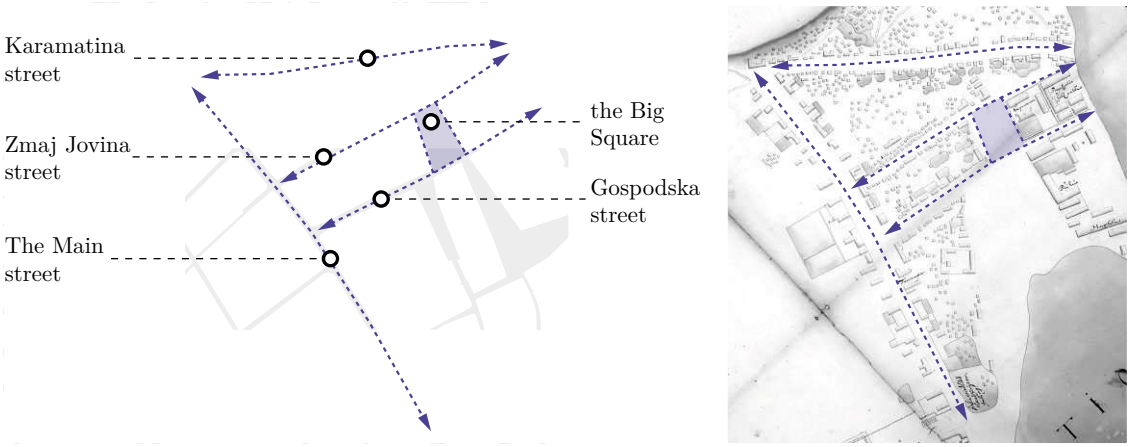


Figure 3.41: Schematics of the current layout of Zemun's street network, 2024, (left), created by author. Layout of the street network marked in blue on the map from 1740 in Figure 3.39 (right), (N.N., 1749).

By analyzing the 1740 plan, we may identify three main types of buildings. The predominant type are small houses constructed from weak materials. The small buildings on today's Zmaj Jovina Street are placed in two rows, where the first row is facing the street and the second row is located inside the courtyard. This indicates that one row likely served as the primary structure and the other as a secondary structure (A. M. Dabižić, 2006). The second type of buildings includes structures of greater proportions, likely larger residential or mixed-use complexes. The third type contains the largest public facilities, including the structures inside the Contumaz complex, such as warehouses and administrative buildings, the hospital, and the church.

The map includes a medieval fortress described as the "old castle", as well as buildings marked in yellow that indicate planned construction, such as the Contumaz expansion (A. M. Dabižić, 2006). The plan's value as an authentic source confirms its conformity of directions, angles, and surfaces to the current condition, as well as the variety of shapes and sizes of the buildings. Therefore, the scenario shown on the plan can serve as a foundation for restoring the urban and architectural condition and visual representation of Zemun as it was in 1740. With the exception of the buildings labeled "Zartaken", which served as guard towers with a fortified ground floor and a wooden top story, and "Das alte Schloss", or the old castle, none of the other structures have been preserved or are even known to exist. Based on the 1740 plan, we assume that the guard tower corresponds to the former "White Bear" tavern, now a residential house (A. Dabižić, 1997, p. 39), (M. Dabižić, 1959, p. 30). Several structures from a later period were constructed at the exact locations where they previously stood during this phase, as was the case with the Church of St. Nicholas and the Church of the Assumption of the Blessed Virgin Mary, together with the customs house and several residential dwellings, see Figure 3.42).

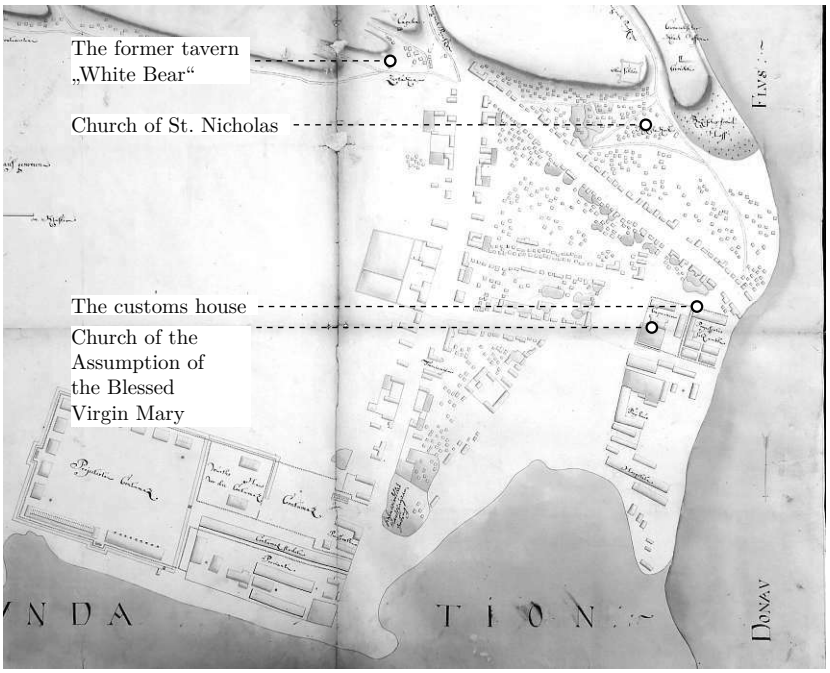


Figure 3.42: Map of Zemun from 1740 (Figure 3.39), with important buildings marked, (N.N., 1749).

Zemun, as depicted in Friedrich Renner's 1753 plan, shown in Figure Figure 3.43, has a relatively regular square shape. The Danube River forms the northeastern boundary, while flood zones towards the Sava River define the southeastern side. The southwestern side is open, and the northwestern side is delimited by the loess section of Ćukovac and Gardoš. The effects of urbanization are clearly evident in this plan. Zemun is fortified with palisades for defensive purposes and has experienced substantial expansion in its territory compared to its previous state. The expansion mostly relates to the western area, where new blocks were constructed in an orthogonal layout parallel to the main street. The expansion on the southeastern side, which was formerly flooded, is also visible. As a precaution against potential floods, this area is limited

by high embankments. Renner's plan shows a tendency toward structuring the community in a grid-like scheme with large closed blocks. Zemun is equipped with gates, with one major gate or numerous smaller gates on each side of the town, next to which a guard is stationed. Unlike the previous plan dating back to 1740, this plan excludes individual structures and focuses solely on notable public buildings (A. M. Dabižić, 2006), (A. M. Dabižić, 2014, p. 127–128), (Stanisavljević and Petrović, 2014, p. 3).

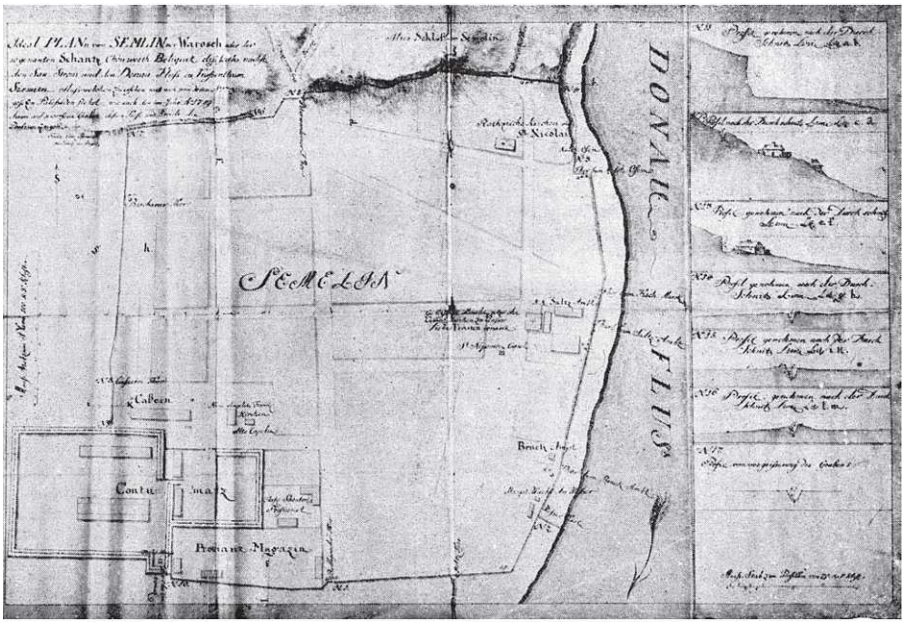


Figure 3.43: Plan von Semliner Warosh (Plan of Zemun village) by Friedrich Renner, 1753, (Stanisavljević and Petrović, 2014).

The primary purpose of Renner's plan was to establish the embankments, and it also depicted the topography of certain parts of the land. The sections of embankments are enhanced by illustrations of houses. Based on the information provided, the residences on Gardoš and at the base of Ćukovac were constructed using reeds (A. M. Dabižić, 2006), (A. M. Dabižić, 2014, p. 127–128). The originally designed part of Contumaz maintained its volume. The Church of St. Nicholas is highly recognizable and situated in its current location (A. M. Dabižić, 2006).

The plan created by Johann Michael Klotz in 1754, shown in Figure 3.44, has an obvious resemblance to Friedrich Renner's plan from 1753. Both plans depict the blocks within the street grid, highlight certain public buildings, and show newly constructed embankments. The key aspects provided in these plans relate to the extension of the city's territory in the south-western direction, encompassing an extra eight schematic blocks highlighted in yellow on the plan. On the northwest side, the settlement was expanded by relocating the palisades from the foothills of Ćukovac and the slopes of Gardoš to their plateaus. Despite the plans' slight lack of accuracy and the presence of orthographic flaws, they still offer a fairly accurate, though general, representation of the town's street layout and size (A. M. Dabižić, 2006), (A. M. Dabižić, 2014, p. 128–129).

Theodor von Werthenpreis and Wenzel von Wohlgemuth conducted one of the first geodetic survey of Zemun, providing a cadastral plan in 1780, see Figure 3.45 (A. Dabižić, 1997, p. 39). This plan is significant for its value as the primary cadastral source, offering accurate data that is highly valuable

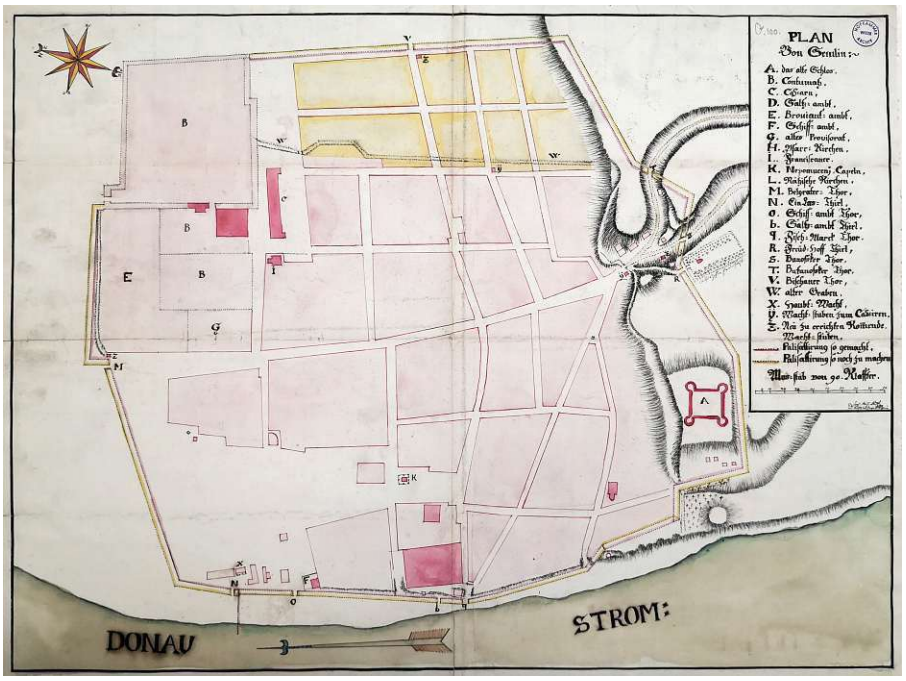


Figure 3.44: Johan Michael Klotz's plan of the City of Zemun, 1754. Signature: AT-OeStA/FHKA SUS KS, O-100. General Administrative Archives – Finance and Court Chamber Archives, Vienna (Klotz, 1754).

for studying the internal structure of already-formed and fully defined settlements (Stanisavljević and Petrović, 2014, p. 3–4). Compared to earlier plans, this strategy does not prioritize crucial military information. The plan indicates further expansion towards the southwest area, leading to the expansion of Contumaz and the building fund on that side of the city. In contrast to the 1754 plan (Figure 3.44), the extension line now stretches to Ugrinovacka Street, whereas previously it was located near Majakovski Street, encompassing several additional blocks (Figure 3.46).

By 1780, Zemun had already developed into a well-established urban area, complete with organized blocks and a street network that closely resembled its current layout. The road infrastructure has the basic structure of an orthogonal scheme, which has developed naturally in response to the topography (A. Dabižić, 1997, p. 39). The street network is defined by the main street, which serves as a dividing line between the eastern and western areas of the town. The eastern half of the city, including Main Street, is primarily characterized by the concentration of public buildings, whereas the western part is predominantly residential. The building blocks had varying dimensions and were predominantly rectangular in shape (A. M. Dabižić, 2006), (A. M. Dabižić, 2014, p. 129–130).

