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*ABSTRACT****Urban changes and problems of Novi Sad in the 21st century***

Novi Sad is the second-most populous city in Serbia. As an urban entity, and an immigration factor, its importance increased after the break-up of the former Yugoslavia. Due to the immigration of inhabitants, both from the former republics of Yugoslavia and from other parts of Serbia, population growth has led to morphological changes. The city expanded towards Futog, Rumenci and Bački Jarak. In addition, the city has undergone significant changes in the internal physiognomy, in the central parts of the city, as well as in the other parts. In the central parts of the city, efforts are being made to preserve old architectural buildings. However, in the eighties of the last century, the demolition of old buildings in the center began. In their place, they sprouted buildings of modern architecture, which do not fit into the previous style of construction, pertaining to the late 19th and early 20th century. This trend continued later throughout the 21st century. Particularly evident are the changes in the shift of individual, collective construction, which is characteristic of the center itself and the narrower and broader surroundings of the city's central parts. Collective housing facilities are springing up all over Novi Sad, depending on the investor. The style of construction is changing, as well as the purpose of some urban spaces. An additional problem is the increasing traffic load and congestion of roads, especially during the time of getting to school and work, as well as the time of return. These are just some of the apparent issues that Novi Sad faced in the post-socialist period, which need to be solved for the sustainability of an organized city.

*KEY WORDS**Novi Sad, urban change, problems.*

1. Introduction

Novi Sad is the second-most populous city in the Republic of Serbia, right after the capital Belgrade. It was built on the Danube river's left bank, in the extreme south of Bačka region, in the Autonomous Province of Vojvodina. One part of the city was built in the alluvial plain of the Danube, and the rest is on somewhat higher and drained land. In the beginning, the Danube's proximity and the swampy terrain did not allow its construction along the banks of the Danube. It was necessary to resort to land development, drainage of certain swampy terrains so that the city could have access to the river (Bubalo Živković, 2003; Jegdić and Gradinać, 2016).

Today's settlement of Novi Sad is relatively young. Construction began by the end of 17th century, coinciding with the works on the Petrovaradin Fortress on the right side of the Danube. However, archaeological research had shown that the territory of Novi Sad was continuously inhabited long before the construction of the Petrovaradin Fortress began and before the establishment of the then settlement (Grujić, 1991). The latest excavations showed this during the urban changes in the very center of Novi Sad when more than 3,000 years old graves were discovered (<https://voice.org.rs/palata-pupin-ili-kako-je-zapocelo-naprednjacko-urbanisticko-nasilje-u-novom-sadu/>).

Intensive development of Novi Sad had followed after the First, and especially after the Second World War, with the growth of the population, the construction of boulevards, collective housing, construction of dams in Liman, the formation of new parts of the city, building industrial facilities, and forming industrial zones. Novi Sad had the highest population growth in the 1960s and 1970s, and then in the first decade of the 21st century. Intensive industrial development attracted (Stepanović, 2019) a large number of migrants so that population growth rates were the highest at the beginning of the second half of the 20th century (Đurđev and Ćurčić, 2005).

At the end of the 20th century, due to the war in the former SFR Yugoslavia and the bombing of the Republic of Serbia, the population growth rates were significantly lower. However, in the last inter-census period, population growth rates were slightly higher than in the first inter-census period after the Second World War (Table 1). In the last inter-census period (2002 - 2011), the area of the City of Novi Sad, due to the immigration of the population, had the largest increase in the absolute number of inhabitants (40,142) after Belgrade (47,240 inhabitants) (SORS, 2014).

Table. 1. Population of Novi Sad from 1948 to 2011 according to the censuses

Year of census	Population	Population growth		
		Total	Average annual growth	
			Number	Rate in ‰
1948.	64.041	-	-	-
1953.	70.769	6.728	1.346	19,0
1961.	95.192	24.423	3.053	32,1
1971.	134.160	38.968	3.897	29,0
1981.	163.773	29.613	2.961	18,1
1991.	173.186	9.413	941	5,4
2002.	191.656	18.470	1.679	8,8
2011.	231.798	40.142	4.460	19,2

Source: Statistical Office of the Republic of Serbia, 2014, *Comparative overview of the population 1948, 1953, 1961, 1971, 1981, 1991, 2002. and 2011. 2011 Census of Population, Households and Dwellings in the Republic of Serbia.*

Population growth, post-socialist social changes, modern building styles, striving for modern and economical construction with energy savings, have also led to urban transformations in the city. During the 20th century, Novi Sad had the characteristics of a developed and modern city, with wide boulevards and numerous collective housing facilities that exhibited socialist construction characteristics. During that period, its urban core was mostly preserved, built after the bombing of Novi Sad (1848) in the second half of the 19th century or the beginning of the 20th century. By the end of the 20th century, small changes were made, but the urban concept and buildings, which had a historical background and architectural specificity, were preserved.

