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Visual Perception of Public Open Spaces in Niksic

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Abstract

The typical representatives of public open spaces in Niksic are analyzed in this paper from the perspective of the subjective visual perception. The research is based on empirical analysis and the semantic differential method. The aim of this paper is to form an objective criterion for the design of desirable public open spaces of the city in the 21st century, based on the subjective assessment of the space through observing twelve photographs of typical visual resources of Niksic, with emphasis on the visual and aesthetic dimension. Research results point out that poly functional, dynamic, associative, homogeneous, inclusive, authentic spaces with lots of natural elements achieve desired visual effect on users. It has been concluded that it is necessary to revitalize certain public open spaces of Niksic as the primary visual resource of the city.

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1. Introduction

Visual perception, from the aspect of subjective presentation of objective reality, is an important component in the process of research and development of the physical structure of the modern city. At the same time, the physical structure of the city implies "a complex set of built elements, space and ambience, units and assemblies, which jointed and connected in an integrated urban system, create the ambience

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and the environment for complex processing of urban life" (Radovic, 2003). Modern needs and possibilities indicate the importance of the subjective visual considerations of the environment. Visual resources, respectively visual effects as their factors, play a dominant role in the identification of cultural, socio-economic, identity and common values of the built environment. The value and significance of the built space are predominantly manifested through subjective view of that space. Image, as a result of a bilateral process between the observer and the environment (Lynch, 1960) is particularly sensitive issue in the process of architectural and urban design. Various theorists who have been dealing with the visual perception of architecture and urbanism of cities throughout history (Arnheim,1977; Cullen,1959; Ittelson,1960; Lynch, 1960; Rossi, 1966; Spreiregen,1965; Stea,1978; Winters,1999) indicate the importance of interaction between man and the environment and the importance of the images creation in the users memory. Visual achievement of the city is expressed through the continuity complexity of the entirety elements, which an eye absorbs, achieving perceptual image of the spatial presentations, fulfilled with richness of meanings and associations, which, in conjunction with the memory, form the overall experience of space. Visual perception involves the complexity. "Visual experience is dynamic." (Arnheim,1954).

Aspect of visual perception in the architectural process and urban design is underrepresented, what affects on their visual image and visual identity values. We start from the premise that to each intervention and activity in the space precedes the perceptual and experiential aspect, because the man's attitude towards city is primarily perceptual. The interaction between man and the city was dominantly achieved by visual perception. If you look at the psychological fact that nothing exists outside the mind, and that the mind is composed of many various perceptions that are entered through the senses, which are selected, agreed, combined, connected, shaped, forming a continuous row, that creates an attitude about a particular case or appearance which has been studying, based on which the reaction achieves the same, then it is clear the role of visual perception in that perfect functional and unique process. (Perovic, 2010b.). In addition, "Every aspect of a visual experience has its physiological counterpart in the Nervous System" (Arnheim,1954).

The research of visual perception of the public open spaces of the city is important because of the fact that they are the primary visual resources that participate in the experience of the city's image. If we are willing to understand the city as a complete and integrated system of diverse functions and contents, built and unbuilt spaces, based on relations and dialogue, the city as a performer of the complex social processes, as "the stage for active life of citizens that will enable a person to come to full expression" (Mumford, 1968), the city as a space that "first we shape, and after it shapes us", then the public open spaces we experience as: factors which contribute to the homogeneity of the urban structure, places of activities and interpretations of life's philosophy, respecting diversity, choice of action; public scene, visual factors and psychological experience of the place, their boundaries as a link, and the places of the integration and relations; the places of complexity and balance, the places where the images of the interior space throughout the external prism are formed. (Perović, 2010a). Generally, the life quality in the city is determined by the level of development of the visual resources. The experience of the places is the product of the primary visual perception of the space. Diversity in shape, structure, function, detail, then: colors, textures, light, vegetation, floor organization, relations, participates in the subjective formation of the space image. An aesthetic value refers to the perception of the natural beauty of the environment, visual resources are often connected with natural environments, however, built urban public open spaces have direct visual impact on the users, because they are in a direct, constant dialogue with them, primarily due to the occupation of the city's central position in the systems, as well as they were created by the man and because they are made by the man measure.

Public open spaces had an important place in the city throughout history (Mumford, 1970), while their role of "public scene" weakened over time. With the development of modern cities, many public open

spaces disappeared, lost their function or changed their outlook. Various factors that influence on the formation of visual identification of the place are: economic, social, industrial, cultural, political, historical, and individual. Modern architecture and urban design practice, faced with the trend of globalization and urbanization, has resulted in the transformation of the visual identity of many urban environment. Modern public open spaces of some cities are often transformed into clean, minimalistic lines, simple forms, sometimes free of associations and meanings. Numerous references of the theorists who have studied public spaces of the city (Carr, at all., 1992; Lennard, S.H.C. & Lennard, H., 1984; Lennard, S., Crowhurst, H., & Lennard, H.L., 1993; Marcus & Francis, 1990; Wooley, 2003) indicate their importance in the structure of urban space, especially in the formation of socio-cultural and identity values of local built environment and its users.