The fronts of the blocks have been built, while the interior of each block has courtyards and gardens. The width of the streets fluctuates and is irregular (Stanisavljević and Petrović, 2014, p. 4). The streets in Ćukovac and Gardoš have retained their free, terrain-conditioned layout, which is not shown on the map. As a result, the only visible structures in these areas are houses, arranged somewhat irregularly. Zemun consisted of 48 building blocks, with a total of 100 identified buildings. A wall barrier isolated Contumaz from the rest of the city, housing a total of 50 buildings. The plan included the first depiction of landscape elements. A row of trees adorns both sides of Main Street, Gospodska Street, and Magistrate Square (Figure 3.46). The green areas can also be

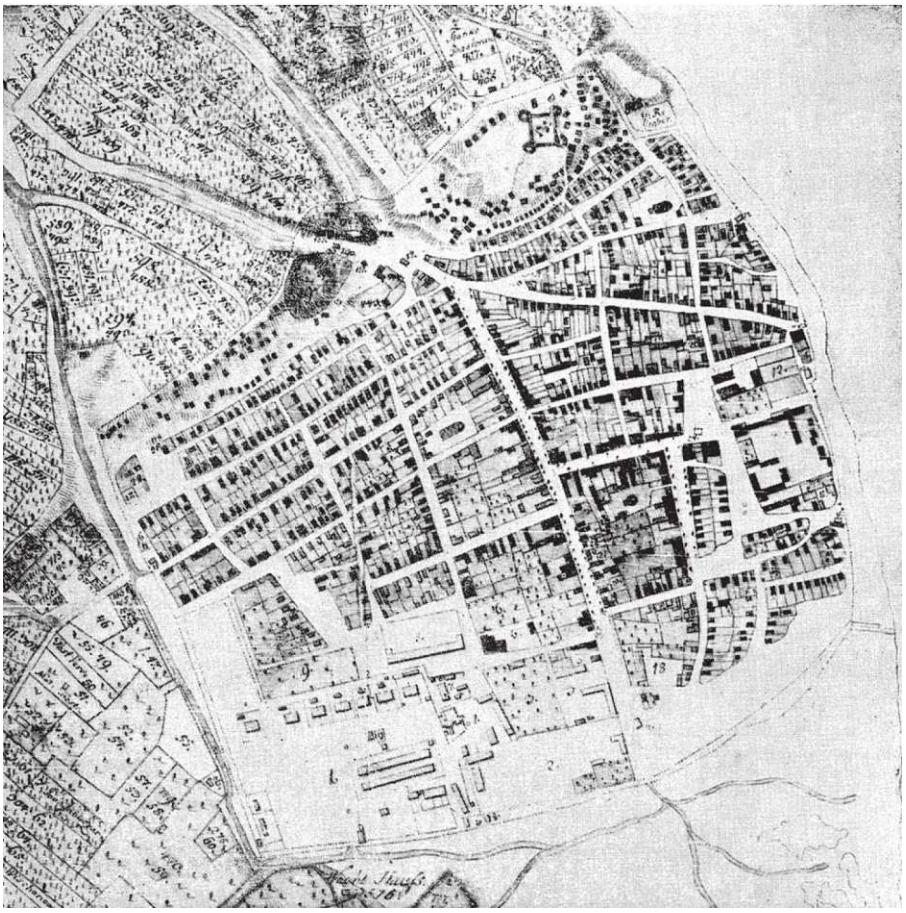


Figure 3.45: Detail of the plan of Zemun by Theodor von Werthenpreis and Wenzel von Wohlgemuth from 1780 (A. Dabižić, 2005).

detected, and they include two parks close to Contumaz, expansive garden on the Big Square, and additional smaller gardens within residential complexes (A. M. Dabižić, 2014, p. 130), (Škalamera, 1966, p. 13).

The building blocks are divided into predominantly regular, narrow plots, with the majority of buildings constructed along the edges facing the street. While most structures follow the construction line, there are also examples of deviations, with numerous buildings situated at a considerable distance from the street. Only on Main and Gospodska streets are buildings assembled in a continuous line, directly adjacent to each other. All other buildings are positioned freely, with their narrow sides facing the street, and for them, it is uncommon to stand directly next to each other (A. M. Dabižić, 2014, p. 131).

The plan from Werthenpreis and Wohlgemuth (Figure 3.45), as opposed to the 1754 plan from Klotz (Figure 3.44), clearly demonstrates the progress made within the current structure, particularly in the newly constructed blocks. The formerly vacant regions on the eastern side are now occupied by five newly constructed blocks (Figure 3.46). Furthermore, the western section of the town has undergone development, transforming the previously schematically drawn blocks into blocks that now have a concrete form. By comparing with previous plans, it is evident that between 1754

Figure 3.46: New building blocks and greenery in the Old Core of Zemun marked on the plan of Zemun by Theodor von Werthenpreis and Wenzel von Wohlgemuth from 1780 (Figure 3.45).

and 1780, certain areas of Ćukovac and Gardoš were developed, with quite densely built houses. According to the cadastral plan from 1780, Zemun had over 1050 documented buildings, which encompassed both public buildings and private residences, providing insight into the town's growth and its urban character. By 1780, Zemun had already developed into a completely urbanized settlement (A. M. Dabižić, 2006).

Throughout the War between Austria and the Ottoman Empire, which took place from 1788 to 1791, multiple plans were developed for Zemun, the location where the Austrian military forces were stationed. One of such plans was created in 1791 (Figure 3.47) (Stanisavljević and Petrović, 2014, p. 4–5).

The foundation of these plans relied on a cadastral plan from 1780. Based on available data, elements of relevance to the military were specifically included (A. M. Dabižić, 2014, p. 131–132). All of these plans provide a comprehensive depiction of Contumaz, with a particular emphasis on the prominent churches that serve as landmarks and the old castle that serves as a military observatory. The expansion towards the Belgrade side is essential for the urban identity of the Old Core of Zemun, as the town will subsequently grow in that direction. By the end of the 18th century, a fortified terrace with embankments was constructed. It stretches from the Belgrade Gate, marked with 'C' on the map, in a southeastern direction, where it borders the Danube and the flood terrain. This expansion can be seen in the painting from 1789 (Figure 3.48) (A. M. Dabižić, 2016, p. 5), which depicts the view of Zemun and Belgrade as viewed from Gardoš.

Another notable plan from that period is the one that originated in 1788 (Figure 3.49). This plan depicts the presence of churches and the old castle located on Gardoš and provides an extensive representation of Contumaz, with the legend identifying significant objects contained inside it.

Figure 3.47: Übersichtsplan der Stadt und der nächsten Umgebung mit den Verschanzungen und Retranchements (Overview plan of the city and the immediate surroundings with the fortifications and retranchements), 1789. Signature: AT-OeStA/KA KPS GPA Inland C VII Semlin Alpha, 7, War Archive, Vienna (N.N., 1789).

The plan also illustrates Zemun's growth towards Belgrade (Stanisavljević and Petrović, 2014, p. 5), (A. Dabižić, 1997, p. 41), (Škalamera, 1966, p. 13).

Carl Berthold's 1830 plan (Figure 3.50) is one of the most representative examples of cartography from the early 19th century. This plan's accuracy and clarity classify it as a top-tier cartographic work, demonstrating its full credibility. The plan includes a detailed textual explanation of certain objects, along with a comprehensive legend. The legend primarily identifies the Contumaz buildings, but it also indicates other structures such as the post office, hospital, and magistrate's office. Carl Berthold's plan is not dated, although it may be indirectly concluded that it was not created before 1823, given that it includes the magistrate's building that was constructed in that year. Also, the plan wasn't created after 1830 due to the inclusion of buildings constructed before that year. Furthermore, the magistrate's building was constructed in 1836, and the plan depicts the situation prior to its addition. The Vienna War Archive names 1913 as the period in which it was created (N.N., 1913).

The plan, which closely matches the 1780 plan by Werthenpreis and Wohlgemuth (Figure 3.45), offers an accurate representation of the town, with a particular emphasis on public buildings and defense lines. Carl Berthold provides precise measurements for each building, separating private and public structures using color. The hatching is used to visually describe the topography and designate different types of soil using signs. This plan is notable for being the first to officially identify almost all streets, with the names being assigned between 1816 and 1818 (A. M. Dabižić,

Figure 3.48: View of Zemun and Belgrade from Gardoš in 1789. Photograph of S. Mancini's chromolithography "Prospect der Stadt und Festung Belgrad von Semlin aus anzusehen", MGB, I1/242 (A. M. Dabižić, 2016).

Figure 3.49: Plan von Semlin und dessen Verschanzungen (Plan of Semlin and its fortifications), 1788. Signature: AT-OeStA/KA KPS KS H III e, 3071. War Archive, Vienna (N.N., 1788).

2014, p. 137). The street names in Zemun are indicative of several elements. Several streets are named after natural features, such as Main, Dunavska (Danube), and Strma (steep) streets. Some streets were given names based on the buildings situated on them, like Bolnička (Hospital)

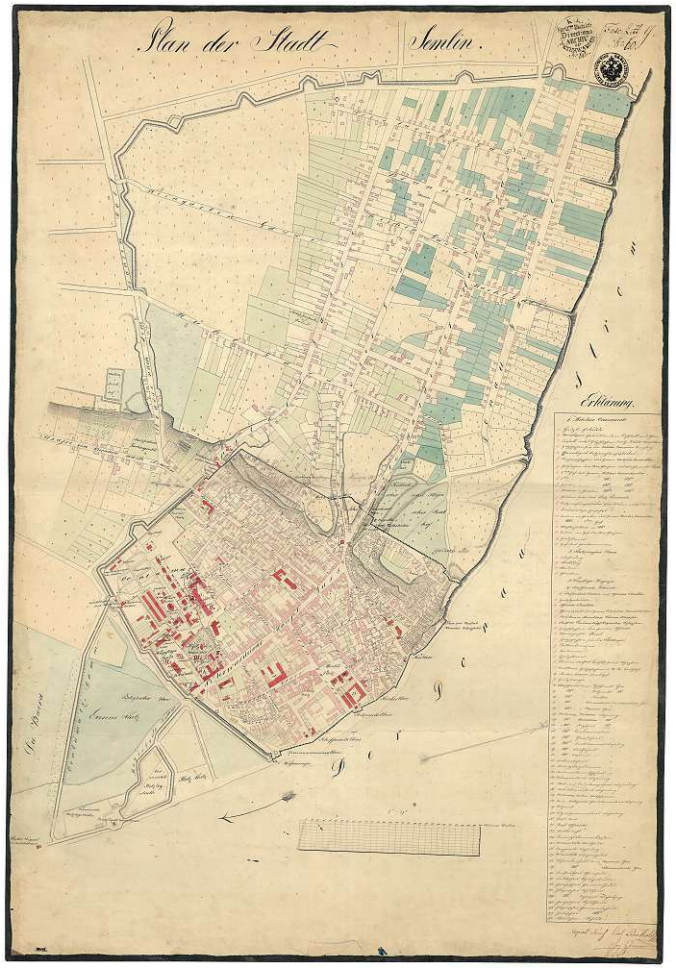


Figure 3.50: Plan der Stadt Semlin mit eingezeichneter Stadtumfassung und Verschanzungen (Plan of the town of Semlin with the town perimeter and fortifications marked out), 1913. Signature: AT-OeStA/KA KPS GPA Inland C VII Semlin Alpha, 27. War Archive, Vienna.(N.N., 1913).

Street and Magistratska (Magistrate) Street. In addition, there are streets that bear the names of the occupations of the people who live there, such as Ribarska (fishing) and Oračka (ploughing) streets (A. M. Dabižić, 2006). Additionally, we are now able to observe settlements located to the north of the Old Core of Zemun. These settlements were established towards the end of the 18th century and throughout the initial years of the 19th century (A. M. Dabižić, 2014, p. 138).

The overall dimensions of the settlement in the first half of the 19th century remain unchanged compared to the 1780 plan, except for the northern part, where the barriers have been relocated further into the Loess plateau and closer to the Danube. We can notice the first streets that were constructed on Đukovac and Gardoš. The overall street network remained unchanged; it just acquired a more precise form (A. Dabižić, 1997, p. 41). The buildings are primarily located along construction lines, which results in a more consistent implementation of block construction with compact fronts (A. M. Dabižić, 2006), (A. M. Dabižić, 2014, p. 138–139). Notable modifications can be seen in the new sizes and dimensions of buildings, particularly along the main routes, where large and connected structures are visible. Subsequent to the demolition of smaller individual

buildings, they were substituted with larger ones that provide continuous facades on both sides of the street. In the center areas of the core, many buildings are oriented with their elongated sides facing the street, while one or two building wings are directed towards the courtyard. There is a growing trend toward constructing large buildings that occupy entire plots, indicating an increasing preference for maximizing plot utilization and developing large-scale structures. New buildings were built at the expense of former gardens, squares, or open spaces. In the late 18th century, the standard practice involved the construction of mainly one residential building on each plot. However, in the 1830 plan, it can be observed that many plots now accommodate an additional building. The construction of the zemun in the early 19th century had an impact on the reduction of green spaces. As a result, the current plan no longer includes greenery in the Main, Gospodska, and Magistrate streets. This plan affirms a progressive alteration in the town's structure, free of any major and significant modifications. Zemun's both development and stagnation were hindered by major political and economic events, resulting in gradual changes in living conditions (A. M. Dabižić, 2014, p. 137), (A. Dabižić, 1997, p. 41).

Summary

Over the course of two centuries, the settlements in Vojvodina that transformed into military, economic, and cultural centers had a significant position. In time, many of them underwent a process of development and transformation, ultimately becoming urban centers, one of which is Zemun. Zemun's history dates back to the early 18th century, when it originated as a village and gradually grew into a regional center for crafts and trade. Eventually, it gained recognition as a city of significant international importance.

In this Section, we analyze the period from 1740 to 1830, which was characterized by significant growth and improvement in settlements. Today, numerous structures and areas constructed during that period are declared cultural landmarks, while the Old Core of Zemun is preserved as a spatial cultural-historical entity. Through the analysis of various cartographic sources, which have been utilized to gather detailed information on the topographical development and the condition of buildings, we follow the evolution of the urban environment in Zemun over a span of 90 years.

Early Cartographic Records and Initial Development (1740 Plan): The 1740 plan (Figure 3.39), preserved at the Vienna Chamber Archive, presents the earliest cartographic depiction of Zemun, emphasizing the initial growth of the settlement along major routes that connected eastern Srem with Belgrade. The city was morphologically divided into two different categories. The northeastern part was located on the hillside, while the southern section was positioned on plain terrain. This geographical difference later had a significant impact on the development of the street network. The 1740 plan depicts early growth toward the southeast, while the western sections of the Old Core remain mostly undeveloped, with the exception of the Contumaz area. The layout and construction of streets and buildings during this era suggest the early stages of urban planning, characterized by a combination of irregular and orthogonal street patterns. The map can be used as a basis for the restoration of the urban and architectural condition of Zemun in 1740.

