

Citizen as the user, creator and a dimension of open public space: The case study of Independence Square and Freedom Street in Podgorica

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Abstract

This paper examines the relation between open public spaces and citizens on the example of the historical core of Podgorica, Mirko's town. The main goal is to identify the mutual influence of citizens and development on public open spaces. The spatial structure in the historical context of the chosen location was analyzed with an emphasis on the impact of public urban space on the quality of interpersonal relations. The hypothesis to be set refers to the direct impact of the urban space on the quality of interpersonal relations. Indirect goal of the paper is to explore possibilities and needs of a citizen in relation to the open public space and to emphasize the development direction of the open public space, which must remain open to constant changes, where each of its users should participate together with the planners. The results of the survey indicate a negative trend of traffic, inadequate architectural treatment of buildings the design of which is subordinate to the needs of fast economic profit, as well as problematic compositional aspects of public spaces that do not contribute to the development of social relations and healthy - active way of life.

Keywords: Public open space, Independence Square, Freedom Street, Social relations, Healthy city, Sustainable city

1. Introduction

When dealing with settlement issues, the main reason for their creation is being neglected, “human happiness, happiness a man discovers in balance between himself and other elements of his settlement” (Doxiadis, 1982, p. 23). Experience proves that in the past cities were created in line with the needs of population, aligned with their possibilities and their senses. That is why designing cities is highly influenced by human behaviour and the way they operate. It can be stated that a man should become a city dimension and a city need, rather than any other factor, no matter how important and inevitable it might seem. “What is most important is to recognize it is not the buildings that should be gathered around, but people and events” (Gehl, 2010, p. 81). Sitte (2006) even noticed that public space design has gone the wrong direction, by observing and studying squares, their architecture, historical development, their relations, as well as the way they have been used. He also noticed that contemporary planning of open public space is not following the basic principles which proved to be of an exceptional quality with spontaneously created medieval towns (Sitte, 2006). Due to the fact that construction all over the world has the same principles, neglecting local space values, spirit of the place and the users themselves, their abilities and possibilities, this research is about the space-user relation which is highly ignored today. Relation space-user was a basis for city development in the past and should be a basis for their development in the future. Strategic environmental impact assessments, SIA¹ are conducted in all the developed countries in the field of urbanism and space planning. “It is about an iterative process of prediction, analysing, managing and monitoring the consequences of planned spatial and urban planning interventions, i.e. an impact on social development which helps decisions making when it comes to carrying out planned actions” (Milojkić, 2012, p. 208). In her paper related to the impact assessment of social development in urban and spatial planning, Milojkić states that efficient implementation of SIA in the field of urban and space planning in developing countries, such as Montenegro, is of a great importance. Same author (Milojkić, 2012) warns that developing countries need “the efficient mechanisms of social development protection against the negative impact of the development and other projects in space. Transition rarely favours social goals over the economic goals, and social regression is the usual companion of particular transitional periods (Lakićević, 2001)”.The paper analyses the central public space, Freedom Street and Independence Square, its

¹ SIA - Strategic environmental impact assessment

physical structure, historical development, traffic and impact of this kind of space on the options and behaviour of its users, as well as on their personal experience of the space itself.

2. Relations between public open space and users

As long as the human body, its possibilities and needs are respected, pleasant, healthy, sustainable and simple urban units will be designed, and staying in them would be a pleasure. Gehl writes that “forming cities for people should start from human mobility and human senses, because they are a biological base for activity, behaviour and communication in a city space” (Gehl, 2016, p. 33). This assertion also implies an important role of the visual perception which helps us perceive and experience space. Social visual field (fig. 1) is one of the most important aspects of urban planning and urban design.



Fig. 1. Devastation of Podgorica after IIWW (1944). Source: Uspomene Stare Podgorice”.

The border of that area is one hundred meters because at that distance movement can be noticed. Distance of twenty meters is also important because at this distance one can recognize emotions and facial expressions. The dimensions of most European squares are in direct relation with the social visual field. Their size, regardless of the form, rarely goes over one hundred meters at any direction. Since our eyes are limited horizontally, one can clearly see 70° to 80° below the horizon and only 50° to 55° above it (fig. 2).

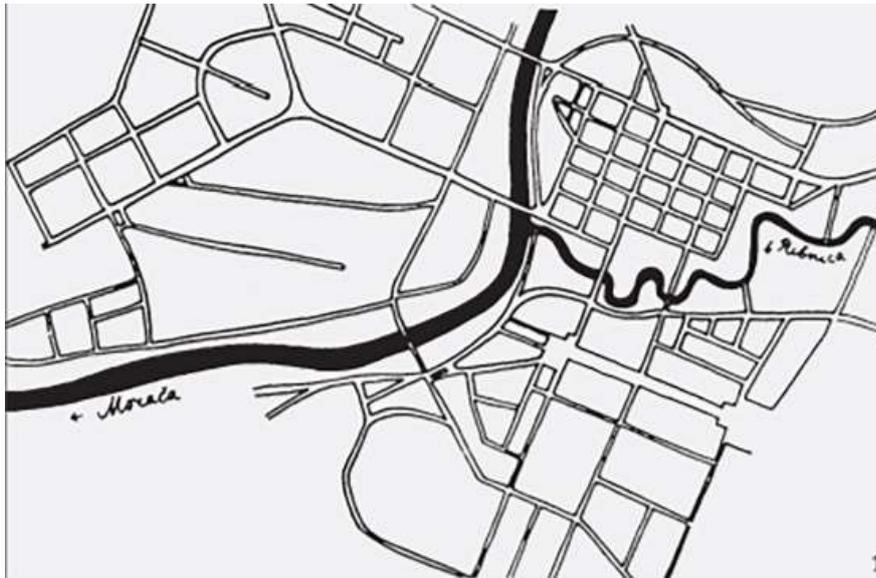


Fig. 2. Vorman's plan for Mirkova Varoš 1886. Source : Popović, Lipovac , & Vlahović, 2016, p. 67.

