

LIBERATION BOULEVARD'S STRUCTURE AND IDENTITY IMPACT ON PEDESTRIAN ACTIVITIES

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Summary: Changes that have dictated the development of the urban structure of Novi Sad, during different historical periods, can be identified through the analysis of the street network of the city. The most significant transformation of the urban matrix was carried out under the influence of a change in the mind-set of the post-war era of the XX century and led to radical changes in society, but also to the creation of the modern image of the city. The expansion of car traffic has caused the development of important boulevards that have connected the new urban areas, and that changes in the street network have formed the urban identity of the city that is recognizable to its citizens today. A progressive development of Novi Sad during the 1960s led to the construction of the Liberation Boulevard - the most prominent and busiest city motorway, which changed the previously known image of the city. Boulevard, which connects the main railway station with the Liberty Bridge, was built in order to solve the problem of increased activity of motor vehicles on the roads in the central area of the city. It has become the main traffic communication of Novi Sad with its position in the overall urban matrix, as well as an accepted border between the east/old and the west/new part of the city. Today's persistence shows the importance of this boulevard, as well as its potential as line element of the urban fabric that can be used for connecting and networking of the city. The aim of this paper is to analyse the dominant Liberation Boulevard, whose construction has morphologically transformed Novi Sad and its identity. Morphological structure, physiognomy and character of boulevard create a connection with the public activities and conditions for concentrated dynamic and stationary pedestrian activities. This paper examines the visual and environmental entities of Liberation Boulevard, ground floors contents that are oriented towards it, the interaction between buildings'

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facades and pedestrians, as well as the scope and nature of activities on the sidewalks of boulevard. The aim of this study is to explore how the boulevard built in the 1960s functions today, and how is the main boulevard of the city adapted to the pedestrian communication and the current needs of Novi Sad's citizens.

Keywords: *Liberation Boulevard, Novi Sad, public space, pedestrian activities*

1. INTRODUCTION: CONSTRUCTION OF NEW BOULEVARDS IN NOVI SAD DURING XX CENTURY

New technologies have enabled the separation of communication and physical transport, nevertheless transport networks continued to provide exchange of goods and people. Physical boundaries no longer constitute an obstacle in the flow of information and capital, since a complex traffic network significantly shortens the physical distances in incoherent urban spaces. The feeling of space formed by transportation system becomes one of the essential features of the globalized city in which space is not measured in the length, but in the time it takes in order to get from one point to another [1]. As the movement and spatial form are closely related, structure of urban matrix is understood as the most important determinant of urban mobility. After the period that was characterized with the rapid industrialization of society and the concentration of population in urban areas, XX century has introduced growth of the cities and possibilities of spatial dispersion.

A large number of vehicles per capita have empowered a significant percentage of the urban fabric to the traffic network, and made street traffic - the generator of the city's growth. Due to technological innovations, new ways of transportation and communication, the city as meeting place gave easily accessible and extensive contact to people, and an overlap of production and consumption realized a direct connection between lifestyle and urban organization. As the central indicator of the transformations, which formed the appearance of a settlement in time, urban matrix of Novi Sad shows significant alterations in the city, which verbalized the development of urban image that the city has today.

During the XX century, urban matrix of Novi Sad had been radically transformed and adapted to the need for new necessities of life, resulting in a change in the physical and functional structure of the city. The radical changes in the way of thinking in the post-war era lead to reorganization of the way in which cities are being build and rebuild, and urbanization has served as a key means of absorbing surplus capital and labour. This era was characterized with the industrialization of the whole society, construction of educational, health care and industrial facilities, production of standardized goods, mass consumption, a strong welfare state and a significant collective consumption. The city has been treated as an exceptional medium for political messages, and urban planning has been seen as 'an extended arm of the state, a means of social control and manipulation' [2].

Period of post-war reconstruction of Novi Sad was characterised with the strict implementation of the Master Plan of 1950, until its replacement with a new plan in 1963, which bears all the characteristics of socialist construction, such as building

materials, rationality expressed in the facades, but also in restrictions in residential premises [3]. Liberation Boulevard was built between 1962 and 1964, as one of the most important changes that has influenced the present image of Novi Sad (Fig. 1). It was known as 23rd October Boulevard up to the 1991, in honour of 23rd October 1944, the day of liberation of Novi Sad from occupation in World War II. During the period of its construction, the urban tissue of this part of the city had already been formed, and the new construction had to destroy the existing physical structure of the city. A large number of residential houses had to be demolished in the space determined for the formation of the new boulevard. Furthermore, strong economic upswing in Novi Sad during the 60s and 70s of the XX century created the conditions for construction of Liberty Bridge and relocation of traffic congestion from the city centre.