Mid-18th Century Expansions (1753 and 1754 Plans): The plans created by Friedrich Renner (Figure 3.43) and Johann Michael Klotz (Figure 3.44) demonstrate significant territorial growth, primarily towards the western region, where the new blocks were constructed. Expansion also occurred in the southwest and southeast directions, although to a smaller extent. These plans

indicate a shift towards an urban layout that is more organized and characterized by a grid-like form. There is a particular focus on the defensive and public structures.

Comprehensive Cadastral Survey (1780 Plan): The 1780 cadastral plan created by Theodor von Werthenpreis and Wenzel von Wohlgemuth (Figure 3.45) is an important moment in Zemun's cartography history. It provides accurate and precise information, which is useful in comprehending the town's internal structure. At that point, the city had already evolved into a fully developed urban area, characterized by well-organized blocks and a street network that closely resembles its current shape. The plan illustrates the basic arrangement of a street network that mostly consists of orthogonal streets, where the eastern section of the city is primarily defined by public buildings while the western part is predominantly residential. Additionally, the plan includes the first illustration of landscape elements and lists more than 1,050 documented structures in Zemun.

Late 18th Developments (1788 Plan): Plans from the late 18th and early 19th centuries, such as the one from 1788 (Figure 3.49), continue to demonstrate Zemun's expansion and development. The settlement's expansion is now taking place in the southernmost region, specifically towards the Belgrade side. The 1788 plan offers a detailed representation of Contumaz, including the identification of important features within it.

Early 19th Century Developments (1830 Plan): Carl Berthold's 1830 plan (Figure 3.50), renowned for its exceptional precision, stands as a prime cartographic work of the early 19th century. This plan is significant for being the first official identification of almost all streets in Zemun, with names allocated between 1816 and 1818. The general size of Zemun remained mostly the same as the 1780 design, with the exception of extensions towards the north into the Loess plateau and closer to the Danube. Considerable modifications took place in the sizes and proportions of buildings, especially along main roads, where bigger, interconnected complexes replaced smaller, individual buildings. Zemun had a significant transformation in its urban character in the early 19th century, characterized by the construction of larger buildings and the more efficient use of land.

3.4.2 Analysis of Zemun's Urban Development Categorized by Centuries

18th century

Following the war's destruction and devastation, the village of Zemun is slowly recovering its population and economic condition. Zemun, although in Belgrade's shadow, underwent expansion and progress during the time span from the Peace of Požarevac (1718) to the Peace of Belgrade (1739). The city's functions expand beyond local significance with the establishment of organizations such as the cordon service, the Contumaz (1730), and the customs house. These developments attract a diversified population, breaking away from the previous reliance solely on agriculture. Changes in the social, ethnic, religious, and professional composition of its inhabitants significantly influenced the urban structure of the city. Aside from farmers and fishermen, civil servants from Contumaz and the customs office are also situated in the city, along with merchants engaged in the trade of products from the Ottoman Empire to the Austrian monarchy (A. Dabižić, 1997, p. 39).

Following the Peace of Belgrade, Zemun underwent a new stage of growth, marked by a significant increase in population. The city takes an important position as a strategic border point with the Ottoman Empire. It also gains prominence as a significant center for the transportation of goods between the East and the West, thereby promoting economic expansion and progress (Stanisavljević and Petrović, 2014, p. 2–3).

Officially designated as an autonomous military community in 1749 (Marković, 1896, p. 72), (M. Dabižić, 1959, p. 20), Zemun established the municipal administration, known as the Magistrate, in 1751 (A. Dabižić, 1997, p. 39). The shift in geopolitical position had a significant impact on the transformation of Zemun's urban layout. Freeing the city from military control and establishing it as an independent military community under the city administration created new opportunities for the development of the civilian population and the creation of a suitable urban settlement. This modification enabled municipal authorities to implement measures to improve infrastructure and establish an urban setting that promotes social and economic growth (Stanisavljević and Petrović, 2014, p. 2–3).

Zemun's urban development gained a legal foundation with the implementation of the norm in 1755. This period is characterized by the transformation of the city into a relatively regular square shape (Stanisavljević and Petrović, 2014, p. 2–3). Multiple sources that document Zemun's condition toward the end of the 18th century highlight its prosperity. Tanasije Ilić asserts that during a span of forty years (1763–1803), Zemun rapidly transformed into not only the most populated but also the most culturally advanced city in the Military Frontier, characterized by intensive traffic and prosperous trade. Petar Marković characterizes that time as the peak of prosperity in Zemun, while Vasa Bogdanov highlights that it was the most wealthy and aesthetically attractive autonomous town in the entire Military Border (Bogdanov, 1929, p. 26).

The urban agglomeration of Zemun had mostly completed its fundamental shape and structure by the late 18th century, laying the foundation for what is now the Old Core of the city. The street layout in the Old Core of Zemun, dating back to the late 18th century, has been remarkably well preserved with minimal modifications, along with a number of distinctive architectural structures. These include churches like the Church of St. Nicholas and the Quarantine Chapel of the Holy Archangels Michael and Gabriel, as well as important architectural landmarks such as the Karamata house, the Ičko house, and the Customs Office. Unfortunately, numerous structures have lost their original character as a result of later modifications (A. M. Dabižić, 2006).

By analyzing engravings and buildings from that time, we may conclude the appearance of Zemun during the late 18th century. During that period, Zemun represented a typical Pannonian small town characterized by the prevalence of baroque bell towers and single-story buildings. The city's southern perspective was enhanced by the presence of horizontal lines of gabled roofs, see Figures 3.51. The church towers were projected onto the vertical surface of the loess parts of Ćukovac and Gardoš, with the ruins of the medieval castle rising above them. This connection between the city's flat center and the Loess region became a defining feature of Zemun's Old Core's visual aspect.

The majority of the structures were mud houses or wooden houses covered with reeds. These homes were essentially modified versions of rural Vojvodina houses. Those houses were modest in size and constructed using basic materials. The interior layout was designed to meet the specific demands of the former residents, who were primarily fishermen, boatmen, craftsmen, and merchants (A. Dabižić, 2001, p. 173–174). The better houses were constructed using brick and typically had multiple rooms, with the longer side oriented towards the street. In addition to the exceptional view, this architectural design also facilitated natural light and sunshine throughout

Figure 3.51: Roofs of the Old Core of Zemun, view from Gardoš, recorded in the 60s of the last century (left) (A. Dabižić, 2001). Roofs above the old core of Zemun – today's view (right), 2024, photographed by author.

the day, enhancing the overall comfort of living in these homes (A. M. Dabižić, 2006), (A. Dabižić, 2001, p. 174).

19th Century

Zemun experienced further progress throughout the early 19th century. The ongoing development of Zemun was validated by a significant increase in population, which doubled over a span of 25 years. This demographic expansion served as a key component in the city's future progress and development. Zemun's development persisted despite the cessation of the powerful incentives that had previously prompted its rise at the start of the 19th century. This period is marked by continuous progress and transformation into a more developed form. During the 19th and early 20th centuries, the city consistently experienced growth, despite certain oscillations in its development. Furthermore, in addition to the population growth, there were notable reconstructions and improvements made to existing structures. The renovations made significant contributions to the enhancement of infrastructure and the general appearance of the city, rendering Zemun increasingly appealing and dynamic (Stanisavljević and Petrović, 2014, p. 5–6).

The emphasis on further development in the 19th and early 20th centuries was characterized by subtle improvements to the existing urban structure. These modifications were related to the internal organization of the city, the gradual improvement of areas with insufficient development, and the architectural reconstruction of existing structures (A. Dabižić, 1997, p. 41).

The street network remained mostly unaltered, and Zemun's construction fund gained additional

attributes in the form of larger and more connected structures. The arrangement of buildings along building lines, namely on the outside borders of the blocks, led to the creation of blocks with compact fronts. It is notable that additional structures have been added to the plots, which was not the case by the end of the 18th century. The construction areas maintained the original plot subdivision, with elongated blocks divided both lengthwise and widthwise into numerous smaller plots. The plots facing the streets typically had a frontage of less than ten meters (Stanisavljević and Petrović, 2014, p. 6), (A. M. Dabižić, 2014, p. 137).

The growing bourgeoisie in Zemun uses its increased influence and economic position to reinforce civil institutions and rights. The change was demonstrated through the restoration and reconstruction of existing structures, both privately owned and those utilized by the city authority (magistrate). The rivalries among various nations within the bourgeoisie, likely originating from diverse ethnic and cultural backgrounds, manifested themselves in the creation of representative, visually appealing structures. These structures served as a representation of social status and prestige, and their establishment demonstrated the power and impact of certain groups within the urban area (A. M. Dabižić, 2006).

In order to enhance its influence, the church constructs new temples or renovates existing ones. The presence of religious differences within the population has resulted in the creation of educational institutions and communities that are organized based on ethnic affiliations. Subsequently, as common interests emerge, facilities of general importance, such as hospitals, schools, and recreational facilities, are gradually developed. Although the construction fund has been expanded and rebuilt, the spatial and urban changes remain almost undetectable (A. M. Dabižić, 2006).

The city regulations implemented in 1862 replaced previous community regulations established in 1787. By granting citizens the power to elect the mayor through a voting process, the level of democracy has increased. The second important change was related to the financial system. The city imposed a system where the city treasury and a surtax, an additional tax, replaced the inhabitants' fixed tax rate. These modifications enhanced the legal and financial basis of local self-governance, enabling better management of city finances and increased independence in decision-making (A. M. Dabižić, 2006).

There was also a separation between the property owned by the city and the property owned by the state. As a result of this separation, the land where Contumaz was situated came under the ownership of the city. Work commenced on the Contumaz land, which was partly driven by the obligation to utilize the acquired land for public purposes. The municipality was required to convert the Contumaz area into a city park. In 1876, a decision was made to demolish the defensive wall located on the southeastern edge of the town. By selling the bricks, funds were raised to acquire plantations. In 1879, the construction of the high school building took place on Contumaz land. As part of this development, a small park was established around the building, marking the initial stage of what would later become City Park. The remaining portion of Contumaz was transformed into a park and finalized in 1885. A special cooperative was established to oversee the maintenance and care of the park. Two Quarantine Chapels have been conserved up to the present time (Dabižić, 1981; A. M. Dabižić, 2006).

On the northwest side, the remnants of the defensive wall no longer had a military function. In the late 19th century, the remaining ramparts were completely destroyed, and the ditches on the sides facing Bežanija and Belgrade were transformed into wide streets. These modifications helped to transform the urban setting into a more modern urban space, adapting the city to modern needs and traffic demands (A. M. Dabižić, 2014, p. 138).

The exposed Danube riverbank, however, posed a significant threat to the town, since floods inflicted substantial damage. The flood in the spring of 1876 resulted in significant devastation, prompting the urgent need to implement regulations for the Danube coastline. A coastline fort about one kilometer in length was constructed in 1889. Zemun now had an additional leisure area with the construction of the quay and promenade, in addition to the existing park (Dabižić, 1981).

Zemun had a total of 1839 houses by the end of the 19th century, including 69 public houses and 1770 private ones. Out of the total, 1,742 were single-story, whereas 97 had just one level. There were no buildings with multiple stories. The railway system linking Zemun to Budapest (1883) and Zagreb (1891) had an impact on Zemun's economy. This development resulted in a rise in international tourists, the establishment of the first hotels, and an increase in transportation, particularly of raw materials. Furthermore, the first major industries were established, including electrical power plants, breweries, and brick factories. The economic recovery also stimulated the establishment of the first financial institutions (A. M. Dabižić, 2006).

The city's communal concerns, including water supply, sewage, and street illumination, became a pressing problem. However, the majority of these needs either remained unaddressed for an extended period or received only partial fulfillment. Zemun had very limited municipal facilities in the early 19th century, particularly in terms of water supply. That became a major problem in the late 19th century. Although septic tanks were already in existence, the development of the sewage network only commenced towards the end of that century (Marković, 1911, p. 1–2). In 1875, a main water canal was built in Glavna Street, and in 1888, drainage systems were installed on several streets. However, significant construction projects did not commence until the 20th century. Prior to 1900, Zemun relied on kerosene lamps for illumination until the establishment of the electric power plant. The process of paving and asphalting the streets began in 1899. This involved paving the central streets and building sidewalks, which replaced the previous brick pavements (Stanisavljević and Petrović, 2014, p. 6).

20th Century

During the late 19th and early 20th centuries, architectural plans often included compact blocks with connected facades. The majority of the city is structured according to this scheme, where buildings are positioned adjacent to one another along building lines. Only a few periphery areas reveal spaces between buildings, and even there, the structures align with construction lines (Figure 3.52) (Škalamera, 1966, p. 29).

In the early decades of the last century, some buildings in Zemun had side wings that extended into the courtyard. However, in this period, buildings with enclosed shapes that encompass the inner courtyard or buildings with one or two wings situated within the same plot are more frequent. Based on the consistent division of blocks into plots and the unchanged size of the blocks, it can be concluded that there was no merging of plots compared to the situation in the 1830s. However, the construction of larger buildings within the existing plots led to a reduction in open spaces. Consequently, earlier buildings were characterized by a more wide and open layout, with wings that extended into courtyards. In contrast, newer structures adopted a more compact and enclosed design, with closed inner courtyards or fewer open spaces (Figure 3.53) (A. Dabižić, 1997, p. 41).

Although they are gradually being replaced by contemporary structures, there is a growing trend in

Figure 3.52: Plan of the city of Zemun after 1909 (A. M. Dabižić, 2014).

the construction of rural houses that are modified to adapt to urban environments. More primitive forms of housing are gradually improving in terms of quality due to advancements in building materials and roof coverings (A. Dabižić, 1997, p. 41–42). Construction on the same plots and building lines followed the foundation established at the end of the 18th century. Despite their flat location, the new plots deviated from the expected strictly orthogonal layout. The newly constructed streets maintained the existing shapes and directions (A. M. Dabižić, 2006).

In accordance with the Building Regulations of 1900, Zemun was required to have a regulation plan. In 1906, the city council of Zemun decided to develop such a plan, although the specific details of it remain unknown. Zemun saw a period of significant spatial development in the early years of the 20th century, when engineer Pavle Horvat created a new regulation plan in 1911 (Škalamera, 1966, p. 26). The buildings constructed during this period have distinct characteristics and most aesthetically correspond with the modified Art Nouveau style. Notably, they are characterized by the height of the floors and the arrangement of rooms with prominent entrances (Grozdanić, 2010, p. 152).