This implies that in a city landscape people notice higher buildings from a distance only, and not from vicinity. Quality of life in these multi-storey buildings is good at the first and the second floor, somewhat worse on the third, fourth and fifth, while from all of the higher floors people are not able to follow and observe city life, they cannot notice speech, shouting or body movements. Adapting to movement speed is another limitation of visual perception. Our sight is intended for the movement of five km/h, which is the average speed of walking. At that speed, one may perceive the environment through which he moves, and has the possibility to pay attention to details. Possibilities of noticing and observing in today's environment are highly limited because people mainly move through cities in cars at the speed of 50–80–100 km/h. This is why architecture in spaces which are adapted to fast moving, seem poor and provide an uninteresting and tiring experience (Gehl, 2016). Cullen (Cullen, 2007, p. 65) explains the importance and seriousness of complexity as an architectural expression and a characteristic of the urban structure stating that “the quality of complexity occupies the eye”. It is clear how cities' areas have lost on their quality due to the increased speed of human movement and increased dimensions when planning a city. As expected, in the modern times, more and more roads are being constructed, favouring the role of cars in a city life. Also, bikers and pedestrians are being neglected primarily due to the fact that urban planners and traffic engineers do not recognize them as an important user category when designing roads. If the number of roads would go down, so would the number of cars. However, modern traffic planning is supposed to provide a more significant balance between different modes of transport, in which pedestrians should be given priority where there is combined traffic. That is the reason why an experiment *Woonerf* was conducted in Holland based on the street of play concept, with reduced intensity of traffic and with the emphasis on

social activities. The fact that 800 similar interventions now exist in Holland, proves the success of the experiment itself (Royal Dutch Touring Association, 1978). “Good transportation and communication are not only among the most difficult things to achieve, they are also basic necessities” (Jacobs, 1961, str. 339). Studies of public life in public space in 1968, 1986 and 1995, mentioned by Gehl (Gehl, 2016, p. 46) in his book “Cities for People”, shows that the level of activity in public space increased four times within the observed period in Copenhagen, because “the more space there is, the more lively the city will be”.

Mark Francis noticed that the way “people perceive a space may contribute to their use or lack of use of the place” (Francis, 1987, str. 90-91). The edges of a city appear as a serious topic in the approaches and discussion of a city, limiting visual field and defining each individual space. Border zones occur as a space of exchange and contacts, a public space designated by zones for sojourn, whether for sitting or standing. These spaces should include some of the following elements: personal rhythm, interesting events, narrow buildings, multiple doors and vertical relief on facades. The informal spaces are also of importance, states Francis (1987), such as buildings corners, bus stations, staircases of public buildings, etc. Those are the places for people gatherings and interventions should make them more pleasant for socialization. Studies on open public spaces of Copenhagen from 2003 indicate there is a significant tendency for pedestrians to slow down and turn their heads towards the front of the open and active facades, as well as to often stop in front of them. On the other side, pace tends to increase in front of the closed facades, people rarely turn their heads towards them and rarely stop (Gehl, 2016). Ralf Erskin noticed something similar, when he said: “If the complex is interesting and exciting at the height of the eye, the entire area will be interesting. So, try to make the edge zone attractive and rich in details and do not bother much about the higher floors which are less important, both functionally and visually.”² We can conclude that mild edges are crucial for the development of live cities. In order for such a city to function well, it must exude safety and security for its users. One way to achieve the sense of safety is to increase traffic safety and eliminate crime in the city. To feel safe one must have control over the events influencing them. Therefore, Gehl concludes that “the connection between distance, intensity, proximity and warmth in different types of communication has an interesting parallel in the decoding and perceiving of cities and city space” (Gehl, 2016, p. 51). This means that in smaller spaces we have more intense, warmer and more hospitable experiences, than in the cities and urban complexes that are oversized and have a small number of users. This implies the importance of taking care of mutual relations in the art of space (Sitte, 2006). One way to achieve such relation is to

² Jan Gehl, conversation with Ralph Erskine

empower city life in a way that will increase a sense of security through the presence of other people. Use of public spaces by children is greatly defined by inadequate traffic speed in settlements (Perez & Hart, 1980). On the site itself, safety is achieved by designing pleasant and mild parterre, illuminated and open spaces and buildings. One should not forget that mild edges provide security, but also good spatial disposition that makes it easy to orientate in space. Oskar Newman (1972) contributes to this topic in his work on *defensible space* where he points to a strong link between a clearly defined territory of affiliation and security. He gives a convincing argument for consistent work with clear hierarchies in city planning in order to "enhance real and perceived security" (Newman, 1972). He adds to that, as a significant point, the transition between public and private spaces, actually its mitigation by construction of half-private / half-public spaces. Mumford (2010) also notices that an architect may indirectly contribute to town safety, claiming that half of the antisocial symptoms emerging in new cities were not special signs of inner wickedness, but a blind reaction to the environment (Mumford, 2010). That is why the social sustainability aspect is highly important, added up by history of society and space, as well as the space name itself (Lynch, 1960). Bazik (1995) emphasizes that: "The space without users and activities does not fulfil the essence of its existence. It gets a hallmark of a quality urban ambient only through a contribution to the everyday life of citizens" (Bazik, 1995, p. 1). A common problem of the modern public space is disconnection between characteristics of user groups and space development. Teenagers and elderly people are the most common and numerous users of public space, but have their needs often ignored (Francis, 1987). Local residents need to get involved not only in city life, but also in the creation of the city. This way they will get a sense of social belonging (Madanipour, 2004). Citizen involvement in creating a space will later on trigger a sentiment towards the space, as well as increase its significance, what represents an important dimension of urban quality (Kaplan, 1980; Appleyard, 1979).

According to one other, more famous understanding of sustainability, a city should be a natural system maximising clean air, quality of water and health of citizens (Hough, 1984; Sprin, 1984). Interest in the construction of sustainable cities was induced by a number of factors: fossil fuel extraction, pollution escalation, carbon dioxide emissions and endangering climate conditions. Therefore, stimulating walking and cycling is a way towards building a sustainable city, reducing exploitation of the mentioned resources and contributing to environment preservation, reducing at the same time space needed for daily traffic. "Sun and wind play a critical role in determining people's sense of comfort outdoors. Sun and wind both influence how warm or cold people feel, and winds, when too strong, can be a source of annoyance, and even physical harm" (Bosselmann, et al., 1984, p. 10). Therefore, introducing intensive bicycle traffic and public

transportation in comparison to car traffic, location, form and size of the city structure play a huge role in the* space quality. Many researchers* today deal with defining sustainable city aspects, the manner of their implementation, their causes and consequences (Doust, 2014; Gibberd, 2017; Russo & Comi, 2012; Zhou, 2012; Oktay, 2012).