Figure 1. Transformations of Liberation Boulevard from its construction in 1960s to its present prospect

Liberation Boulevard is the most frequent, the most representative, and the longest rectilinear boulevard in modern Novi Sad, stretching from the main train station to the Liberty Bridge. Traditional symbolism of the gate is transferred to the new aspects of the city gates such as Train station and Liberty Bridge, which are offering new perspective of the possible entrances into the city. Novi Sad has two major socio-spatial units - its central part with a compact historic centre and 'new' part of the city, which was extensively built during the second half of the XX century. Historically the most significant part of the city remained on the eastern side of the Boulevard, whereas the most of the construction areas available for architectural and urban planning projects remained on the western side. The new Boulevard connected the different areas of the city and interconnected routes of the most lines of public transport, which have improved the traffic communication of Novi Sad.

The analysis of the street network of Novi Sad displays a heterogeneity in the construction periods, outlining the period between 1960s and 1980s when the most important part of the urban transport infrastructure was built. Expansion of car traffic in the city caused the introduction of new traffic routes that fundamentally altered the familiar image of the city. Irregular street network of old city centre was shattered with progressive construction of Liberation Boulevard and Mihajlo Pupin Boulevard, which have made significant impact on the city. The study explores morphogenesis, physical structure and elements of identity of Liberation Boulevard, as well as visual and environmental entities, connection between the ground floors contents, transparency and design, buildings' facades interaction with pedestrians and the extent and nature of pedestrian activities and stays along the boulevard.

2. STRUCTURE AND IDENTITY OF LIBERATION BOULEVARD

Liberation Boulevard extends between the Jasa Tomic Boulevard and the main railway station in the north, to the Liberty Bridge in the south. The linear route is oriented in a north-south axis, dividing the city in two parts - the old part of the city on the east, and the new part available for spatial expansion positioned on the west (Fig. 2). With a length of about 3,5 km, it represents the most important business and traffic street in Novi Sad. Multiple layers of Liberation Boulevard are evident with different ambiances, historical sites, crisscrossed paths, modern commercial and residential buildings, walkways and urban landmarks in its wider surroundings.

Boulevard was built for the purpose of solving the problem of road traffic expansion through the centre of the city. Nevertheless, it has very strong importance in the collective memory of the Novi Sad's inhabitants with its identity. With its position in the overall planimetrics of the city, its morphological characteristics, as well as contents that are orient towards it, Liberation Boulevard has become the longitudinal centre of the city, which is gaining more importance during time [4].



Figure 2. Position of Liberation Boulevard in urban matrix of Novi Sad (left), intersection with Maksima Gorkog Street (center) and present-day Boulevard (right)

Liberation Boulevard is linking the main railway station on the north with the Liberty Bridge on the south through its long route. Construction of a new railway station had started in 1963 and it was completed in 1964, the same time as the construction of the new Liberation Boulevard. Passenger building, designed by Imre Farkas, is facing the central area of the city, whereas all other railway infrastructure is located in the industrial zone, between the railway and channel Danube-Tisa-Danube. Vehicular entrance of the city from the side of Srem was intended to make the glorification of the city by the construction of Liberation Boulevard and Liberty Bridge. The construction of the new bridge, designed by academician Nikola Hajdin, had lasted from 1976 to 1981. A bridge is 1382 meters long, and constructed in cable system with two 60 meters high pylons. The name Liberty Bridge was given in honour of 37th anniversary of the Novi Sad's liberation in World War II. The bridge was destroyed on April 3rd 1999 in the NATO bombardment, and reconstructed in 2005. The new bridge has connected the Novi Sad side and Liberation Boulevard with the Srem side and new Miseluk tunnel.