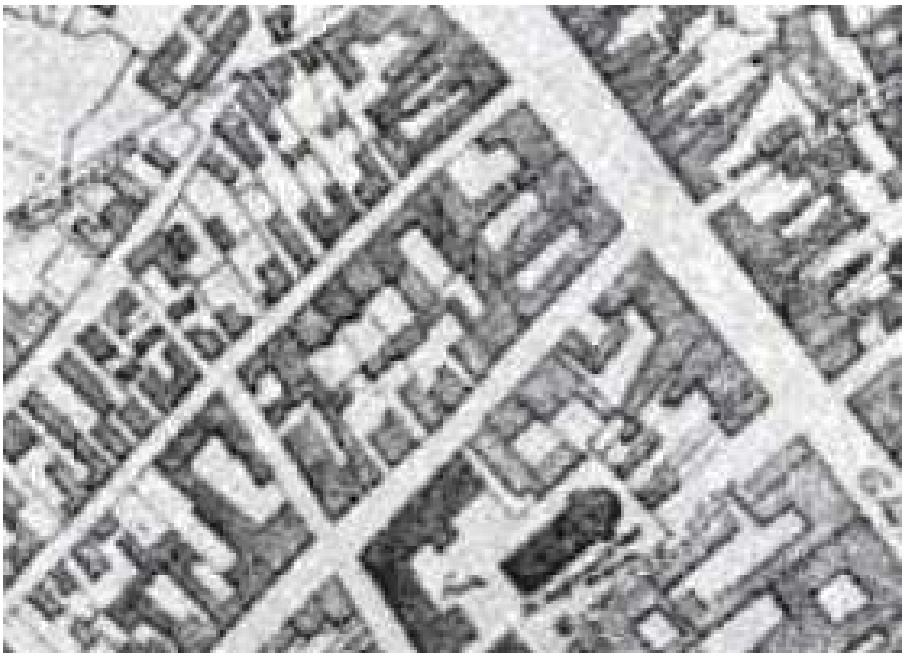


Figure 3.53: Compact construction with closed inner courtyards (A. M. Dabižić, 2014).

Throughout the previous period, Zemun's architecture showed a double character: stylistic and typological. The construction of rural houses that are adapted to urban conditions still exists, but not to the same extent as before. There has been a significant increase in the construction of stylish buildings. As a result, by the early 1900s, the number of stylish buildings was nearly equal to the number of rural ones (A. M. Dabižić, 2006).

The prevalent style of small single-story houses with rural characteristics, featuring a small number of rooms constructed from earth and covered with straw or reeds, is gradually being transformed. It's interesting that the Construction Statute, dating back to 1906, explicitly prohibited the use of highly flammable materials for the construction of these houses. However, despite this regulation, these houses continued to exist for a considerable period of time. This type of house maintains the fundamental structure of a parallelepiped with a gable roof, but improves its quality by gradually changing the building material and roof covering (A. M. Dabižić, 2006).

Despite Zemun's favorable geomorphological characteristics, the Austrian influence that shaped the town emphasized the importance of logical and efficient land and resource utilization. The houses were arranged in a manner that enabled the most efficient utilization of the interior space. Zemun implemented urbanization and subdivision in the same way, with narrow and elongated plots as the predominant elements, see Figure 3.54. Despite the limited spatial comfort, the proportion between the size of the home and the land facilitated a satisfying lifestyle. This was particularly evident in the upper city, where the initial rural nature resulted in lower construction density and more pleasant residential areas (Lalicki, 2002, p. 22).

Figure 3.54: A typical Zemun building block (A. M. Dabižić, 2014).

Summary

From the Peace of Požarevac in 1718 to the Peace of Belgrade in 1739, Zemun experienced significant growth and development, gradually emerging from Belgrade's shadow. The establishment of key institutions, such as the cordon service, the Contumaz, and the customs house, elevated Zemun's importance beyond the local level, attracting a diverse population to the area. This change brought about notable changes in the social, ethnic, religious, and professional composition of Zemun's inhabitants, which in turn significantly influenced its urban structure. Following the Peace of Belgrade in 1739, Zemun underwent substantial demographic expansion, becoming a major border location with the Ottoman Empire and a crucial center for trade connecting the Eastern and Western regions. The city's development during this period was marked by the completion of its essential urban structure, which laid the groundwork for what is now known as Zemun's Old Core. Remarkably, the street layout from the late 18th century has largely remained unaltered, preserving the historical character of the city.

Zemun underwent substantial advancement and development during the 19th century. The city's population had more than doubled within 25 years, resulting in its expansion and development into an urban area. During this era, there were gradual improvements made to the urban structure, as new and larger structures were built within the old plots while preserving the original block arrangement. A notable development was the transformation of the Contumaz land into public spaces, including the establishment of a city park. In the late 19th century, the remaining defensive walls were torn down, and the old ditches were replaced by wide streets, resulting in the modernization of the urban layout. In 1889, a coastline fort was constructed along the exposed Danube riverbank to protect it from flooding. Additionally, a quay and promenade were added to provide recreational opportunities.By the conclusion of the 19th century, Zemun possessed a total

of 1839 residences, primarily consisting of one-story structures. This period also witnessed the emergence of notable industries such as power plants, breweries, and brick factories, as well as the establishment of the first hotels. The city's communal issues, such as water provision, sewage management, and street illumination, gradually improved. The construction of a primary water canal took place in 1875, followed by the installation of drainage systems in 1888. In conclusion, Zemun saw consistent growth and modernization during the 19th century. This was evidenced by an increase in population, improvements in infrastructure, and the establishment of public and community facilities.

In the late 19th and early 20th centuries, Zemun mostly consisted of compact blocks of buildings with interconnected facades, arranged along the building lines. Structures from this period embraced a more compact and enclosed design, with closed inner courtyards or reduced open areas. Due to the absence of plot merging, larger buildings were erected on plots of the same size, resulting in a decrease in open areas. During this time, there was an ongoing construction of rural houses that were modified to suit urban conditions. However, there was an increasing tendency towards constructing more contemporary buildings. Despite being on flat terrain, the new plots did not follow the expected strict orthogonal layout and retained existing shapes and directions.

In 1911, Engineer Pavle Horvat created a new regulation plan that led to a period of significant spatial development. Buildings from this period frequently exhibited a modified Art Nouveau style, marked by high stories and prominent entrances. Small one-story houses with rural attributes, comprising a limited number of rooms built from weak materials, gradually transformed. They maintained their basic parallelepiped structure with a gable roof but improved their overall quality by using better materials. Zemun was greatly influenced by Austria, which prioritized the rational and effective use of land and resources. The houses were designed in a way that prioritized maximizing the efficiency of interior space. This was achieved by using narrow and elongated plots as the main elements. Although the homes were not very spacious, the proportion between the size of the house and the land allowed for a satisfying lifestyle. This was especially so in the upper city, where the initial rural nature led to reduced development density and more pleasant residential neighborhoods.

3.5 Comparative Analysis of Urban Planning Under the Rule of Both Empires

The development of cities and villages in the Ottoman Empire and the Austro-Hungarian Empire reflects the differences in governance, cultural priorities, economic objectives, and societal structures. These differences are particularly evident in city planning and architecture, as well as in the ways each empire shaped its territories. Zemun, a settlement near Belgrade that was under the rule of both empires, offers a compelling case study to examine these contrasts in practice.

Zemun's development during the Ottoman period was shaped by its role as a strategic border settlement along the Danube River. Following the Ottoman conquest in 1521, the town evolved from a modest village of 78 households in 1546 to a bustling borough with over 90 households by 1566/67, a mix of Muslim and Christian populations. This growth reflected Zemun's importance as a frontier hub for trade, cultural interaction, and defense.

During the Ottoman rule, Zemun was shaped by the empire's emphasis on organic urban growth, which allowed settlements to adapt naturally to their topography and local needs. In the case of Zemun, this approach led to a town with a modest, agricultural character. Its growth was gradual, driven by the rhythms of local farming life, rather than by rigid planning or large-scale infrastructure projects. As a result, the settlement retained a unique, organic form that reflected the simplicity and practicality of its inhabitantsâ€™ everyday lives, while remaining closely connected to the agricultural life that sustained them. During Ottoman rule, Zemun was a town defined by its narrow, winding streets and modest, functional architecture. The buildings, primarily small oriental houses, were constructed using locally available materials such as wood and sun-dried mud bricks. This reflected the socio-economic realities of the predominantly agrarian population, whose simple, practical needs shaped the town's design.

Zemun's layout was shaped by key religious and communal structures. The city grew informally around important landmarks like the mosque and the fortress, which played both spiritual and defensive roles. Built from hewn stone, the mosque featured a lead-covered dome and a tall minaret, becoming a social and spiritual hub, as depicted by Brandstätter in 1608. The Zemun fortress, strategically positioned on the hill, was a focal point of Ottoman military architecture, although its condition degraded over time. These structures influenced the town's development, highlighting the significance of faith and protection in the communityâ€™s daily life. Records from travelers such as Evlija Čelebija in 1663 provide a glimpse of the settlementâ€™s composition, noting one fortress, approximately 400 modest wooden homes, one mosque, six chapels, and a primary school. Despite its modest size, Zemun was a multicultural town where various ethnicities coexisted, although trade was limited, and residents depended on Belgrade for essential goods.

The architectural and urban character of Zemun under Ottoman rule was also shaped by environmental and material constraints. Buildings often used sunâ€“dried mud bricks due to a lack of timber and resources for baking bricks. These structures offered insulation against the harsh continental climate but had short lifespans. However, the previously mentioned absence of systematic planning or durable materials meant that much of this urban fabric did not survive the tumult of subsequent centuries. Our understanding of Zemunâ€™s Ottoman-era layout and architecture is hindered by difficulties stemming from the lack of documentation, relying largely on fragmented sources such as travelogues and sketches. These records provide glimpses of a settlement focused on practicality, with rudimentary pit houses and a sparse infrastructure that left the town vulnerable to destruction during wars and conquests.

In contrast, the Austro-Hungarian rule, beginning in the early 18th century, marked a turning point in Zemun's urban development. Cities under the Austro-Hungarian Empire were systematically planned, embodying Enlightenment ideals and European urban trends.

Plans such as the cadastral survey of 1780 reflect a highly organized approach to urban planning, introducing grid-like street networks and durable construction techniques. Cities were displaying the development of public spaces, and zoning for administrative, residential, and industrial areas. Unlike the organic growth seen under Ottoman governance, Austro-Hungarian urbanization followed strategic priorities, with streets laid out to connect administrative centers, trade routes, and residential districts.

The architectural landscape of Zemun underwent a significant transformation with the arrival of Austro-Hungarian influences. The modest wooden and mud-brick buildings from the Ottoman period were replaced by structures built with brick, showcasing a blend of Baroque, Neoclassical, and later, Art Nouveau styles. This change in materials reflected increased resources and technological progress. Eclectic architecture present in this period emphasized imperial grandeur and cultural

diversity. Buildings such as opera houses, parliament buildings, and train stations symbolized progress and connectivity, while residential areas ranged from ornate apartments for the wealthy to more functional housing for workers in the industrial districts. Public buildings, squares, and commercial centers became focal points of urban life, symbolizing the region's economic and cultural integration into the broader Austro-Hungarian realm.

The integration of Zemun into the Habsburg Monarchy in 1717 initiated a systematic transformation, underpinned by detailed cartographic records. Analyzing Zemun's urban development during the Austro-Hungarian period is greatly facilitated by the advantage of having sufficient and well-documented sources, including detailed maps and plans, which provide valuable insights into the settlement's growth and structure.

Zemun, situated at the confluence of these two empires, exemplifies the synthesis and tension between different urban approaches. Under Ottoman rule (16thâ€“18th centuries), Zemun developed as a frontier town with an organic layout, allowing the settlement to evolve in harmony with its natural topography and local needs. This urban approach resulted in a unique settlement form that reflected the simplicity and practicality of its inhabitants' daily lives. The Austro-Hungarian conquest in 1717 transformed Zemun into a structured and modernized settlement, with the introduction of gridâ€“like street networks, organized zones, public squares and durable construction techniques. Unlike Ottoman-era organic growth, Austro-Hungarian urbanization followed strategic priorities, reflecting its highly organized approach to urban planning.

These shifts in urban planing reflect broader contrasts between the two empires. The Ottoman approach emphasized organic growth and practical urban layouts centered on religion and commerce, while the Austro-Hungarians prioritized order, modernization, and imperial imagery. In Zemun, this dual heritage remains evident today. The older parts of the town, near the Danube, retain narrow, winding streets and modest buildings reminiscent of its Ottoman past. Meanwhile, the town center and broader urban fabric reflect Austro-Hungarian planning, with its structured streets, grand public buildings, and squares.

In conclusion, Zemun serves as a microcosm of the Ottoman and Austro-Hungarian legacies, blending Eastern and Western influences in its architecture and urban layout. The organic, communityâ€“focused structures of the Ottoman period coexist with the modernized, imperial designs introduced by the Austro-Hungarians. This interplay of styles and planning philosophies highlights the historical complexities of a town shaped by two contrasting empires, leaving a rich architectural and cultural tapestry that endures to this day.

Ultimately, a more detailed comparative analysis of urban planning under Ottoman and Austro-Hungarian rule in Zemun presents significant challenges due to the stark disparity in the availability of documentation. The Ottoman period suffers from a critical lack of detailed records, leaving only fragmented evidence from travelogues, sketches, and indirect observations. This scarcity forces reliance on logical deductions and broader regional patterns to reconstruct the urban and architectural characteristics of the time, inherently limiting the precision and depth of analysis. In contrast, the Austro-Hungarian period offers a wealth of cartographic and documentary resources, enabling a more nuanced and precise understanding of the city's transformation. Detailed maps, surveys, and records allow for comprehensive insights into the planning, infrastructure, and architectural evolution under Habsburg rule.

This disparity underscores the difficulty in achieving an equally detailed analysis of the two empiresâ€™ urban planning legacies, as the Ottoman periodâ€™s urban fabric remains largely speculative, while Austro-Hungarian developments are well-documented and accessible for study.