Healthy cities are imposed as a necessity of modern life. This goal should be dominant when considering designing new cities. A healthy city determinant insists on the health aspect, everyday physical activities being significantly reduced, resulting in higher healthcare costs and shorter life expectancy. Laurie (1978) warns that overdesigning and overplanning of public spaces disables changes which users need over time. That is why planners must know the limits and be prepared to return constantly and work on the changes required by the space as well as by users.

2.1. Historical development of the research site

The construction of Mirko's Town was initiated by the Regulation of Prince Nikola from 1886 (Ivanović, 1979). Its project was developed by the engineer Vorman in 1886, under the name of Mirko's Town (fig. 3).



“Basic conception of the Vorman’s plan was that in the middle part of the city would be a quadrangular square of 1ha, and the left space be divided into five straight wide streets in the direction of N-S and seven in the direction of E-W. The area of building took approximately 60ha of land. It should accommodate 10000 inhabitants” (Ivanović, 1979, p. 82). In the photo collection of Rade Ljumović (2001) can be seen that buildings were predominantly of low height. Residential buildings have had either one or two floors, while public buildings and hotels went to up to four floors in height. Following the Second World War, Podgorica

was almost completely devastated (fig. 4), with the settlement of the Old Town on the left side of the mouth of Ribnica river being preserved (Ivanović, 2013) together with a few buildings on the right side of Ribnica.



Figure 4 – Field of vision, Source - (Gehl, Cities for People, 2016, p. 34)

Further planning influencing the development of Podgorica in 20th century was under the impact of Socialist realism (Ašanin , 2016). Nedučin researched Yugoslavian Socialism in architecture stating that several factors impacted first post-war plans: political, ideological, social, military, etc. “whose purpose was to demonstrate superiority of Socialism over Capitalism (Kostinskiy, 2011) or a commitment of the state to the society and to achieving social equality (Crowley & Reid, 2002), so the transformation of city environment* was embedded with ideology”. Further development of the city continues by adopting several plans at the beginning of 1950s (fig. 5). These plans proposed city expansion at the right side of Morača River. Markuš notices that nowadays the city is developing neglecting natural characteristics in particular potential of rivers and hills, spreading almost completely “two-dimensionally through the visual domination of the landscape” (Markuš, 2001, pp. 16-17). The fact that no plan was completely finalized explains misbalance and damage to the urban form. Settlements emerging in recent years are a personification of the *profitable architecture* trend, which assumes economic profit as the basic human need, causing severe consequences in urban tissue of the city, resulting in inhuman life conditions. A good example of this architecture is a city block called *City kvart*, built near the biggest shopping mall in Podgorica. These negative trends are present in all fields of architecture and urbanism and in that way they negatively affect proper development of man as a social being.

3. Methods

The analysis are based on the four main data sources, which will be combined: the official statistics conducted within Montenegro (Kalđerović, et al., 2014; Monstat, 2011), a survey conducted by the NGO Biciklo.me, a systematic observation of the area of the Freedom Street and the Independence Square as a case study and the results of the survey conducted by the author of the paper in Podgorica.

Official statistical data is related to the research carried out by the Statistical Office of Montenegro (2011). These are the latest official surveys conducted in 2011. They include the entire Montenegro, with a partial separation by municipalities. This data is published in the two publications, Traffic and Connections in Montenegro (Monstat, 2011), and Population Projections of Montenegro until 2060 with a Structural Analysis of the Population of Montenegro (Kalđerović, et al., 2014). The non-government organization Biciklo.me (Biciklo.me, 2018) surveyed 1405 citizens, on what determined the percentage value of bicycles being used, causes making it difficult to use a bicycle and the biggest traffic issues in Podgorica. Systematic observation was carried out at the research subject location and it is related to measurement of time intervals for different user movements, mapping of existing buildings and roads, and analysing their impact on movement and ways of perceiving space. The research was supplemented by a survey conducted amongst of 245 citizens of Podgorica. The survey is summarized and includes questions related to the behaviour and movement of citizens and their personal experience of the observed area.

4.Results

The location of the research is at Mirko's (New) Town and covers the Freedom street and the Independence Square (fig.6). The Freedom Street (fig. 7) begins, on the South of the St. Petar Cetinjski Boulevard and ends with Ivana Crnojevića Boulevard on the North. It is 485 meters long and 18 meters wide with vehicle, bicycle and pedestrian traffic.



Fig. 6. Location of the study Fig. 7. Freedom Street about 1970. Source: "Uspomene stare Podgorice"

It has vehicle-pedestrian character throughout the day, except during the period from 05pm to 06am when it turns into a pedestrian zone. Four streets cross the Freedom Street, from the south to the north, Karađorđeva, Novaka Miloševa, Miljana Vukova and Hercegovačka Street. All of these streets are opened for vehicles all day long, except for a part of the Hercegovačka Street which is pedestrian only. Driveway of the Freedom Street consists of two lanes, three and a half meters wide, and a sidewalk on both sides five and a half meters wide. The cycling traffic is regularly carried out on the vehicle lines, along the edge of the sidewalk. Buildings located along the Freedom Street are public, residential and business (Markuš, 2008). Public buildings are the Post Office at its very beginning, with three floors and the Supreme Prosecutor's Office, with high ground floor and four floors above. There are twenty one business buildings, and eleven multi-story buildings, while the rest are ground-floor buildings. The remaining ten buildings are residential with business premises on the ground floor, they have three to fourteen floors (fig. 8). In the ground floor of all buildings, besides public institutions, there are business premises, shops, cafes, bakeries, administrative companies, etc. (fig. 9).