As the most important traffic route, it can be considered the main street of Novi Sad and informal centre of the city. Although the most important public, political, administrative and cultural institutions of Novi Sad are positioned in the traditional city centre known as Old Town, most of the business, commercial and entertainment contents are placed in

the Liberation Boulevard. The buildings which form its architectural framework do not form a completely closed physical frame of the boulevard, resulting that it is not completely harmonious along its whole length. Some of the most important public, administrative and commercial freestanding buildings on the Boulevard are - Railway station, Bus station, Petroleum Industry of Serbia - Gazprom Neft (NIS), Elektrovojvodina, Dnevnik, Police administration, Mercator shopping center, Agrovjvodina, adults' elementary school Sveti Sava and Futoska marketplace (Fig. 3). Stadium Karadjordje, home ground of football club Vojvodina, is positioned in the southern part of the Boulevard, next to the tennis courts. Limanski Park, one of the most popular green parks of the city, is situated on the south side near the Liberty Bridge. Boulevard also includes numerous banks, bars, restaurants and shops.



Figure 3. Important structures alongside Liberation Boulevard - Elektrovojvodina (left), Petroleum Industry of Serbia - NIS (center) and Limanski Park (right)

Most of the public transport routes pass through Boulevard and streets it intersects with, and a proximity to special features of the city have endowed a Boulevard with increased importance. Liberation Boulevard is frequently titled only Boulevard to signify its wider surroundings and informal neighbourhood of Novi Sad named after it. As informal city district, Boulevard covers parts of the following traditional urban neighbourhoods - Liman, Stari grad, Grbavica, Rotkvarija, Sajmiste, and Banatic. Significant streets that are making intersections with Liberation Boulevard are Jasa Tomic Boulevard, King Petar I Boulevard, Novosadskog sajma Street, Pap Pavla Street, Futoska Street, Jevrejska Street, Brace Ribnikar Street, Maksima Gorkog Street, Tzar Lazar Boulevard and Narodnog fronta Street. Liberation Boulevard has a wide cross-section (approx. 60 m) with a total of six traffic lanes, parking spaces, green areas, bicycle lanes and spacious walkways for pedestrians alongside sidewalks. It is equipped with elements of urban furniture such as benches, street lamps, flower pots, information panels, trash bins, kiosks, telephone booths, bus stations, billboards, etc. Nevertheless, considering its length, it lacks in street furniture envisioned for resting, adequate parterre paving, water elements of urban design, sculptures, green areas and trees needed in the formation of the urban landscape.

3. INFLUENCE OF BUILDINGS' FACADES AND GROUND FLOORS ON PEDESTRIAN ACTIVITIES

Typical city is not a street scheme but a series of spaces created by buildings [5].

Walking through the Boulevard, close to the buildings' facades and the various display windows creates opportunities to perceive what is happening in the buildings and considerably enriches walking experience. According to Montgomery [6], key indicator of the vitality of public space, among other things, is the existence of an 'active street fronts'. All cities communicate messages to people as they move, while most of the messages are given by the 'faces' of the buildings. Buildings' facades and diversity of functions inside buildings alongside Liberation Boulevard provide many points of exchange between inside and outside, and have a major impact on the activities and attractiveness of the spaces outside. Jan Gehl [7] divides close encounters with buildings into a few main groups:

1. Walking alongside, parallel, or at right angle to the buildings' facades.
2. Stopping, standing, sitting or engaged in activities next to buildings.
3. Ground-floor facades influence with the edge effect, which refers to people's preference for staying at the edges of space, and the support effect, which refers to the human preference for standing or sitting at a fixed point – a niche, a corner, a column or something else.
4. Desirable visual opportunities, which are making that the activities inside the buildings and outside in public spaces are connected visually.

Distinguishing volumes and the heights of new commercial and residential buildings, built at the turn between XX and XXI century, highlight their dominance in the physical structure of the Liberation Boulevard. Architectural buildings along the Boulevard are not in relation to each other and do not form completely closed physical framework of the street, and their ground floors are almost completely closed to public contents. There is evident lack of public institutions envisioned for culture and education, and only public contents are outdoor coffee bars and restaurants. Uniform facade fronts of buildings in terms of vertical regulation and stylistic affiliation are not common due to the transformation of urban centre in certain periods, especially during 1990s. Design of the front facade is especially significant, particularly in buildings where the facade faces the street and sidewalks. Architecture framework of the street, the ratio between height of the buildings' facades and width of the boulevard's cross section, are all affecting scale and of traffic and pedestrian activities alongside Liberation Boulevard.