This imbalance shows how much historical documentation – or the lack of it – affects our ability to study and understand architecture and urban history. In the case of Zemun, the Ottoman period's scant documentation results in a speculative understanding of its urban planning, where gaps must be filled with logical inferences. In contrast, the Austro-Hungarian period, with its extensive cartographic and documentary resources, allows for a thorough and reliable analysis. This disparity demonstrates how documentation not only informs the depth and clarity of historical narratives but also shapes the methodologies scholars must employ to bridge the gaps in understanding. It underscores the critical role of record-keeping in preserving architectural and urban heritage for future study.

3.6 Urban Planning After the First World War

Following the end of the First World War, Zemun lost its status as a border town, enabling its gradual integration with Belgrade, both in terms of financial cooperation and infrastructure development. Following the abolition of the city administration in 1934, Zemun was incorporated into the city of Belgrade. Despite being administratively united with the capital of Serbia, Zemun maintained a certain level of autonomy.

After the First World War, Zemun continued with its development in accordance with Pavel Horvat's plans. However, in 1928, a competition was initiated for a new general regulatory plan, which was won by the architect Mihailo Radovanović, shown in Figure 3.55. These plans established the basic guidelines for the city's future expansion and development, yet they did not significantly change the structure and character of the Old Core of Zemun. Plans from that period suggest continuing Zemun's autonomous growth, despite expectations of integration with Belgrade (Grozdanić, 2010, p. 153), (A. Dabižić, 1997, p. 42–43). Most buildings constructed between the two world wars still adhere to traditional construction techniques, featuring gable roofs. Simultaneously, the use of concrete increased, as did the development of flat roofs. These structures often integrate harmoniously into their surroundings and reach a maximum height of four stories (A. M. Dabižić, 2006).

Zemun gained a transportation link to Belgrade with the construction of a bridge over the Sava River in 1935 (Grozdanić, 2010, p. 153). This had an important impact on the development of the urban layout of the Old Core of Zemun. The increased accessibility to the Old Core prompted the establishment of public facilities in the area, such as the Faculty of Agriculture and the Air Force Base, among others.

Zemun's urban plans have adhered to the General Urban Plan of Belgrade from 1950, from the mid-20th century until now, see Figure 3.56 (A. Dabižić, 1997, p. 43), (Stanisavljević and Petrović, 2014, p. 6–7). As a result, all plans and projects for the expansion and organization of the Zemun are consistent with the overall plan, which includes the entire city of Belgrade. What is similar between this plan and the previous plans, which were developed between the two wars, is that they do not bring substantial changes to the urban situation in the Old Core of Zemun.

For the first time, Belgrade's general urban plan from 1950 considered the historical significance of the Old Core of Zemun. Prior urban plans failed to explicitly acknowledge the historical importance of this particular area of the city, instead continuing existing patterns without thorough examination. The 1950 plan acknowledged the importance of preserving the Old Core. The urban structure of the city has been preserved, with particular attention given to protecting and improving its historical

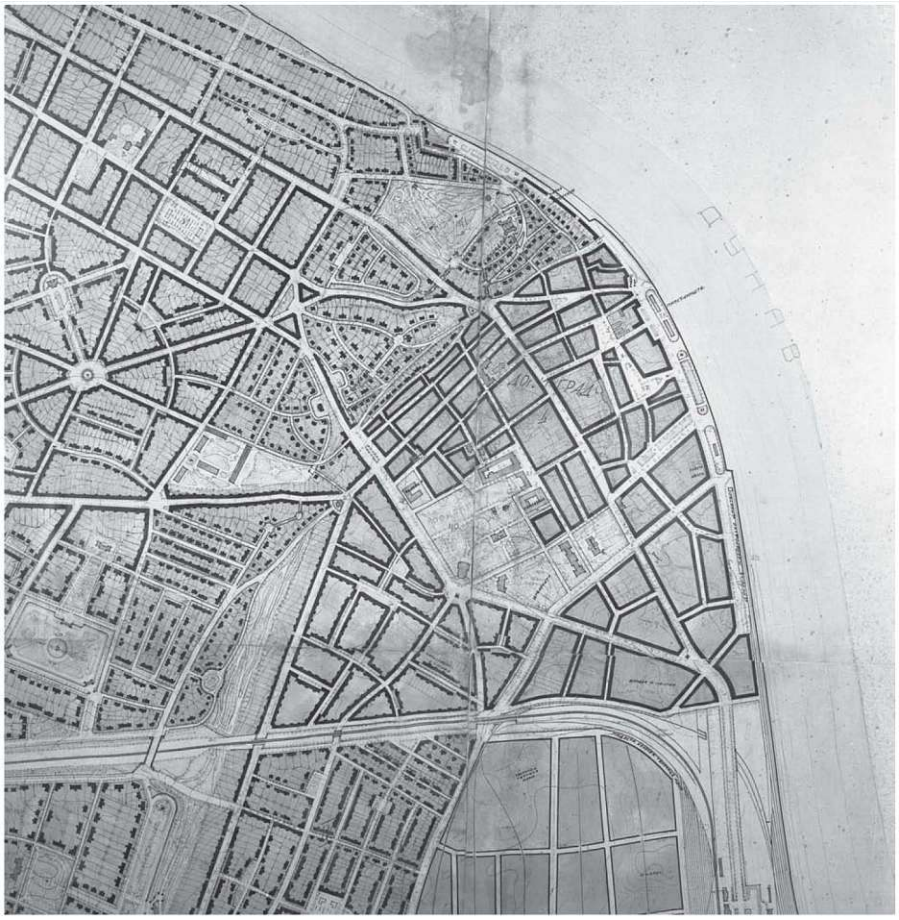


Figure 3.55: General regulation plan of Zemun from 1928 by arch. Mihailo Radovanović. Original in the National Museum of Zemun, inv. no. A-298. (Grozdanić, 2010).

and cultural significance. This approach represents a substantial shift in urban planning, as it deviates from the automatic continuation of past practices and instead prioritizes the preservation of the historical identity and significance of this area (A. M. Dabižić, 2014, p. 52), (A. M. Dabižić, 2006).

The Institute for the Protection of Cultural Monuments of the City of Belgrade officially designated the Old Core of Zemun as a cultural property on November 1, 1966. Prior to 1966, urban planning efforts in Zemun did not significantly alter the historic center but instead concentrated on restoring the existing state. This period was characterized by the construction of a small number of individual structures, the addition of building floors, and the formation of the southeastern part of the city. While the new blocks do not disturb the characteristic appearance of the urban complex with their volume and facades, individual buildings constructed in different parts of the central area often do not harmonize with the existing surroundings (A. M. Dabižić, 2006).

The General Urban Plan of Belgrade from 1972, shown in Figure 3.57, and the Regulatory Plan for the Municipality of Zemun shared a similar approach when it came to the Old Core of Zemun. Both plans designated the Old Center of Zemun as a key center in Belgrade and the surrounding area, emphasizing its unique atmospheric characteristics. This general plan proposes the ongoing

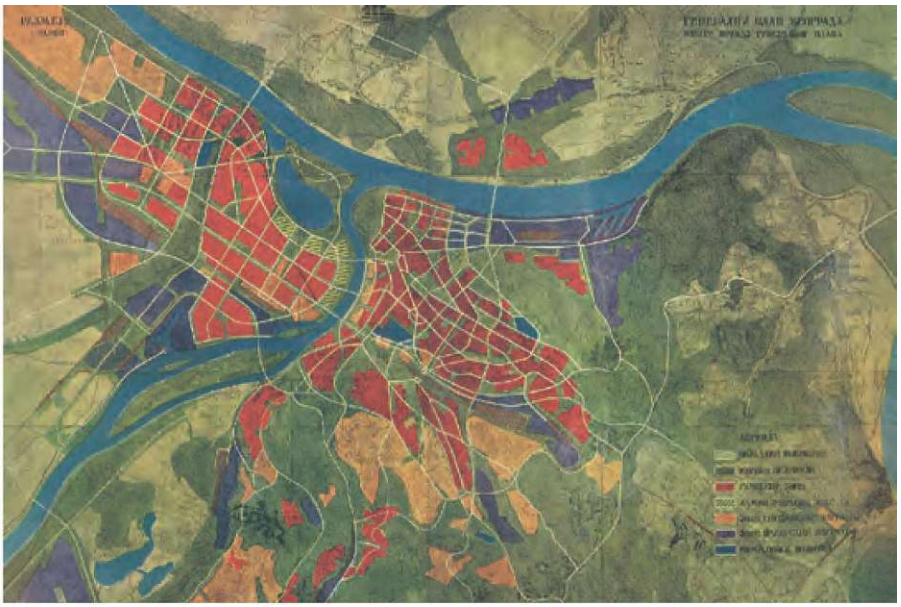


Figure 3.56: General Urban Plan of Belgrade from 1950. Issued by the Executive Board of the City of Belgrade 1951, p. 169 (Grozdanić, 2010).

revitalization of the protected cultural and historical environment, with the goal of reviving and conserving a historically significant section of the city (Grozdanić, 2010, p. 155–156).

Figure 3.57: General Urban Plan of Belgrade from 1972. Urban Institute of Belgrade, Center for Documentation and Informatics (Grozdanić, 2010).

Similar to the earlier stages of development in the 19th century, the Old Core of Zemun maintained

its building character from 1945 to 1991. During this time, the predominant practice was the construction of individual buildings within an established block system. These buildings were often of high-quality construction, particularly in the southern and southeastern regions. Nevertheless, certain locations have exhibited negative trends, such as the excessive use of land by amassing objects with no value in yards or completely obscuring construction sites. Despite these problems, there were no significant urban interventions in Zemun's Old Core (A. M. Dabižić, 2014, p. 139–140).

According to the general urban plans of Belgrade until the year 2000, newly constructed buildings were usually regulated by height restrictions that were aligned with the existing buildings in the area. The maximum number of floors was restricted to the ground floor and three additional floors. However, in areas with loess plateau slopes, such as Gardoš and Ćukovac, the height of buildings was limited to either the ground floor or the ground floor and one additional floor. Most of the existing residential houses were not planned to be extended. The implementation of plans regarding the protection of cultural monuments has not been implemented (Grozdanić, 2010, p. 156).

In Zemun, there has been an increase in the construction of buildings that deviate from the traditional aesthetic and features of older houses, which are considered the fundamental essence of the area. These new buildings disrupt the typical appearance and atmosphere of the old parts of the city, causing the distinctive Zemun ambiance to be lost. The introduction of these buildings disrupts the typical visual and atmospheric characteristics of the city's historic sections, resulting in the loss of the unique Zemun ambiance (A. Dabižić, 1997, p. 43–46).

Summary

Despite Zemun's official integration into Belgrade in 1934, it continues to progress autonomously. The regulatory plan of Zemun, established in 1928, provided the fundamental principles for the city's future planning without altering the existing structure. The construction of buildings of higher constructive quality begins with the growing prevalence of concrete and flat roofs. The 1950 plan marked a significant shift in urban planning, breaking away from previous stagnation and prioritizing the preservation of Zemun's Old Core's historical significance. In 1966, the Old Core of Zemun was officially designated as a cultural property, further underscoring its importance. The 1972 urban plan for Belgrade highlighted Zemun's significance and advocated for its preservation and revitalization. Between 1945 and 1991, the Old Core of Zemun maintained its architectural character by focusing on constructing individual buildings within the existing block system.

Despite the construction of high-quality buildings, there were negative trends in the excessive use of land plots. Nevertheless, there were no notable urban interventions. According to Belgrade's urban plans until 2000, new buildings were primarily restricted in height to ensure they were in line with surrounding structures. The maximum number of floors allowed was three. On Loess slopes, the maximum number of floors was restricted to one. There has been a rise in the number of buildings that do not adhere to the typical characteristics of Zemun houses. This has resulted in the destruction of space due to non-compliance with urban planning conditions and the aggressive behavior of users.

4 Comparative Analysis of Building Regulations in Zemun

This Section will address the building regulations relevant to the city of Zemun, focusing on structural limitations and the legal requirements for construction. While an analysis of Zemun's plans and development indicates that the town grew rather spontaneously, this does not imply that the construction and urban organization processes were entirely unregulated, particularly in later years. This Chapter presents a study of the three key building regulations, which are explained in the next Section. The Chapter closes with an comparative analysis of the presented building regulations.

4.1 Overview of Building Regulations in Zemun

In this Section, the building regulations (BR) related to Zemun at three different dates are presented:

BR I "Strassen- und Bautengesetz vom 7. Džemaziul-evel 1280 (1863)" (Government Gazette, 1880, p. 180 ff.).

BR II "Bauordnung für Sarajevo und jene Städte und Märkte in Bosnien und der Herzegovina [...]" (Government Gazette, 1880, p. 246 ff).

BR III "III Building Order for the Cities of Osiek, Varaždin, and Zemun" (Government Gazette, 1900).

While the first to building regulation had effect in a wider ares, the last regulation is quite specific for Zemun and therefore analyzed in more detail in this Section.

Building Regulation 1863

The first building regulations related to Zemun (BR I) are from 1863 and can be found in "Strassen- und Bautengesetz vom 7. Džemaziul-evel 1280 (1863)" (Government Gazette, 1880, p. 180 ff.). The first paragraph refers to the width of the streets. Different categories of streets have specific dimensions designated to ensure they adhere to required width regulations and fulfill traffic requirements. The minimum width for first-class streets is 11.25 meters, for second-class streets it is 9 meters, for third-class streets it is 7.5 meters, and for fourth-class streets it is 6 meters. Narrow, narrow streets, intended for individual houses, must have a width of 4.5 meters. The dimensions are obtained from the outer borders of the ground floors of buildings on either side

of the street. To achieve the width specified in §1, half of the space is assigned on both sides of the street; in situations where buildings exist only on one side, half is assigned on that side, with the remaining half assigned to the opposite side during future construction or renovation of buildings (Government Gazette, 1880, p. 180). Note, that these dimensions refer to the width from house to house, not the pure width of the street.

The second paragraph addresses the height of the buildings. The maximum height for solid structures is 15 meters, while for timber structures it is 10.5 meters. The roof's height may only surpass the building's height by 4.5 meters. For buildings on steep terrain, height is calculated using the average of the highest and lowest ground points. However, the side at the highest elevation has specific limits: 19.5 meters for solid buildings and 15 meters for wooden buildings, ensuring stability and safety on uneven ground (§21). Regulations concerning construction height are not applicable to public structures (§23) (Government Gazette, 1880, p. 183).