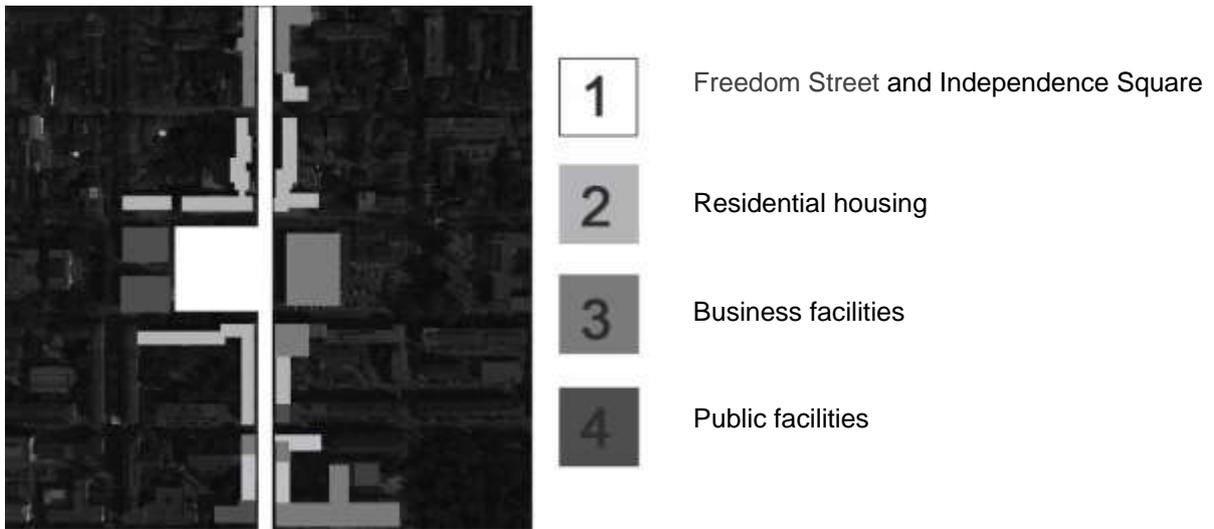


Fig.8. Freedom Street and Independence Square. Source:Google Earth photography and author design.



Fig. 9. Freedom Street, 2018.

The Independence Square (fig. 10), located along the middle part of the Freedom Street, occupying one block of Vorman's urban design, is a simple regular geometric square (Krier, 1991). Until the Second World War, the dominant function of the Square was market. During a long period of socialist reconstruction, the Square served as a car parking lot (fig. 11) and as a location for occasionally organised cultural events and rare political meetings.



Fig. 10. Independence Square.

Source : <http://www.rtcg.me/vijesti/drustvo/122026/trg-republike-bice-trg-nezavisnosti.html>



Fig. 11. Parking for cars on the square in the center of Podgorica, around 1980. Source: "Uspomene stare Podgorice

It was named after a distinguished communist Ivan Milutinović, until February 2004, when the Square was renamed to the Republic Square, when the reconstruction started after the referendum in 2006 and it was completed within the same year. Twelve years later it changed its name again to Independence Square and the monument of Duke Mirko Petrović was reinstalled (fig. 12). The square covers approximately 12,000 square meters, and if we consider the total space together with streets it makes a square with approximately the same edges of nearly 110 meters. The central rectangular part of the square, which is four stairs lower, has dimensions of sixty by forty meters, with a ratio of 1.5:1 (fig. 13).



Fig. 12. Return of the monument dedicated to Duke Mirko Petrović, 2018. Source:

<https://www.slobodnaevropa.org/a/podgorica-cetinje-crna-gora-mirko-petrovic-spomenik/28491250.html>

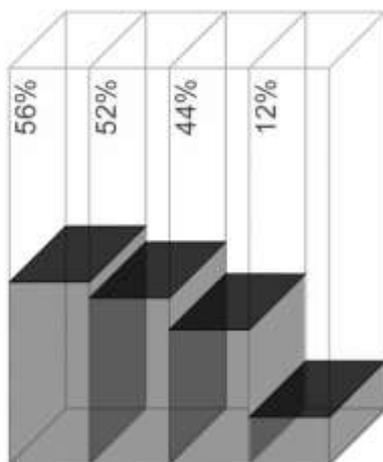


Fig. 13. Square "Trg nezavisnosti", inner and external square,

Source - Google Earth photography and author design

The ratio of square width, 110 meters, and height of buildings, twenty meters, is 5.5:1. The buildings along the square are, on the east side, public buildings, that is city parliament building with four floors and city library "Radosav Ljumović" with three floors. On the south side there are two residential buildings with business premises on the ground floor, and on the west side, along the Freedom Street, there is the Beko shopping centre. On the north there are three residential buildings that have business premises on the ground floor, two to five floors high. One five floors high residential building located on the north side makes a large part of the northern facade of the square. At the center of the square there is a circularly shaped fountain, with eleven meters diameter, and two colonnades along the south and north side of the square. The spatial composition of the square is created by the disposition of greenery located along the edge of the inner square from the north and south which serves as a buffer zone between the benches facing the center of the square and the colonnades which are the transition to a wider, busier part of the square. The paving of the narrower square is done in two-tone diagonal modular grid system.

In the survey conducted by NGO Biciklo.me (2018) the majority of respondents stated that the main reasons for reduced the use of bicycles as a means of transport, are risks of the bicycle being stolen, intensity of vehicle traffic, insufficiently developed bicycle infrastructure and ultimately insufficient visibility of cyclists as participants in the traffic and as well as local climate (Graph. 1).



56%- indicated the risk of the bicycle being stolen,

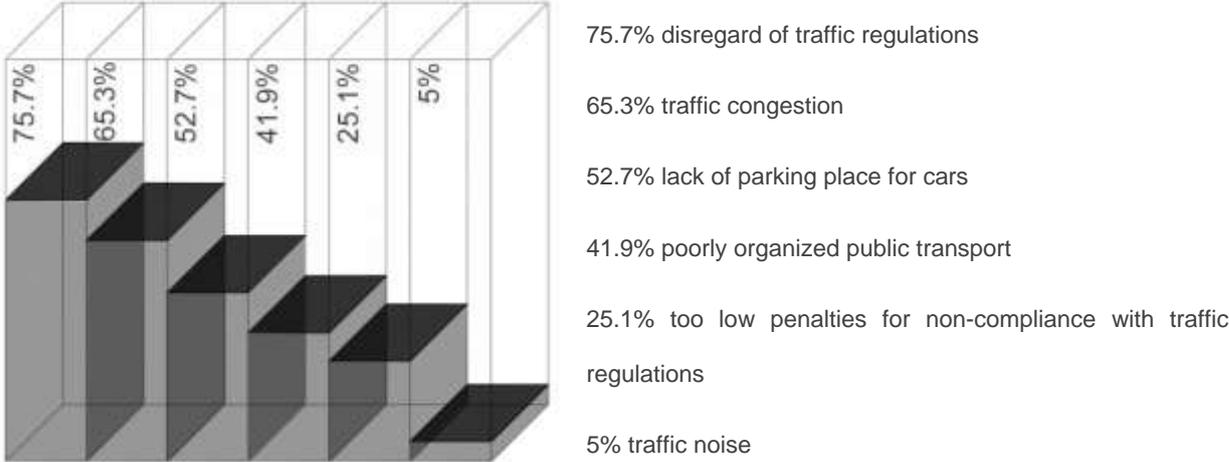
52%- intensity of motorized traffic and the insufficiently developed bicycle infrastructure