Even today, in the center of Novi Sad, to a certain extent, the former physiognomy and architectural heritage (Milanković-Jović, 1993) is preserved, from the appearance of the facades of houses to the structure of the streets. Even today, streets such as Laza Telečki and Mita Ružić are narrow and accessible only to pedestrians, cyclists and those who use a scooter. The physiognomies of the central pedestrian zone, Dunavska, Zmaj Jovina and a part of Pašičeva Street (Vujičić, Besermenji and Stamenković, 2009) have been retained. However, in the mentioned streets, some buildings have changed their appearance due to reconstruction or upgrading.



Figure 1: Preserved identity of Novi Sad, top left - Laze Telečkog Street; top right – The building of Communal bank; bottom left - Mita Ružića Street; bottom right - Zmaj Jovina street and in the background Pupin's palace.

Photo: Milka Bubalo Živković

Administrative buildings, religious buildings, educational and cultural institutions are still preserved in the city center. Even today, in Dunavska and Zmaj Jovina streets, there are shops on the ground floor (today they are modernly equipped), and residential buildings on the first floor. There are numerous passages with modern shops, craft workshops, bookstores, restaurants, which have preserved the old identity (Figure 1). However, the problem is the inadequate maintenance of some buildings under protection, causing them to become dilapidated, with the facade falling off, the walls cracking. At the same time, the tenants themselves are not allowed to do the reconstruction.

Therefore, the buildings collapse in such an extent that it is impossible to rebuild them, which is why they are being demolished, and legal or illegal construction of other buildings occurs. However, even functional buildings under protection are demolished, such as the building of the Communal Bank on the corner of Narodnih heroja Street and Mihajlo Pupin Boulevard (Figure 1).

2. Methodology and data sources

For this research, the field research method was used. Then, analysis of observations from the field was performed and their comparison with the General Urban Plans of Novi Sad from 1985, 2000, and General Plan of the City of Novi Sad until 2021 from 2006. The interview method, which was used in conversations with the population of Novi Sad, and urban planners who point out the disruption of the urban structure in recent decades, helped in the analysis of current and previous urban changes.

For demographic changes, which also impacted urban changes, we used data from the Statistical Office of the Republic of Serbia on population trends in the period after the Second World War. The historical method was used to examine morphological changes during the historical development of Novi Sad.

3. Urban changes of Novi Sad during the 21st century

Based on the General Urban Plan of Novi Sad from 1985, there was a great need to increase the degree of construction land utilization (Nedučin, 2014). It was the basis for the future transformation of the spatial structure of Novi Sad in those parts where the population density and the number of apartments per hectare were small. The General Urban Plan confirmed the same in 2000. Based on these general plans' requirements, during the 21st century, there are significant transformations - land recycling, i.e., the demolition of older family buildings, and the construction of multi-family buildings. This achieved greater utilization of construction land, as well as existing infrastructure. Urban changes have affected almost all parts of Novi Sad. However, the most prestigious locations, such as the center itself, Podbara and Rotkvarija, have undergone the most significant changes.

The most prestigious locations were also the most attractive to investors, making them exposed to intensive construction expansion and feverish construction (<http://www.novisad.rs/node/255>). This process led to the construction of entire blocks, many apartments per block, which led to additional problems - lack of parking spaces, traffic jams, and noise.

In 2016, a new traffic road was built (Bulevar Evrope), which connects parts of the city with a large concentration of individual family (Telep, Adamovićevo naselje, Avijatičarsko naselje) and multi-family buildings (Liman III and IV, Sajmište, Bistrica and Detelinara) with the Industrial Zone North and highway Belgrade - Subotica (Figure 2).

During the transformation of the internal physiognomy, significant changes took place, especially in the city's central part. The dominant building materials used in the new buildings are glass and metal. They disrupt the architectural style of construction that was once present. In addition to the buildings from the second half of the 19th and during the 20th century, new ones "emerged", not complementing existing ones.

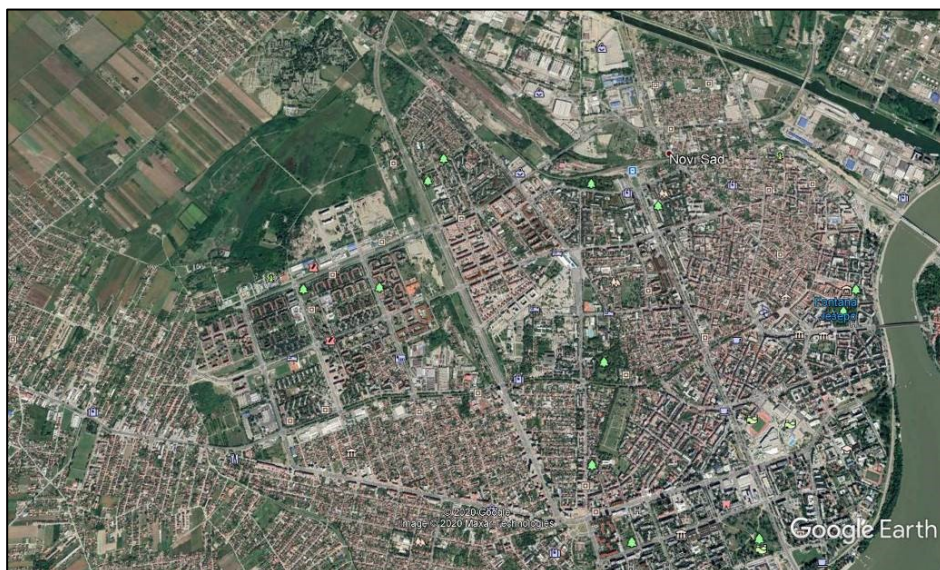


Figure 2: Bulevar Evrope – traffic road connecting Liman and industrial zone.