Fire prevention measures are detailed in paragraphs 24–27 (Government Gazette, 1880, p. 183–184). All chimneys must be fire-resistant and designed for simple maintenance and cleaning. The fireplace must be constructed on a stone foundation or another non-combustible material. Chimneys must be constructed from stone or brick and have to be a minimum of 1.5 meters above the roof (§24). The accommodation facilities must be constructed using solid materials. Wood is used only for flooring and furnishings in the rooms (§25). Ovens, baths, factories, and all workshops that operate at night and use fire must possess fireproof walls, and their doors, shutters, and trapdoors must be reinforced with iron sheets (§26). Wood, charcoal, and wood storage areas must be enclosed and shielded by fire-resistant walls. Construction of such stores near residential areas requires a specific approval from the authorities (§27).

Building Regulation 1880

Another building regulation which applies to Zemun (BR II) can be found in "Bauordnung für Sarajevo und jene Städte und Märkte in Bosnien und der Herzegovina [...]" (Government Gazette, 1880, p. 246 ff). The first section refers to general regulations. The application for a building permit is described in §1. In Sarajevo, the construction authority's approval is required for any new construction project, expansion, or renovation. In certain cases, the authorization of superior governmental authorities is necessary. All construction works must comply with current building regulations (Government Gazette, 1880, p. 249–250).

As stated in paragraph 2, significant modifications or enhancements to existing structures require prior notification to the building authority to ensure regulatory compliance. These adaptations include alterations to the building's external dimensions or facade along the street, modifications to primary structural elements such as walls, ceilings, or roofs, including changes to their size or quantity-as well as the construction or modification of fireplaces, chimneys, or wells. These measures seek to preserve the safety, functionality, and aesthetic uniformity of the built environment (Government Gazette, 1880, p. 250).

The requirements of the building plan are described in §4 (Government Gazette, 1880, p. 250–251). The building plan, required to be submitted in two parts, must include detailed representations of the structure. This includes floor plans and sections of all floors, from the basement to the attic, with the basement plan specifically showing any house canals or watercourses. Drawings must use a standardized color scheme: red for new masonry, yellow for masonry to be demolished, black for masonry to remain, brown for new wooden structures, and uncolored for wooden structures

to be removed. Iron and other artificial constructions must also be clearly depicted. Plans and cross-sections must be precise and easy to interpret without additional tools like compasses or rulers. Additionally, the plan must include the facade of the building. If the building authority deems it necessary, a situational plan illustrating local conditions must also be submitted, drawn to a scale of 1:1000 for larger areas or 1:500 for smaller ones. Floor plans, cross-sections, and facades are to be presented at a scale of 1:200.

The construction of new residential, commercial, or other buildings near rivers and streams is regulated in §17 (Government Gazette, 1880, p. 254) and is permitted only if they are set at an appropriate distance from the banks. This distance must comply with existing regulations or be determined by local conditions to ensure the prevention of dangers and disruptions in the use of the water.

A building permit becomes invalid if construction does not commence within two years from the date it is issued, as stated by §18 (Government Gazette, 1880, p. 254).

The second section deals with special regulations regarding the extension and regulation of streets, expropriation and division of building land. The expansion width of streets follows the exact guidelines outlined in §1 of the Building Regulation from 1863 (Government Gazette, 1880).

The third section deals with the regulations pertaining to the construction. §40 (Government Gazette, 1880, p. 259) regulated the construction of buldings. Buildings intended for public use, as well as social and economic buildings, should be constructed using well-fired bricks or stones. They must have a roof with a framework covered in fireproof material, and the roof should be separated from adjacent buildings in a fireproof manner. Additionally, these buildings should include at least one staircase made of stone or another fireproof material leading up to the attic.

The building authority may allow deviations from the provisions in §40 based on local conditions in certain cases, which are explained in §42 (Government Gazette, 1880, p. 260). For building sites not at risk of flooding, the use of unfired mud bricks may be permitted, but the foundation walls must be made of fired bricks or stones up to a height of 0.54 meters above street level, and the corner pillars must be made of fired bricks or stones up to the roof beams. Additionally, such buildings can only have one upper storey in addition to the ground floor, limiting them to a maximum of two storeys.

When constructing houses, the thickness of the walls must be suitable for the building conditions and materials used, which is regulated in §47 (Government Gazette, 1880, p. 261). Generally, the following guidelines apply: Main walls made of fired bricks must be at least 45 centimeters thick on the top floor and at least 60 centimeters thick if made of rubble stone, provided the room depth does not exceed 7 meters. Walls supporting ceilings can be built with the same thickness up to two storeys, but must be reinforced by 15 centimeters for every additional two storeys. Non-supporting walls can have uniform thickness throughout all floors. The foundation must be at least 15 centimeters thicker than the wall above it on the ground floor and must be placed on stable, load-bearing ground.

§47 (Government Gazette, 1880, p. 261) states that partition walls inside a building, unless they continue the walls from the lower storey, must be supported by iron crossbeams or a suitably strong wooden framework, and must be kept away from any heating sources. Wooden partition walls are only allowed between two fireproof walls if they are not near fireplaces. Additionally, these wooden walls must be protected on both sides with mortar or clay.

The number of floors is regulated in §53 (Government Gazette, 1880, p. 263). In streets that are 12 meters wide or more, houses may have up to three upper floors in addition to the ground floor. In narrower streets, if an extension to 12 meters is not planned or feasible, buildings are not permitted to have more than two upper floors above the ground floor.

In new buildings, the windows in apartment rooms must be appropriately sized according to the room height, with a minimum height of one meter and a width of 0.6 meters, as stated in §55 (Government Gazette, 1880, p. 263). The sashes of all windows on the ground floor facing a public street or square, as well as all doors and gates leading to public areas, must open inwards. The only exception is for shop windows and displays, where the window sashes and shutters can be designed to fold back completely against the house wall.

According to §59 (Government Gazette, 1880, p. 265), fire walls must be constructed between any two adjacent houses, as well as between connected residential and commercial buildings. These walls must have a thickness of at least 30 centimeters, or 15 centimeters with 15-centimeter thick reinforcing pillars, and must extend at least 30 centimeters above the roof surface. In very long buildings, additional transverse or dividing fire walls must be erected, with the distance between each wall not exceeding 20–30 meters.

To prevent moisture, which can damage both health and the building's condition, the ground floors of all new apartments must be designed with floors raised at least 0.30 meters above the street level. A higher elevation may be required if special conditions, such as being located in a flood zone, dictate it, see §63 (Government Gazette, 1880, p. 266).

Balconies are regulated in §67 (Government Gazette, 1880, p. 267–268). Both open and closed balconies are allowed, but their projection beyond the facade must not exceed certain limits: 1.3 meters in open spaces, 1.1 meters in streets 12 meters or wider, 1.0 meter in streets 10 meters wide, and 0.8 meters in streets 8 meters wide. Balconies must also be at least 1.5 meters away from the neighboring property line and installed in a way that does not interfere with traffic.

Building Regulation 1900

A key reference (BR III) for comprehending these legal regulations is the "III Building Order for the Cities of Osiek, Varaždin, and Zemun", which is included in the "Collection of Laws and Orders of the Kingdom of Croatia and Slavonia", dated June 25, 1900 (Government Gazette, 1900). It is regarded as the fundamental legal instrument for regulating construction in those cities, precisely describing the essential elements of urban planning. This statute defined city zones and their functions, specifying construction methods, building height limitations, construction lines, roofing techniques, sidewalk construction, and other important construction guidelines and restrictions. Therefore, the framework for the controlled urban development of Zemun was established. In the early 20th century, construction was overseen and managed by an administrative procedure, with the enforcement of legal regulations carried out by the Construction Board and the city engineer (A. M. Dabižić, 2014).

In the first chapter, Zemun's construction law clarifies the circumstances under which a building permit is required and identifies the types of work that require reporting to the authorities. As stated in §1 of the statute, a building permit is mandatory prior to the beginning of any new constructions, extensions, or significant modifications that impact the structural integrity of the building or its essential components, particularly regarding stability and safety, including fire

protection measures. The primary alterations requiring a permit include, among others, the construction of a well or basement, the installation or modification of fireplaces and chimneys, the demolition of partition walls, the remodeling of the exterior facade and roofs, and the installation of doors and windows facing the street or neighboring properties. Minor renovations that do not substantially impact the building's stability or safety, including minor interventions, must be reported to the city administration at least three days prior to the beginning of the work (§3). However, the statute exempts from reporting activities solely intended for the building's maintenance, which do not impact its structural integrity.

Under §7 of Zemun's construction statute, all construction plans must adhere to specific requirements that ensure a clear presentation of the proposed works and their environmental impacts. Plans must include the subsequent components:

(i) Environmental plan at a scale of 1:2880, showing the site and its surroundings of the proposed structure. All old buildings on the construction site, neighboring properties, and buildings with the owners' names, the street width, and the locations of wells, septic systems, and landfills must be clearly indicated on the plan. The construction plan established by the regulatory line must be clearly stated, including the elevation of the entrance and ground floor of the new building.

(ii) The building plan must encompass every part of the building, featuring layouts of each floor, attics, and basements, along with the main facade of the building. The floor plan, sections, and facades must be rendered at a scale of 1:100, incorporating precise measurements for each component of the building.

(iii) Walls in the plans should be delineated using designated colors: new walls in red, existing walls in gray, walls designated for demolition in yellow, steel structures in blue, stone walls in purple, and wooden structures in brown.

(iv) Industrial buildings require additional details, including plans describing the intended function of the building, along with static calculations for more complex structures.

Provided that the building documentation is complete, and no objections exist, the city administration shall issue a building permit within eight days (§10). According to §12, a permit may be denied for aesthetic, technical, or safety reasons.

Regulations define specific building conditions in terms of proximity to essential infrastructure facilities. Per §16, new constructions, extensions, or substantial modifications must be situated no less than four meters from the road's outer border. Construction adjacent to railways requires consultation with the railway administration, whereas construction near mines requires the consent of the mine owner. Furthermore, construction adjacent to military fortifications necessitates authorization from the relevant military authorities. Construction adjacent to rivers and streams is permitted only if structures are situated at a safe distance from the shoreline to safeguard against potential hazards and to ensure compliance with water usage regulations and laws (§17).

Buildings covered in non-flammable materials must maintain a minimum distance of 20 meters from the forest, whereas those covered in flammable substances must be situated at least 50 meters away. The City Commission may modify these distances based on particular circumstances. Construction of wood storage facilities must take place outside populated regions and at a minimum distance of 60 meters from adjacent residences, with the potential for greater distances in specific cases (§18).

§21 refers to the definition of construction lines and street width specifications. In new construction, extensions, or renovations adjacent to traffic areas, the city administration establishes the construction line and the total size of the construction while ensuring adequate width for traffic roads. Primary streets must have a minimum width of 15 meters, whereas secondary streets should be at least 12 meters wide. The elevation of the ground floor must be established at a minimum of 30 centimeter above street level or 50 centimeter above the highest recorded flood level, considering the elevation of adjacent streets and prevailing local conditions. Additionally, a particular focus is placed on preserving larger undeveloped zones in appropriate locations within the city's center.

§23 refers to construction supervision, whereby the city administration is accountable for controlling the construction process. Their responsibility is to guarantee the following: no construction may commence without an issued building permit; construction activities must adhere to the designated construction lines; the conditions stated in the building permit must be strictly followed; high-quality building materials are required. The city administration is responsible for ensuring that no construction materials remain in traffic areas and that material transportation does not damage these areas. §24 states that the construction permit is valid for a duration of one year. If construction does not commence within that timeframe, a new building permit must be acquired.

The second chapter of this statute addresses land subdivision and defines detailed regulations and procedures related to the division of land in urban regions. The subdivision of land into various plots requires authorization from the city administration. The individual requesting permission to carry out a subdivision must submit a situational plan with divided plots at a scale of 1:2880, or alternatively 1:1440. This plan must include cadastral numbers, the dimensions of the plots, a description of the land, and documentation of ownership for those plots (§28).

When dividing the land, it is essential to consider the connectivity of plots to traffic areas. The subdivision will be approved only if the owner gives up a portion of his land free of charge for the development of necessary traffic zones. The subdivision plan mandates that smaller streets must have a minimum width of 12 meters, while bigger streets with more traffic require at least 15 meters (§28). The subdivision must ensure that each plot has a minimum area of 900 square meters. Each plot is required to possess a minimum of 10 meters of street frontage; however, a corner plot must have one side with at least 20 meters and the other side with a minimum of 16 meters. The minimum depth of plots must be 16 meters (§28). When subdividing land into residential complexes with an inner courtyard, the street frontage may be minimized to a minimum of 8 meters, and for corner plots, to at least 14 meters. Plots must be designed to allow construction with adequate light and airflow (§28).

The third Chapter addresses building construction regulations, encompassing criteria such as courtyard dimensions and building height. It includes general regulations for building with connected or open facades, as well as construction in previously damaged areas.

§31 of this statute requires the preparation of precise situational plans, including land parceling and construction methods, prior to the development of new areas or the reconstruction of city parts impacted by fire or flood. The essential components that need to be considered are:

(i) Shape and size of plots: The dimensions and configuration of plots must be suitable for the construction of residential and industrial structures, including sufficiently large courtyards and gardens.

(ii) Integration with traffic zones: New streets must link to existing traffic areas and have an even rectilinear shape with minimal slope. Main streets must have a minimum width of 15

meters, whereas modern-day highways should measure between 20 and 24 meters in width. Moreover, side streets are to be constructed with a width of 8–12 meters, accompanied by sidewalks of 2–3 meters wide with sufficiently designed drains for effective water drainage.

(iii) Building orientation: The main facade of the residential building should face the street, while the industrial structures should be located in the courtyard.

(iv) Flood protection: New areas must not be built adjacent to rivers with unprotected banks or within floodplains.

§32 regulates the building construction methods, including the distances between buildings and streets, as well as the regulations for the construction of open and interconnected buildings.

The city administration has the authority to establish specific regulations for the construction of new urban areas and the renovation of existing ones, which will dictate the construction methods. The city will be divided into zones that define areas where connected or open construction is allowed.