44% -insufficient visibility of cyclists as participants in the traffic

12%- local climate

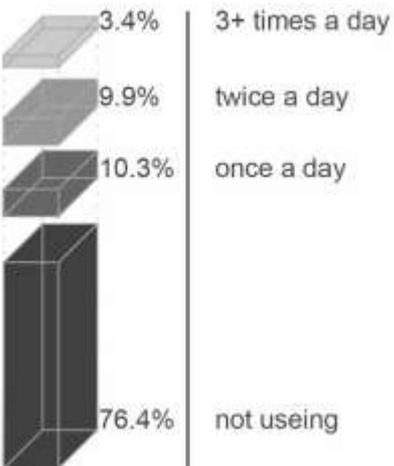
Graph. 1. The cause of reduced use of bicycles as a means of transport . Source: Biciklo.me, 2018.

According to citizens, the biggest issues in Podgorica are lack of respect of traffic regulations, traffic congestion, lack of parking place for cars, poorly organized public transport, low fines for non-compliance with traffic regulations and traffic noise (Graph. 2) (Biciklo.me, 2018).

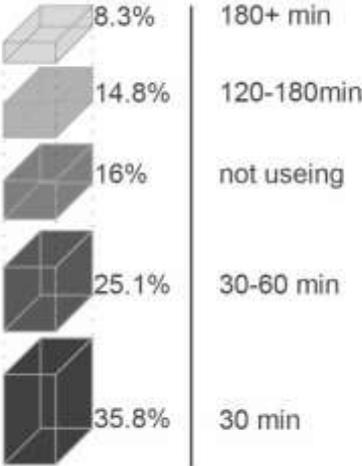


Graph. 2. The biggest traffic issues in Podgorica

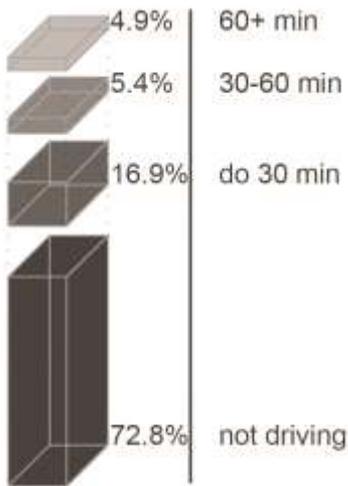
Based on a survey of 245 citizens of Podgorica, out of which 62% women and 38% men, the daily movement of people and their attitude about the area of a case study, the Freedom street and the Independence Square, were analysed. Graphics show how often the respondents use public transport in the city (Graph 3), how often they use car as means of transport (Graph. 4), how much they use bicycles (Graph. 5), how often they walk (Graph. 6) and how much time per day do they spend in a seated position (Graph. 7) or doing physical activities (Graphic 8).



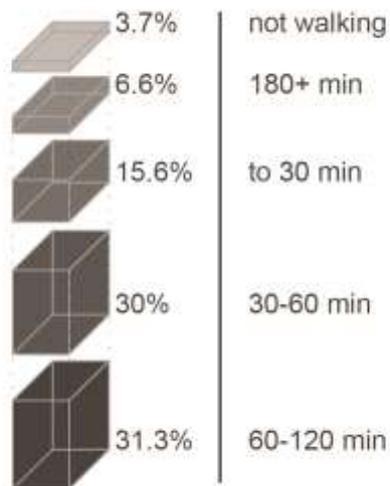
Graph. 3. How often do the respondents use public transport in the city(Authore survey).



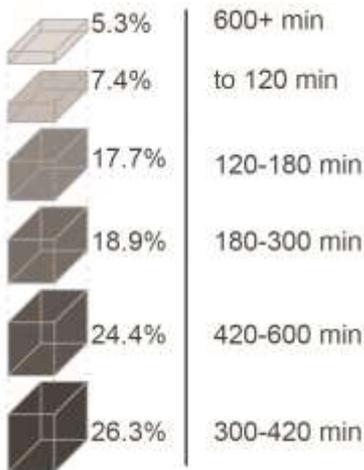
Graph.4. How often do the respondents use the car as a mean of transport



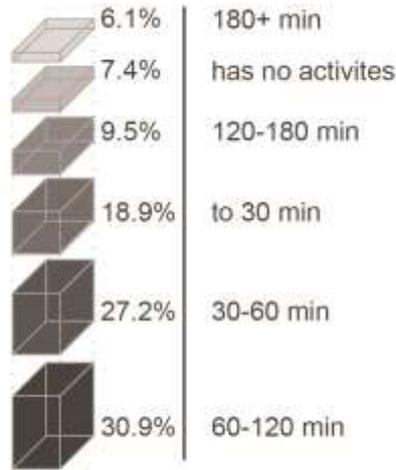
Graph. 5. How much do the respondents use bicycles



Graph. 6. How often do the respondents walk

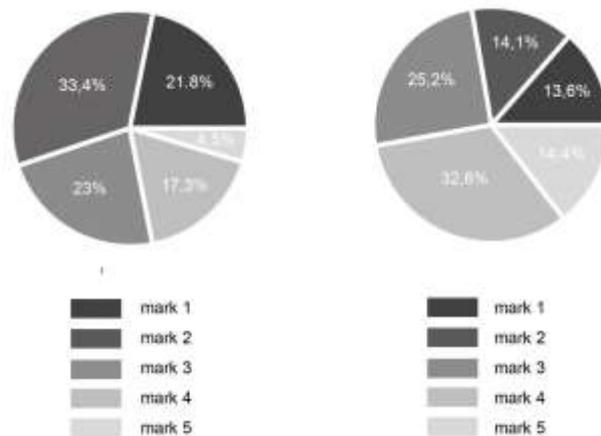


Graph. 7. How much time per day do the respondents spend in a seated position



Graph. 8. How much time per day do the respondents spend doing physical activities

In the period from 2005 to 2010 the number of registered cars in Montenegro increased by 27.7%. In 2005 there was 118,930 vehicles, and in 2010 it increased to 164,653 vehicles (Monstat, 2011). Based on this data, the conclusion is that in 2010 there is one vehicle per every 3.7 inhabitants in Montenegro. This number has increased significantly to this day. The graphs show the results of personal feelings of the respondents regarding the entertainment (graph 9) and safety (graph 10) within the research area, on a scale one to five.