Pedestrians move slower and frequently stop in front of the active facades which are open, flexible, interesting and safe, while lifeless, closed and self-absorbed facades pacify urban users. Interaction between facades and pedestrians is reached through the rhythm, scale, architectural detail, windows and colours of facades, which can also be important for the identity of complete street (Fig. 4). Attractive ground level facades offer opportunity to reach out and touch the building with good facade materials, textures and adequate details. Walking along a ground floor facade with primarily vertical facade rhythms makes the walk more interesting since moving from one vertical element to another seem to shorten the walk, while facades with horizontal articulation intensify the feeling of a long distance. Special facade components such as colonnades and arcades can achieve the impression of street closeness.

The structure of the human eye and the human sensory apparatus are designed to perceive and process sensory impressions while moving at about 5 km/h, influencing the viewing angles on the buildings. In that manner, ground floor facades have a higher emotional impact on passers-by than the rest of the building. Ground floor facades provide an important link between buildings and people through functionally and

psychologically linking of indoors and outdoors, and it is where building and people meet, and where close encounters with buildings occur.



Figure 4. Horizontal (left) and vertical facade rhythms (center-left), closed ground floors (center- right), and the extension of ground floor as urban furniture (right)

Contents and openness of ground floors on Liberation Boulevard are directly related to the architectural program of the building, and they serve many purposes depending on the location of the building and its functions. Public activities such as looking in a display windows concentrate in places of high transparency, and many stationary activities and other opportunities for stopping occur where there are niches and openings at ground floors. Extension of some ground floors on Liberation Boulevard have welcoming design and serve as a part of public space, or in some occasions even as urban furniture. Closed ground floors are generating impersonal urban experience, whereas inviting urban environment can be reached by interesting and varied ground floors.

4. PEDESTRIAN ACTIVITIES ON SIDEWALKS OF LIBERATION BOULEVARD

Boulevard is primarily a social concept because it is made out of people, urban life, and public contents, and therefore it is a kind of 'civic legitimacy of the city' [8]. To make full use of public spaces of the city possible, it is essential that they meet certain preconditions in order to be appropriated by people and their activities. Streets are old as civilization, and more than any other human artefact, have some to symbolize public life, with all its human contact, conflict and tolerance [9]. The XX century has introduced separation of pedestrian movement from traffic streets creating confusion between automobile and pedestrian city scale, resulting that the most of the streets and boulevards lack in clear structure and identity needed by people. On the other hand, street sidewalks are intended for the movement of pedestrians and easy access to buildings, and as such are frequently not identified as part of public life. Kevin Lynch defines streets as paths, concluding that 'concentration of special use or activity along a street may give it prominence in the minds of observers' [10]. Therefore, sidewalks are the most important fragments of life in the city, which needs to provide conditions for the basic activities such as walking, standing, and sitting.

Character of residential and commercial buildings and their ground floors is making enormous influence on public activities on sidewalks (Fig. 5). Buildings with more than

one basic function are ensuring the presence of people in public places of sidewalks at different times. Besides numerous cafes and restaurants, which are often interconnecting inside spaces of buildings with outside spaces of the city, most of buildings with commercial contents in ground floors have closed facades without any relation with activities on sidewalks. On the other hand, residential buildings have many walkways and passages connecting the interior of the urban blocks with Boulevard, and spacious green areas in front equipped with benches. The majority of street blocks of Liberation Boulevard are short with frequent crossroads, and providing opportunities for changing the direction of pedestrian movement. Street dynamics is achieved through a large concentration of people on sidewalks, including the local population, regardless of the reasons for their presence.



Figure 5. Influence of residential and commercial buildings and their ground floors character on public activities on sidewalks

Jan Gehl introduces a concept of 'life between buildings' which includes all of the very different activities people engage in when they use common city space: purposeful walks from place to place, promenades, short stops, longer stays, window shopping, conversations and meetings, exercise, dancing, recreation, street trade, children's play, begging and street entertainment [11]. If conditions for pedestrians are improved, the extent of walking and social activities increases significantly, and pedestrian traffic and public city life strengthen. According to Jeff Speck [12], a walk has to satisfy four main conditions: it must be useful, safe, comfortable, and interesting. The physical quality of outdoor spaces is very important factor for the rate of occurrence of outdoor activities. Urban design can be used to influence the extent and character of outdoor activities by providing security, urban furniture and visual quality of space. In regard to its length, Boulevard needs to provide primary seating (benches and chairs) or secondary seating (stairways, pedestals, steps, low walls, etc.) needed for resting on the acceptable walking distances. Climate is another significant factor for the extent and character of outdoor activities, as outdoor activities are reduced if weather conditions are not favourable, imposing that the ability to function year-round requires protection from weather conditions.