(i) When buildings are constructed in open spaces with gardens, each structure must be free on all sides. An exception may apply when two buildings are adjacent, provided their combined street facade length does not surpass 40 meters.

(ii) The distance between the main facade of the building and the street has to be no less than 5 meters, whereas the distance between the side facades of the building and the boundary of the adjacent property must be a minimum of 4 meters.

(iii) Fences next to the main street and neighboring gardens must not be constructed as solid walls, and the height of the fence's base must not surpass 80 centimeters.

The construction regulations for residential and industrial buildings are specified in §33. All new residential structures must be positioned towards the street in accordance with the established construction lines and must not have gable walls facing the street. On the other hand, industrial buildings are required to be constructed within the courtyard; however, if an exception is necessary due to limited space or other factors and they are built towards the street, they must have a facade typical of residential buildings.

§34 refers to the regulations determining courtyard dimensions across various construction techniques. In the construction method involving interconnected buildings, common courtyards must be established, with a width in developed areas of the city being at least two-thirds of the average height of the surrounding buildings, and in undeveloped areas, the width must equal the height of those buildings. In situations where there are no common yards, the space between the building wall with windows and the neighboring plot boundaries must be wide enough to allow for at least 2/3 of the building's height in built-up areas or the full height of the building in undeveloped areas.

The number of stories determines the required percentage of the plot area for construction: a minimum of 15% for ground and one-storey buildings, 20% for two-storey buildings, and 25% for three-storey buildings. As the height of the building increases, the structure must cover a greater proportion of the land, leaving a certain percentage of the plot undeveloped for courtyards, gardens, and to promote light and air circulation. The minimum length of the shortest side of the courtyard must be 6 meters. Buildings lacking courtyards or possessing courtyards with a

minimum dimension of less than 6 meters may be permitted in unregulated central city areas, conditioned upon all living rooms receiving adequate natural light and ventilation from the street, while auxiliary rooms obtain sufficient illumination via artificial lighting.

Per §35, the height of buildings is defined by the number of stories and is measured from the ground to the upper edge of the main cornice. The minimum height requirements are as follows: single-storey buildings must be 4 meters, one-storey buildings 8 meters, two-storey buildings 11.5 meters, and three-storey buildings at least 15 meters. The construction of two- and three-storey structures is forbidden on streets less than 5 meters wide.

The fourth chapter provides a detailed description of the construction method, including the materials to be used, the dimensions of the stairs, doors, and windows, as well as the wall thickness. Residential and industrial structures may be constructed solely from materials such as brick, stone, and concrete. Every residential structure must be a separate entity, prohibiting the utilization of shared adjacent walls, regardless of neighborly consent (§43). Foundations must be sufficiently deep to reach the load-bearing soil. The foundation walls require reinforcement of 15 centimeters in the basement section, and in structures without a basement, this reinforcement is implemented at the ground floor (§44).

In multi-storey buildings, the load-bearing walls on the top floor must be 45 centimeters thick if the internal room width is less than 6.5 meters; for wider rooms, the wall thickness must be 60 centimeters. For single-story buildings where a potential future floor addition is possible, the width of the ground walls was estimated using the same principle as the upper floor walls. The walls must have a thickness of at least 45 centimeters or 60 centimeters to adequately support the weight of a potential upgrade. On all levels, non-loadbearing walls and stair walls may have a thickness of 45 centimeters. Partition walls that do not divide two apartments as well as a bathroom or kitchen from living rooms may have a thickness of 15 centimeters on all floors, including the ground floor. Fire walls must extend at least 15 centimeters above the roof surface, and the installation of windows on fire walls facing neighboring properties is strictly prohibited (§46). To avert moisture infiltration, particularly in structures without a basement, all walls beneath the ground floor must be insulated with a 1–2 centimeters thick layer of asphalt, asphalt blocks, or other appropriate insulating materials (§47).

§48 defines the minimum area and height requirements for residential premises. Every independent apartment must contain a minimum of two separate rooms – one designated as a living area and the other as a kitchen. The room must be at least 4 meters wide, with a minimum area of 20 square meters; the kitchen must have a width of at least 2 meters and an area of 6 square meters. All other residential premises must have a minimum area of 15 square meters In residential structures, the minimum room height must be 3 meters in urban areas, whereas in rural regions, it must be at least 2.8 meters.

Basement apartments can only be permitted in exceptional circumstances, in structures situated above flood zones and devoid of groundwater, contingent upon specific conditions. These apartments must have a minimum clear height of 3 meters, and the floor cannot be located more than 1 meter below the highest elevation of the street or yard level. The elevation of these apartments must position two-thirds of the structure above the street or yard level. Furthermore, these apartments must be equipped with sufficient ventilation and moisture protection, and the flooring must be insulated with a minimum thickness of 15 centimeters (§50). In single-storey apartments, the ground floor level of residential buildings must be a minimum of 30 centimeters above street level, measured at the center of the structure, while the yard must be at least 10 centimeters above street level (§51).

In the city center, the use of reeds, straw, or other highly flammable materials to cover residential or commercial structures is prohibited. If such roofs already exist, only minimal repairs using the same material are permitted; however, complete renovation of the roof is prohibited (§52).

Concerning stair specifications, per §57, in multi-storey buildings, the main stairs must measure a minimum of 1.3 meters in length, with an average width of at least 30 centimeters and a maximum height of 16 centimeters. Stairs must be constructed from stone, concrete, or other non-combustible materials. If the stairs are constructed from wood, their underside must be reinforced with brick, concrete, or a comparable material for fire safety. The stairs to the attic and basement must be a minimum of 1 meter in length, with a maximum height of 20 centimeters and an appropriate width.

Entrance doors shall have a minimum width of 1.6 meters, whereas vehicle entrances must be at least 2.3 meters wide. Windows on the street-facing side of buildings must open inward; if they open outward, they must be positioned at a minimum height of 2.2 meters above the sidewalk to avoid disrupting pedestrians. In the city center, windows are required to have minimum dimensions of 0.8 x 1.6 meters, whereas in less developed areas, windows may be smaller but must not be less than 0.6 x 1.2 meters (§58).

Per §59, balconies, risalites, pillars, or stairs that extend beyond the construction line require authorization from the city administration and are permitted only on streets with a minimum width of 7 meters. Open balconies are permitted if they are situated no more than 1.3 meters from the facade and constructed from fire-resistant materials. Closed balconies must adhere to all mentioned criteria and can extend up to one-tenth of the street width. All street-facing balconies must be positioned at a minimum height of 3 meters to avoid inconveniencing pedestrians. Storefronts require a special permit from the city administration, allowing a maximum extension of 30 centimeters from the wall.

Windows may be installed in walls adjacent to the neighboring plot only if the wall is situated at least 4 meters from the boundary line (§68).

In accordance with §86 of the "III Construction Order for the Cities of Osjek, Varaždin, and Zemun" from 1900, the "Construction Statute for the City of Zemun" was established in 1907 (Pavlović, 1907), which divided Zemun into six regions. The Construction Statute defines the Old Core of Zemun as the primary area with the most rigorous restrictions, categorized into six construction zones based on content and purpose, see Figure 4.1. The first zone serves as the administrative and commercial center, while the second, third, fifth, and sixth zones are predominantly residential areas of varying characteristics. The fourth zone is a recently acquired construction site. The first district was divided based on the statute of January 21, 1897, which established the naming of the streets and their unique administrative house number (A. M. Dabižić, 2014).

§11 defines the types of residential structures allowed in various locations. In the first zone, connected single-storey buildings must be constructed, whereas a building with a high ground floor may only be constructed if its height complies with the requirements of "III building order for the cities of Osijek, Varaždin, and Zemun", §35, specifically if it reaches a minimum height of 8 meters. The first zone permits the construction of two-storey buildings. In the second zone, the construction of ground-floor and single-storey residences is allowed, provided they are connected. In the third zone, only a building with a high ground floor can be built freestanding, whereas single-storey buildings on an elevated foundation can be built together. In the fourth zone, buildings with a high ground floor are permitted, while single-storey buildings are only allowed on elevated foundations and must be connected. In the third and fourth zones, residential

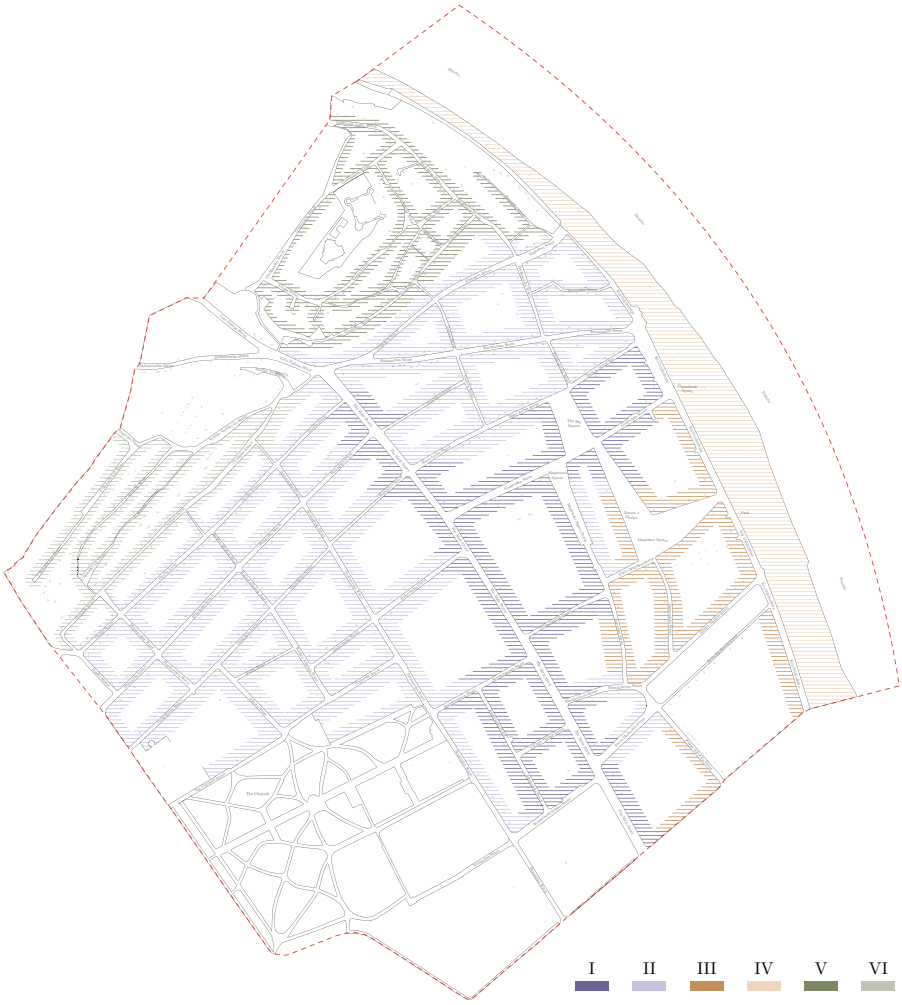


Figure 4.1: Schematic division of Zemun into six construction zones, created by author.

construction must stand on an elevated foundation to minimize flooding risks. In such instances, the ground floor must be a minimum of 50 centimeters above the highest water level. In the fifth and sixth zones, the exceptions defined in §72 of the "III construction order for the cities of Osijek, Varaždin, and Zemun" are permitted.

Per §72 regulations, the city administration may, in exceptional circumstances, permit the construction of single-storey residential structures made of compacted earth or mudbricks. Mudbricks are composite materials of clay and straw characterized by significant water absorption. In such instances, buildings must be constructed on sufficiently thick foundations composed of stone, concrete, or other robust materials. Walls at a height of at least 1 meter above ground level must also be made from the same robust materials, and based on the building's function, dimensions, and flood risk, the height of those walls can be increased. These structures must have basement walls made of stone, brick, or concrete, while multi-storey structures can only use stone or fired brick.

Summary

This Section examines the building regulations in the city of Zemun, focusing on the administrative and legal aspects of construction. The development of Zemun was mostly spontaneous, yet the construction processes were regulated by legal frameworks. The key document regulating construction was the "III Building Order for the Cities of Osijek, Varaždin, and Zemun" from 1900, which specified all aspects of urban planning. This statute regulated the city zone, the permitted number of storeys, the building lines, and specifics such as the minimum dimensions of rooms based on their functions. The regulations explicitly defined the procedures for obtaining construction permits, including the necessary documentation and technical requirements. These laws allowed the city of Zemun to gradually develop while adhering to aesthetic and safety standards.

The 1900 Building Code represents a turning point in the development of Zemun's legal and construction framework, establishing the foundation for many modern legal norms and standards. Its progressive and detailed laws, encompassing general issues like the acquisition and duration of building permits, through the division of urban zones, to detailed guidelines on construction methods and the dimensions of doors and windows, were even then revolutionary and, in many ways, ahead of their time. The laws from 1900, despite their increasing complexity, accuracy, and detail over time, remain the foundation for subsequent, more contemporary Zemun regulations. The building system has been modified and enhanced through additional legal norms, social changes, and technological progress, yet the fundamental principles established by the code remain unchanged in their relevance.

Among the most intriguing construction statutes from 1900, which reflect the progressive ideologies of the time, the law regarding the height of buildings stands out. The law established restrictions on the maximum height of structures to guarantee the accessibility of light and air in metropolitan regions. Today, this represents an important aspect, as it was an early attempt to regulate urban development and fight against excessive urbanization, a phenomenon particularly present in modern cities. This principle is now a primary guideline in urban planning, yet it is worth mentioning that this awareness existed over a century ago. The laws governing the minimum distance between buildings are also noteworthy, as they as well underscore the importance of natural light and enhanced air circulation. Despite their simplicity at the time, these laws signified steps toward better hygiene and public health.

Furthermore, comprehensive building codes in construction are essential, particularly regarding the thickness and type of walls in structures. The law specified the required thickness of a wall based on its function, specifically the load it supports. Considerable emphasis was placed on the possibility of future floor upgrades, requiring the design of ground-floor walls to ensure stability for potential additional levels from the beginning. This measure ensured the long-term stability and flexibility of the building by upgrading the structure without the need for additional reinforcements. These regulations laid the groundwork for modern statics and safety standards in construction, reducing the risk of building collapse and allowing compliance with safety standards that have evolved over time.