Grp.9, 10. Subjective feelings of the respondents on a scale of one to five in terms of entertainment of Freedom Street and Independence Square.

A research conducted by the Statistical office of Montenegro in 2011, on the average life expectancy, by live birth per gender, for men from the central region of the state, where Podgorica is situated, is 73.2 years of age and 78.8 years of age for women (Kaluđerović, et al., 2014). When asked what could be done in this area in order to increase and improve life in it, the most common response was that there should be more greenery and that abandoned and poorly treated spaces, both open and closed, should be reconstructed. Some believe that entertainment and educational programs should be improved, older buildings should be embellished by murals, and the Freedom Street should be completely closed for traffic and lift the Square to the level of the Freedom Street. On the other hand, there were respondents who believe that this area is so damaged that there is nothing that could be done to improve life quality. 86.8% respondents consider that with adequate urban and architectural interventions this space can be improved, 8.3% are not sure, and 5% think that this is impossible. Based on the successive observation of the fifty users of this space, measuring time in relation to the transition meters during movement in this area, it is concluded that the average user of this space is moving 0,73 m/s.

5. Discussion

Analyses confirmed that there is an impact of urban and architectural space context on its use and establishment of the social relations. Consequences of this kind of influence can be recognized based on the analyses of the Freedom Street and the Independence Square, and its spatial context, personal opinions and feelings for this space, which are not necessarily negative. Social sustainability in this space is surrounded with frames of physical structures, horizontal and vertical dimensions of the surrounding

buildings, traffic and profit which do not match citizens' needs, nor needs of different social groups, users of the space. Historical development of Mirko's Town, i.e. the Freedom Street and the Independence Square play an important role in trying to understand the current situation. After the destruction during bombings in the Second World War, the city continues to be renewed without the need to build its new morphological character in correlation with the historical form, developed in accordance with neoclassical, western patterns of the orthogonal block system, in a harmonious scale, with objects of man-made dimension, adapted to the widths of the roads of that time, and with active public spaces supported by daily trading activities. Specificity of post-war reconstruction, which continued to take place mainly according to the principles of modern, functionalist urbanism, was the construction on old foundations, which is the construction within the horizontal dimensions of historical urban tissue. However, instead of harmonious, series of ground floor buildings along the Freedom Street and the Independence square, multi-storied buildings were built, and due to the constant increase of car traffic, the central market is turned into a parking lot, which clearly implies the change of priorities in construction. People are being put behind the technological progress. Remains of the* old Podgorica, meaningful buildings that survived the war, are mainly being replaced by new, more modern buildings which made historical memory and sentimental connection between citizens and space fall into oblivion. Loss of this kind of connection quickly disappeared by the occurrence of nowadays profitable architecture, which does not take the value of the historical space nor needs of users into consideration. Changing the name of the square from "Ivan Milutinović" to Republic Square, then to the current name of Independence square and the reconstruction of the monument Mirko Petrović, represents the political situation in Montenegro. These changes made a direct impact on the connection between the user and the space. During the time, involvement of local residents in creation and development of this opened public space decreased, which explains its lower urban value.

A scientific article called *Are Public Open Space Attributes Associated with Walking and Depression?* (Koohsari, et al., 2018) connects mental health with the quality of public open space. It is common that "neighbourhoods with higher quality POS³ reported lower levels of psychosocial distress compared to those who lived in neighbourhoods with lower quality POS" (Koohsari, et al., 2018, p. 121). One of the causes of this influence is that American and British standards used for planning of public spaces in Australia did not consider Australian context. The same problem occurs in Podgorica, it is building according to standards which neglect characteristics and needs of its users. Recreational bike use throughout the day in the

³ POS- Public Open Space

Freedom Street is significantly disturbed by active traffic, and is closed for traffic only from 5pm to 6am. Recreation is further interfered by four streets that are crossing Freedom Street, with constantly active traffic, currently being an evening pedestrian zone (fig. 14).

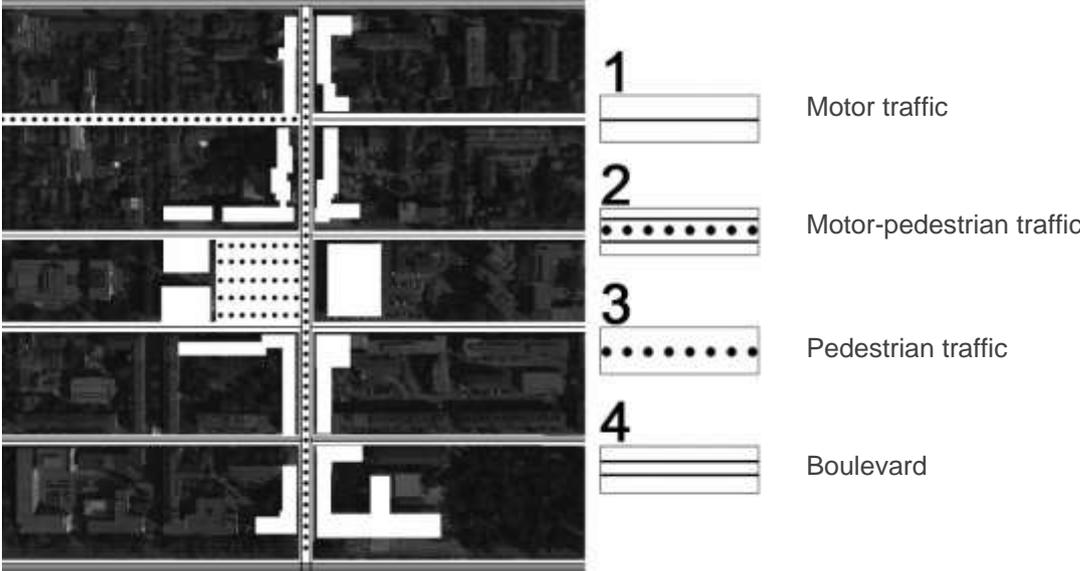


Fig. 14. Traffic.