The violation of the urban identity of Novi Sad began in the second half of the 20th century with the construction of a modern building of the Serbian National Theater, which differs from the surrounding buildings whose architectural style is characteristic for the second half of the 19th or early 20th century. In the Serbian National Theater's immediate vicinity, the building of the "Apollo" Business Center was generally reconstructed and extended. In Zmaj Jovina Street, there are shopping centers "Apollo" and "Lupis" which, stylistically and functionally, do not justify their survival in those locations (Figure 3).



Figure 3. Top left - residential building with shops on the ground floor; top right - scientific and technological center within the University of Novi Sad; bottom left - the latest shopping center "Promenade", bottom right - shopping center "Pariski Magazin". Photo: Milka Bubalo Živković

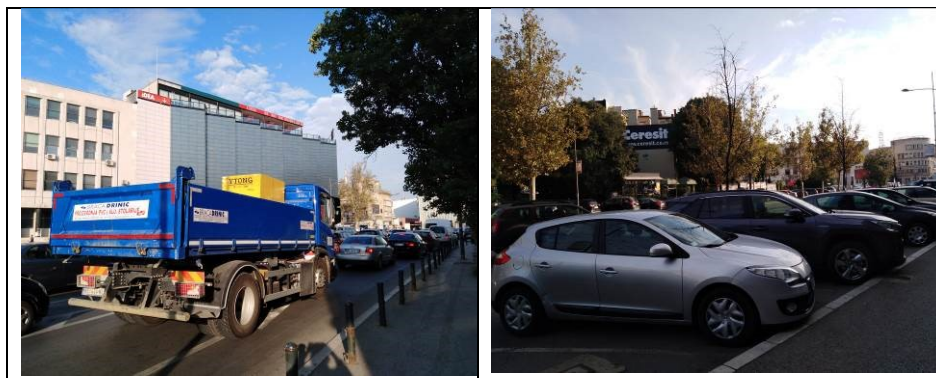
The last "glass" business-residential building in the city center, Pupin's Palace, which was built on the site of the demolished building of the Communal Bank, significantly changed the appearance of that part of the city. An additional architectural problem is the "glued" imitation of the facade of the building of the Communal Bank towards Narodnih heroja Street. This cheap architectural act does not fit into the architecture of the surrounding buildings or the built Pupin's Palace (Figure 4).



*Figure 4: The newest "magnificent" building in the center of Novi Sad - Pupin's Palace.
Photo: Milka Bubalo Živković*

4. Problems caused by the urban changes

Urban changes in the city center, in addition to the disturbed architectural style, lead to other problems. The construction of large residential and commercial buildings has led to an even higher concentration of cars and the need for parking spaces, which affects the additional concentration of exhaust gases, i.e. air pollution, but also significantly higher noise (Đerčan, 2019). Newly built facilities occupy a large percentage of construction land, which results in a reduction of areas under the greenery, which is an additional problem.



*Figure 5: Crowded traffic in the city center and insufficient packing space.
Photo: Milka Bubalo Živković*

Traffic is one of the significant air pollutants in Novi Sad, in addition to the exhaust gases from industrial plants and thermal heating plants (Petrović et al., 2016). One of the adequate solutions to traffic jams is to use bicycles as much as possible. Novi Sad, in addition to the built bicycle paths, has an insufficiently developed culture of using this means of transport, although the landscape of the urban environment allows their use without much effort. In addition, research has shown that economic growth and the new regulations that accompanied the transition in the 1990s negatively affected bicycle parking spaces and cycling safety (Majkić & Anguelovski).

5. Conclusion

Urban change in big cities is necessary and very much needed due to civilisation's development, advances in technology and engineering. However, it is necessary to approach their sustainable development and preserve the architectural identity of the urban center of the city. It is necessary to maintain the specificity, uniqueness, as well as the features of the city that are characteristic of that city only. Mixing of building styles in city districts should not be allowed, because it violates the urban and architectural integrity and historical significance. Cities that have preserved a historically significant urban whole are attractive for tourists. Any building, with any function today, but with a preserved story throughout history, can be a motive for tourists' arrival. If the urban core, the center, is preserved in its entirety, it is a potentially significant tourist attraction. Mixing construction styles with urban changes in the last two or three decades in Novi Sad cannot contribute to its attractiveness.

On the other hand, the construction of "magnificent residential and commercial buildings" leads to a lack of parking space, the concentration of a larger number of cars in the city center and an increase in noise. To maintain the city's very core, it is necessary to expand the pedestrian and bicycle zones in the city and prohibit cars from entering that area. In Novi Sad, it is necessary to expand the zone in which cars cannot enter, except for delivering vans. In addition to solving the problem of noise and crowds, it would also reduce heavy pollution in the city center.

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