The building codes established in 1900 provided a framework for construction regulation; however, many of these laws are outdated due to social, technological, and environmental changes, which have created a need for more modern regulations. For instance, laws from 1900 established minimum standards for natural ventilation and lighting in buildings, primarily determined by the distance between buildings. However, with advancements in artificial lighting and modern HVAC systems, these regulations have undergone major modifications. Also, today there are more

complex laws regarding energy standards and building energy efficiency, which did not exist at the time. Similarly, early laws lacked restrictions regarding the utilization of environmentally sustainable materials and the energy efficiency of structures, whereas modern building laws focus on sustainable practices, the implementation of energy-efficient systems, and the use of recycled or ecological materials. Changes in building codes are fundamentally the result of scientific and technological innovations, as well as an increasing demand for safer, more efficient, and environmentally sustainable building standards.

The division of Zemun into zones at the beginning of the 20th century represented an advanced urban planning approach. The functional division effectively reduced conflicts between various activities, specifically between the residential, industrial, and commercial sectors. Additionally, the strategic placement of the zones enhanced resource utilization by situating industrial zones near transportation routes and rivers, which facilitated access to raw materials and goods movement, and reduced the risk of natural disasters by placing residential zones in less vulnerable areas. The division based on construction method ensured compliance with construction standards in urban areas, while flexibility in rural areas enabled adaptation to local needs. The division of Zemun into zones based on function, location, and construction methodology was designed to achieve harmonious urban development, enhance quality of life, and ensure long-term sustainability. This systematic approach allowed for better organization and regulation of urban space, laying the groundwork for modern metropolises' urban planning standards.

4.2 Comparative Analysis of the Building Regulations

This Section analyses the differences and similarities between the building regulations BR I, BR II, and BR III, presented in the previous Section.

The first point of comparison refers to the contents and requirements of construction plans. The building law of 1900 (BR III) and the building law of 1880 BR II have similar objectives concerning the construction plans; however, they vary in their level of detail and administrative focus. Both laws required detailed architectural plans using standardized scales and color coding to ensure clarity and uniformity in construction documentation. They required floor plans, cross-sections, and facades to be precise and readable for administrative approval. Both highlighted the importance of considering local environmental and infrastructure concerns, including wells and watercourses.

They demonstrated variations in the environmental context and the integration of urban elements. The building regulation from 1900 (BR III) required a comprehensive environmental plan at a scale of 1:2880, including the site's vicinity with adjacent structures and infrastructure, thereby demonstrating a holistic approach to urban planning. The building regulation of 1880 (BR II) only required a situational plan upon request, with smaller scales (1:1000 or 1:500) and less emphasis on integration with the surrounding environment.

Both statutes used analogous color-coding systems, although with minor variations. Zemun employed blue for steel structures and purple for stone walls, signifying a focus on material specification. Sarajevo, in comparison, categorized artificial constructions as "iron and other materials", indicating a less precise method of material classification. BR III used a more detailed approach in its plans with a 1:100 scale, in contrast to the 1:200 scale in BR II. Despite the building laws being merely 20 years apart, this signifies advancement in precision and technology standards.

The next aspect for comparative analysis of the building laws BR I, BR II, and BR III is the regulation of street width, as an essential component of urban planning.

BR I and BR II specify minimum street widths to guarantee sufficient room for traffic and urban functionality. They develop standardized classifications for streets according to their significance and function, yet they employ varying street categories and widths. They outline four categories of streets with designated widths: 11.25 meters for first-class, 9 meters for second-class, 7.5 meters for third-class, 6 meters for fourth-class streets, and 4.5 meters for narrow streets designated for single houses. These requirements represent the traffic and density specifications of mid-19th-century urban settings.

The building regulation from 1900 (BR III) consolidates street classifications into only two categories: primary streets with a minimum width of 15 meters and secondary streets with a minimum width of 12 meters, reflecting increased traffic demands and urban expansion during the early 20th century.

Additionally, BR III establishes elevation standards for ground floors: 30 cm above street level or 50 cm above the highest documented flood level, highlighting an emphasis on flood mitigation – a concern lacking in prior statutes. BR III also emphasizes the preservation of undeveloped areas in the city center, highlighting early zoning and green space integration ideas that the other building regulations likewise excluded.

The implementation methods differ: in the bulding regulations BR I and BR II, achieving the necessary width requires proportionate division of the area between both sides of the street, with adjustments for existing buildings. This indicates a reactive strategy for urban development. The regulation from 1900 (BR III) incorporates proactive urban planning by granting the city government the right to establish building lines and regulate overall construction dimensions, ensuring compliance with modern urban design principles.

BR I and BR II focus on the creation of functioning streets within the limitations of current urban environments, prioritizing traffic needs and systematic development. However, BR III represents a more progressive and innovative strategy, integrating flood mitigation, zoning regulations, and proactive urban planning to meet the demands of a modern, expanding city. This evolution demonstrates the transition in urban policy from reactive control to strategic planning during this period.

The next point of comparison refers to the building height Regulations established in the Laws of BR I, BR II, and BR III. All three regulations exhibit a connection between the building's height and the street's width. The laws consistently correlate allowable building heights with street width, ensuring alignment between urban density and infrastructure capacity. The differences in the laws pertain to the measurement standards. The bulding regulation from 1863 BR I specifies definitive height restrictions based upon construction materials (solid structures: 15 meters, timber: 10.5 meters) and takes considerations of roof height and topography. The law from 1880 BR II indirectly regulates building heights by restricting the number of stories according to street width, permitting a maximum of three upper floors in addition to the ground floor on streets of 12 meters or wider. The building regulation from 1900 BR III establishes a minimum building height based upon the number of floors, promoting visual and structural homogeneity in urban design. Moreover, these minimum heights presumably account for practical factors such as adequate interior space and ventilation, which ensure functional and livable structures.

In conclusion, the building regulations BR I, BR II, and BR III reveal the evolution of urban

planning and construction regulations, reflecting the shifting priorities of cities as they adapted to changing social, economic, and technological contexts. The building regilations BR I and BR II focused primarily on managing urban growth within the limitations of existing infrastructure. However, the building regulation from 1900 BR III demonstrates a significant shift toward proactive urban planning, introducing more detailed and forward-thinking regulations concerning building height, street width, and flood mitigation, as well as integrating zoning concepts and environmental concerns into urban design.

This progression from reactive regulation to a more strategic and comprehensive approach marks a key moment in the history of urban development, highlighting the increasing role of governance in shaping the built environment. These changes not only mirror the physical and aesthetic evolution of cities, but also signify a wider shift in comprehending the organization of urban spaces to meet both functional and social requirements.

Conclusion

This Thesis has investigated the architectural and urban evolution of Zemun, a city uniquely positioned at the crossroads of empires, cultures, and historical eras. By exploring the interplay of Ottoman and Austro-Hungarian influences on Zemun's built environment, the study has illuminated how governance, culture, and geopolitical circumstances shape urban development.

The Ottoman period left a lasting imprint on Zemun, characterized by the organic growth of its urban fabric, narrow streets, and practical, modest structures. These features reflected a decentralized approach to city planning, prioritizing adaptability and functionality over formal design. During this era, Zemun served as a key administrative and commercial hub within the Ottoman Empire, its architectural landscape mirroring the multicultural and religious diversity of its inhabitants.

The Austro-Hungarian period brought a profound transformation, introducing planned urban layouts, monumental architecture, and rigorous building regulations. Zemun became a showcase of European modernization, with structured boulevards, prominent public squares, and architectural styles emblematic of the Habsburg Empire's cultural values and technological advancements. The grid-like patterns and symmetry of this period contrasted starkly with the Ottoman-era urbanism, reflecting a shift from organic growth to centralized planning. These changes not only redefined Zemun's physical landscape but also influenced its cultural identity and social fabric.

The research conducted for this thesis relied on a multidisciplinary approach, incorporating historical cartography, archival sources, and fieldwork. Cartographic analyses from the Finance and Court Chamber Archives and the War Archive in Vienna revealed the evolving layouts of Zemun's urban core over centuries, highlighting key shifts brought about by imperial governance. Personal observations and photographic documentation further enriched the analysis, providing a contemporary lens through which to assess the lasting impacts of Ottoman and Austro-Hungarian legacies.

This work contributes to the broader understanding of how empires shape cities at geopolitical crossroads. Zemun serves as a microcosm of the broader historical dynamics in Southeast Europe, where cultural, political, and architectural forces have interacted over centuries. The cityâ€™s ability to preserve elements of its layered history while adapting to modern needs underscores its resilience and cultural richness.

It is essential to highlight the challenges that Zemun faces in terms of urban planning, both as an independent entity with its distinct historical identity and as an integral part of the broader cityscape of Belgrade. These issues have been identified through a detailed analysis of the historical development context, which has shaped and, at times, constrained its urban and spatial dynamics.

The city faces significant architectural challenges, as newly constructed structures, while formally adhering to prescribed procedures, have not undergone thorough architectural evaluations regarding

aesthetics, functionality, or their integration into the urban context. Consequently, numerous urban spaces have lost their distinctive character, reflecting a profound misunderstanding of the fundamental urban principles on which the city is based.

One set of problems in Zemun's Old Core pertains to smaller individual houses in private ownership. Due to the lack of urban planning until 2003, numerous requests for adaptations, extensions, subdivisions, and demolitions emerged, leading to frequent destruction of buildings and spaces. Without adequate planning preparation, constructions made of various building materials were erected in areas of significant architectural, urban, and cultural-historical value. While the area of Gardoš receives considerable media attention, other parts of the historic core, particularly the central zone containing the most valuable monuments, are neglected.

The Magistrate Building, as the most pristine representation of classicism within the architecture of Zemun's Old Core and the oldest administrative building within the Belgrade area, serves as a prime example of the neglect of cultural heritage. Renovation work on the facade was carried out between 1999 and 2000. Without consulting the City Institute for the Protection of Cultural Monuments, which is responsible for approving such works and prescribing conditions for their execution, the municipality selected a contractor and initiated the renovations. The original wooden joinery was replaced with plasticized materials that fundamentally fail to meet conservation standards and, in terms of craftsmanship, considerably fail to fulfill the criteria required by the Magistrate Building, see Figure 4.2. Additionally, the wooden gate depicted in photographs was also removed (Lalicki, 2002, p. 30–31),see Figure 4.2.

Figure 4.2: Detail of a facade (left), (Institut für den Schutz von Kulturdenkmälern der Stadt Belgrad, 2020). Entrance hall 1964 (right), (Institut für die Erhaltung des kulturellen Erbes von Belgrad, 2010)

Another example of the neglect of buildings of significant cultural value is the 'Pantelić' Foundry 4.3. Established in 1854 in Zemun, the foundry once represented an important example of industrial-technical heritage. It was renowned for its bell casting and tower clock production, which earned it prominence throughout the Austro-Hungarian Empire. Although it was designated as a cultural monument of great significance in 1979, the foundry is currently in a state of disrepair. Following the completion of conservation work in 2006, the building's condition has not been adequately addressed. This unique building, which serves as a museum of craftsmanship and technical culture, has been left to decay, despite its unquestionable architectural and historical significance to both Zemun and Belgrade (Nikolić, Pašić, and A. Milenković, 2018, p. 151–153).

Figure 4.3: General appearance of the 'Pantelić' Foundry (Institut für die Erhaltung des kulturellen Erbes von Belgrad, 2010).

Another significant urban planning issue in Zemun is the disruption and disregard for street regulations. This problem is pervasive not only in the Old Core of Zemun but across the entire municipality. Adherence to regulatory and construction lines, as well as the preservation of an identifiable street front, is essential for maintaining the integrity of the street network and order within the urban structure, highlighting the seriousness of this issue. In addition to preserving the cultural and historical urban value of Zemun's Old Core, compliance with regulatory lines ensures the proper functioning of vehicular and pedestrian traffic, as well as the safety of all traffic participants and users of public space (Lalicki, 2002, p. 33).

The evident lack of understanding, primarily of the architectural significance of Zemun, which is a necessary prerequisite for the city's proper functioning, has created the foundation for the developments that have occurred in Zemun over the past 30 years. The city has endured long-term damage, the scope of which surpasses the mere aggregation of individual issues. This arises from the fact that each urban settlement, as a multilayered system, functions through complex cause-and-effect relationships. Consequently, deficiencies in one domain incur significant costs and have ramifications in numerous others.

In conclusion, the city's inadequate urban policies, along with the aggressive actions of property owners and the ability to disregard regulations established by the Protection Service without facing legal repercussions, have led to an increasing number of buildings with inadequate architecture. These buildings, through their disproportionate size, volume, and choice of materials, significantly disrupt the harmony of the space and undermine the historical and cultural value of the surrounding environment. This reflects a broader systemic issue where the lack of effective enforcement of urban regulations results in the degradation of the urban landscape and the loss of architectural integrity.

While this thesis has comprehensively examined Zemun's architectural evolution, it also opens avenues for future exploration. One promising direction is the integration of historical preservation with contemporary urban development. As Zemun continues to grow as part of the Belgrade metropolitan area, balancing the protection of its heritage with modern urban demands remains a

pressing challenge. Future research could propose strategies for sustainable urban planning that honor Zemun's historical identity while fostering innovation and growth.

Another area for investigation is the comparative study of Zemun with other cities that have experienced similar dual imperial influences. How have other border cities in the Balkans or Central Europe navigated their layered histories, and what lessons might Zemun offer in return? Such studies could deepen our understanding of how cultural and architectural legacies manifest in urban environments shaped by complex historical trajectories.

Zemun's story is more than a local history; it is a narrative of cultural exchange, conflict, and coexistence at the crossroads of empires. Its architecture reflects not just the priorities of its rulers but also the resilience and adaptability of its inhabitants. From Ottoman mosques and labyrinthine streets to Austro-Hungarian town squares and regulatory plans, Zemun encapsulates the rich tapestry of Southeast European history.

As Zemun looks toward the future, its layered architectural heritage stands as both a challenge and an opportunity. Preserving this heritage while meeting the needs of a modern city requires thoughtful planning and collaboration across disciplines. In doing so, Zemun can serve as a model for other historical cities navigating similar crossroads, embodying the potential of urban spaces to honor their past while embracing their future.

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