All this justifies the need to close this street for vehicle traffic, which, increased 27.7% in 2010 according to the Monstat research, and inevitably continues to grow until today. Respondents complained of non-compliance with traffic regulations, traffic congestion and lack of parking place for cars as the biggest issues of traffic in Podgorica. The safety of cyclists in this area is threatened by an inadequately designed bicycle track, which is just a part of a road marked with traffic signs for bicycles. The majority of respondents identified risk of bicycle being stolen, intensity of traffic and insufficiently developed bicycle infrastructure as the main reasons for reduced use of bicycles as a mean of transport. The result of the study indicates how big the problem actually is, as it shows that 72.8% respondents do not even ride a bike. In addition to the fact that the respondents are not active cyclists, the result indicates that in general physical activities are not at an adequate level, even majority of the respondents spends five to ten hours a day in sitting position, and up to an hour in the car. Table 1 presents how this reflects on citizen's health (Kaluđerović, et al., 2014), showing decrease of population by age groups. Influence of facades on the ground floors of the buildings along the Freedom Street, which mainly consists of business premises and administrative centres, is derived from movement of a user, which is 0.73 m/s.

		Large age groups			
		0-19	20-39	40-59	60+
1991	In total	33.9	31.2	22.0	12.9
	Men	34.9	32.6	21.4	11.1
	Woman	32.8	29.9	22.5	14.7
2003	In total	28.8	28.8	25.6	17.7
	Men	30.1	29.2	25.6	15.8
	Woman	27.4	28.4	25.5	19.6
2011	In total	26.3	28.2	27.2	18.3
	Men	27.6	28.8	27.4	16.2
	Woman	25.0	27.7	27.0	20.4

Table 1. The population of Montenegro by large age groups 1991-2012 (%). Source: Kaluđerović, et al., 2014, p. 53.

Having in mind that the average speed of a man is 0.83 m/s, this indicates a slower movement caused by stopping in front of the shop windows, as well as by the tradition of evening walks in the city center. Shop windows in the Freedom Street, whose number is decreasing, represent half-open spaces creating soft spatial transition for users between the interior and exterior. Informal space, mostly mistreated and insecure for use, is also important, disabling social development of the city. Respondents also mentioned that disadvantages of this area are also facilities that are predominantly for business purposes, lack of events in the area, such as artistic performances, as well as manifestations, entertainment and educational programs. A large number of abandoned and mistreated spaces and lack of greenery were also identified as disadvantages. Most respondents said that they did not spend time at all in this part of the city, 39.5%, which is directly related to their rating of interest in this area, mostly rated with two out of five points. Sense of uninteresting space derives from its architecture which does not meet the aesthetic criteria for a public space (fig.15), disturbing the existing Vorman's urban plan, demolition of the remaining terrestrial buildings and construction of high buildings with various styles, tones, creating in that way a space without spatial vertical and horizontal equilibrium. The number of floors of buildings that are located along the Freedom

Street goes up to fourteen, preventing contact of tenants and users of the public space, due to a large distance.



Fig. 15. Buildings in the Freedom Street.

Influence of the square composition on its use is also negative. The lowered level of the inner square compared to the outside square leads to isolation of that space in relation to the surroundings, enabling easier control over users, limiting their free movement subconsciously. This is the reason why this space is mainly used by children and their parents during the day, as parents have easier control over children who will rarely get out of the set frame. The ratio of square width, 110 meters, and height of buildings, 20 meters, is 5.5:1. This is one of the flaws of the Independence square, since the observer has no sense of vertical closure, and horizontal closure is also low because the Freedom Street passes along the user's area of the square. The dimensions of the square, which are approximately 110 meters, exceed the biological potential of a man to observe. Unbalanced relations of the buildings heights leave unpleasant impression of facades, which is supplemented by an inadequate position of the new monument to Mirko Petrović, closing the vision towards the entrance to the square from the west. Another impediment of the square is the position of the fountain, which is in the centre of the space, making it difficult to organize large gatherings and manifestations. A positive characteristic of this square is the pavement which is solved by a lattice system - "spatial surfaces of large, heavily loaded squares can reduce to humane measures if dilatation joints expand and convert into modular grids" (Halprin, 1974, p. 104). From the sustainable use aspect, the composition of the researched location and the way people live there, does not meet the

requirements of a healthy city. The space built for people, in line with their needs and potentials cannot be opposed to the needs of nature. The same applies to a city which if it is created for human beings, must include an aspect of sustainability. Based on the conducted research it is concluded that the public space in the centre of Podgorica does not offer enough possibilities for the development of interpersonal relations because man's natural movement and behaviour are disturbed.

6. Conclusion

The hypothesis shows that inadequate public urban space causes degradation of interpersonal relationships. On the example of research conducted on the location of the Independence Square and the Freedom Street and the way they affect behaviour of their users, the hypothesis is confirmed. The degradation is a consequence of putting progress of technology and profit before man. The historical background in which the society and researched area developed, shows that participation of individuals in use and creation of space, as well as openness of the plan for further developments, influences urban quality and social sustainability. The result of the research shows that negligence of man's potentials and needs results in unsustainability of both the city and society. Requirements that must be met in order to achieve better quality of open public space are: sentimental significance of space, biological capabilities of a human being, human senses, the way people move and the speed of that movement that depends on traffic regulation, entertainment of space, equipment of space, sense of safety and security, and factors of natural phenomena, as sun, wind, temperature etc. For achieving sustainability of the analyzed area, in addition to a more careful relation to its historical development, it is necessary to directly engage users in its future changes, implying participatory and collaborative approach to future planning and architectural interventions.