5. CONCLUSIONS

Although Liberation Boulevard was built for the purpose of solving the traffic problem, the extent and nature of pedestrian activities have transformed it into main pedestrian

route of the city, and nowadays it has a strong importance in the collective memory of Novi Sad's residents. It is important to utilize the analysed elements of potential of this line element of the urban tissue, such as dense city structure, short walking distances, high degree of mixed use, active ground floors and distinguished architecture as a starting points in the creation of the modern image of the Boulevard. Connection between the quality of city space and degree of concern for the human dimension is creating better conditions for city life. Working with the human scale means providing spaces for pedestrians that take into account the possibilities and limitations dictated by the human body. Buildings' facades on the Liberation Boulevard need to respect facade lines, and set more demanding requirements for design of facades facing the street and sidewalks such are colors, variations, niches, verticality and details. Ground floors of Liberation Boulevard provide an important link between buildings and pedestrians, and need to functionally connect indoors and outdoors, and reach interaction with pedestrians through explored connection between the contents, transparency and design, and eventually establish functions that invite the public. Considering its importance as main 'artery' of the city, Liberation Boulevard lacks in some elements of urban design such are adequate parterre paving, green areas, elements of identity, and street furniture envisioned for resting. Urban design of boulevards needs to improve physical quality of outdoor spaces, in order to increase the rate of occurrence of outdoor activities. Possible directions for improvement of Liberation Boulevard's walkability and the extent of outdoor activities can be in availability of urban furniture, visual quality of facades and ground floors, and protection from weather conditions.

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УТИЦАЈ СТРУКТУРЕ И ИДЕНТИТЕТА БУЛЕВАРА ОСЛОБОЂЕЊА НА ПЕШАЧКЕ АКТИВНОСТИ

Резиме: Промене које су диктирале развој урбане структуре Новог Сада током различитих историјских периода, могу се идентификовати кроз анализу уличне мреже. Најзначајније трансформације урбане матрице града реализоване су под утицајем промене у начину размишљања у послератној ери 20. века и довеле су до радикалних промена у друштву, али и креирања савремене слике града. Експанзија аутомобилског саобраћаја у граду изазвала је развој булевара који су повезивали нове урбане целине, а велике промене уличне мреже формирале су урбани идентитет града који је и данас препознатљив. Током 1960-их година долази до прогресивног развоја града и изградње Булевара Ослобођења – најистакнутије и најфреквентније градске саобраћајнице која је изменила до тада познату слику града. Булевар повезује железничку станицу са Мостом Слободе, и саграђен је у циљу решавања проблема повећане активности моторних возила на саобраћајницама града. Својим положајем у градској планиметрији постао је главна саобраћајна комуникација Новог Сада, али и својеврсна граница између источног/старог и западног/новог дела града. Данашња постојаност показује значај овог булевара, као и како се потенцијал овог линијског елемента градског ткива може искористити за повезивање и умрежавање града. У раду се анализира Булевар Ослобођења, чијом је изградњом урбаном ткивом Новог Сада подвргнуто великим морфолошким и идентитетским трансформацијама. Морфолошка структура, физиономија и карактер булевара креирају везу са јавним активностима и услове за концентрисане активности пешака. У раду се истражују визуелно-амбијенталне целине булевара, садржаји приземља који су ка њему оријентисани, интеракција слободних приземља архитектонских објеката и њихових фасада са пешацима, као и обим и природа пешачких активности на булевару. Циљ студије је да истражи како булевар изграђен 60-их година прошлог века функционише данас, и како су главне градске саобраћајнице прилагођене пешачкој комуникацији и данашњим потребама грађана Новог Сада.

Кључне речи: Булевар Ослобођења, Нови Сад, јавни простор, пешачке активности