References

- Appleyard, D. (1981). *Livable streets*. Berkeley: University of California Press.
- Ašanin, A. (2016). Ansambl zgrada na bulevaru Nemanjina obala u Titogradu, Formalne i estetske karakteristike i njihove kulturne i društvene konotacije. *Izgradnja*, 220-226.
- Bazik, D. (1995). *Scenario života u gradu - proces nastajanja gradske scenografije*. Beograd: Mozaik plus.
- Biciklo.me. (2018, May 09). *Motorna vozila iz centra Podgorice protjeralo bi 77.5% građana*. Retrieved July 08, 2018, from biciklo.me: <http://biciklo.me/motorna-vozila-iz-centra-podgorice-protjeralo-bi-77-5-gradana/>

- Bosselmann, P., et al. (1984). *Sun, Wind, and Comfort A Study of Open Spaces and Sidewalks in Four Downtown Areas*. Berkeley: IURD Monograph Series.
- Crowley, D., & Reid, S. (2002). *Socialist Spaces: Sites of Everyday Life in the Eastern Block*. New York: Berg.
- Doksijadis, K. (1982). *Čovjek i grad*. Beograd: NOLIT.
- Doust, K. (2014). Toward a typology of sustainability for cities. *Journal of Traffic and Transportation Engineering*, 1(1), 180-195.
- Francis, M. (1987) Urban Open Spaces. In Zube, E. and Moore, G. (Ed.), *Advances in Environment, Behaviour and Design* (pp. 71-106). New York: Plenum Press.
- Gehl, J. (2010). *Life Between Buildings: Using Public Space*. Belgrade: Urban Planning Institute of Belgrade.
- Gehl, J., & Gemzoe, L. (2004). *Public Spaces, Public Life of Copenhagen*. Copenhagen: Danish Architectural Press.
- Gel, J. (2016). *Grad za ljude*. Beograd: PALGO centar.
- Gibberd, J. (2017). Strengthening Sustainability Planning: The City Capability Framework. *Procedia Engineering* 198, 200-211.
- Halprin, L. (1974). *Gradovi*. Beograd: Građevinska knjiga.
- Hough, M. (1984). *City Form and Natural Process*. New Yourk: Van Nostrand Reinhold.
- Ivanović, Z. (1979). *Gradovi - komunalni centri Crne Gore*. Beograd: RO "Sava Mihić".
- Ivanović, Z. (2013). *Urban Development of Cities in Montenegro during Turkish Empire*. Nikšić: Pobjeda a.d.
- Jacobs, J. (1961). *The Death and Life of Greath American Cities*. New York: Vintage books, A Division of random House.
- Kaluđerović, J. et al. (2014). *Projekcije stanovništva Crne Gore do 2060. godine sa strukturnom analizom stanovništva Crne Gore*. Podgorica: Zavod za statistiku Crne Gore.
- Kaplan, R. (1980). Citizen participation in the design and evaluation of a park. *Environment and Behavior*, 494-507.
- Koohsari, M. J., Badland, H., Mavoa, S., Villanueva, K., Francis, J., Hooper, P., et al. (2018). Are Public Open Space Attributes Associated with Walking and Depression? *Cities*, 119-125.
- Kostinskiy, G. (2011). *Post-Socialist Cities in Flux*. U R. Paddison (Ed.), *Handbook of Urban Studies* (pp. 451-465). London: Sage Publications Ltd.
- Krier, R. (1991). *Gradski prosor u teoriji i praksi, na primjerima gradskog jezgra Štutgarta*. Subotica: Građevinska knjiga, DP "Minerva".
- Kulen, G. (2007). *Gradski pejzaž*. Beograd: Građevinska knjiga.
- Lakićević, D. M. (2001). *Socijalni razvoj i planiranje*. Beograd: FPN .
- Laurie, C. I. (1978). Overdesign is the Death of Outdoor Liveliness. *Landscape Architecture*, 68 (6)485-486.
- Ljumović, R. (2001, Januar). Detalji Stare Podgorice - Putopisna reportaza RTCG-a. (M. Radetić, Interviewer)
- Lynch, K. (1960). *The Image of the City*. Cambridge: The M.I.T. Press.
- Madanipour, A. (2004). Marginal public spaces in European cities . *Journal of Urban Design*,9 (3), 267-286.

- Mamford, L. (2010). *Kultura gradova*. Novi Sad: Mediterran publishing.
- Markuš, A. (2001). *Identitet arhitekture i ljudi*. Podgorica: Unireks.
- Milojkić, D. (2012). Social Impact Assessment in Urban and Regional Planning. *Sociologija i prostor*, 50(2), 203-222.
- Monstat. (2011). *Saobraćaj i veze u Crnoj Gori 2005-2010*. Podgorica: Zavod za statistiku Crne Gore.
- Nedučin, D. (2014). *Postsocijalistički grad - promena društvene i prostorne strukture Novog Sada u periodu tranzicije*. Novi Sad: Autorski reprint.
- Newman, O. (1972). *Defensive Space, Crime Prevention through Environmental Design*. New York.
- Oktaý, D. (2012). Human Sustainable Urbanism: In Pursuit of Ecological and Social-Cultural Sustainability. *Procedia - Social and Behavioral Sciences* 36 , 16-27.
- Perez, C., & Hart, R. (1980). Beyond Playgrounds: Children's accessibility to the landscape. In P. Wilkinson (Ed.), *Innovation in Play Environments*. New York: St. Martin's Press.
- Royal Dutch Touring Association. (1978). Woonerf: Residential precinct. *Eklistics*, 417-423.
- Russo, F., & Comi, A. (2012). City Characteristics and Urban Goods Movements: A Way to Environmental Transportation System in a Sustainable City. *Procedia - Social and Behavioral Sciences* 39 , 61-73.
- Ruster. (2014). *Podgorica Mirkova Varos 1940*. Retrieved septembar 2018, from youtube: <https://www.youtube.com/watch?v=cHWD-zOz55Y>
- Spirn, A. W. (1984). *The Granite garden: Urban nature and human design*. New York: Basic Books.
- Zhou, J. (2012). Sustainable Transportation in the US: A Review of Proposals, Policies and Programs Since 2000. *Frontiers od Architecture Research*, 150-165.
- Zite, K. (2006). *Umjetničko oblikovanje gradova*. Beograd: Građevinska knjiga.