By the radial planning concept of Niksic, from 1883., an urban physical structure was developed, which has provided the domination of public open spaces of the city. Square, street and urban block present the dominant urban memory resources. Public open spaces with their disposition, proportion and relations formed an integrated urban structure of recognizable values. However, Niksic, as a leading industrial city in Montenegro, exclusively oriented on production in the second half of the 20th century, developed an indifferent attitude toward public urban open spaces that reflected on their current visual identity. Based on objective criteria and analysis, public open spaces of Niksic can not be generally described as desirable visual resources of 21st century city.

2. Subject and Aim of the Research

The subjects of the research are subjective visual perception of twelve dominant public open areas of the central zone of Niksic. There have been identified: the central square, the central city street, walking street - promenade, roundabout-square, central park, the monastery complex, hospital complex, markets, cemetery, enclosed housing block, semi-closed and open housing block.

The central city square is primarily gathering place in Niksic, except that its dominance as the center of the social process, recognizable identity and memory values changed over time. The central streets, although traffic dominant in the paper, are not observed from the technically side as an important resources, but only in terms of ambience and visual-aesthetic dimensions. Natural values have a special place for the subjective experience of space, and because of that, the central city park is specially studied. Besides that, the paper analyzes hospital and monastery complex, which, because of their programs, position and the overall importance, participate in visual identification of the city. The market and the graveyard, as two specific public open areas, constantly focused on users and visitors, are also the subjects of research in terms of subjective visual perception of space. It is also interesting that the central parts of the city occupy a large number of housing open spaces that, among others, are selected for the research subject in this paper.

The aim of this paper is, based on subjective visual perception, to identify visual values, respectively positive and negative effects that create typical public open spaces of Niksic, upon which criteria for their desired visual image would be establish. The results will further be used for determination of objective patterns for improvement of existing and design of new public open spaces of the city. Among the various dimensions of urban design (Carmona, 2003), the physical dimension and visual-aesthetic criteria play a primary role in the design process of space of recognizable socio-cultural and identity values. The phenomenon of urban visual culture is studied in terms of visual effects, which are confirmed by visual perception and sensation, and they are enabled through: complexity, continuity and integrity of the space. The importance of the study has additional strength in the fact that the open spaces of Niksic are often criticized by the local population of the city, so, on the basis of their subjective perception, can be reached the conclusion about desirable objective visual elements of reality. The aspect

of visual perception is insufficiently present factor in the design process, what results in inadequate environmental characteristics of space. Theories of visual perception: cognition (Arnheim, 1969), aesthetics (Asihara, 1983) ecology (Gibson, 1979), indicate the need for multiple approaches to visual perception and its importance for the development of quality urban spaces.

When organizing open spaces, it is necessary to examine all the possibilities that they could provide to users and to the city and then realized them through the concrete contents and shapes, characterized by intensive use. Besides the complexity regarding the content: urban equipment, partner, natural elements, architectural objects, elements of visual communication, interaction between these elements is important, the dialogue between the internal and external environments as well as the "readability" (Lynch, 1960) and the availability of space.

3. The Methodological Basis

The research of urban space from the aspect of visual perception is diverse and multidimensional. It is based on the disciplines that have been developed in this field. One of them is the Gestalt psychology (Arnheim,1954; Gibson, 1950; Koffka, 1935), which emphasizes the importance of the perception of the totality. The research methods, designed and applied in studies of visual perception, such as mental map (Lynch, 1960), experimental method, method of visualization (Mambretti,2011), computer models (Do & Gross, 1997), observational method, method of semantic differential , surveys and interviews method and others and the combination of multiple research methods, confirm the importance of this aspect of the study of urban space.

Table1. Scale of semantic differential - arithmetic mean

Monotonically	-3	-2	-1	0	1	2	3	Dynamic
Repulsive	-3	-2	-1	0	1	2	3	Attractive
Disarranged	-3	-2	-1	0	1	2	3	Arranged
Artificial	-3	-2	-1	0	1	2	3	Natural
Boring	-3	-2	-1	0	1	2	3	Interesting
Disturbing	-3	-2	-1	0	1	2	3	Comforting
disharmonized	-3	-2	-1	0	1	2	3	Harmoniously
Dysfunctional	-3	-2	-1	0	1	2	3	Functionally
Intense	-3	-2	-1	0	1	2	3	Relaxed
Unsocial	-3	-2	-1	0	1	2	3	Social
Unattractive	-3	-2	-1	0	1	2	3	Attractive
Cold	-3	-2	-1	0	1	2	3	Warm
Uninspiring	-3	-2	-1	0	1	2	3	Inspiring
Poorly	-3	-2	-1	0	1	2	3	Diverse
Uncertain	-3	-2	-1	0	1	2	3	Certain
Unavailable	-3	-2	-1	0	1	2	3	Available

Two "paradigms" of visual perception are characteristic: objective and subjective, where subjective paradigm implies that the quality can be estimated only with "eyes of the viewer" (Lothian, 1999). A

method of observation and judgment of photographs and semantic differential method were used in this paper (Osgood,1957). The information about subjective visual - aesthetic experience of space ambiances has been obtained by this method. The survey involved 300 respondents at the semantic scale from -3 to 3 between 17 bipolar pairs of adjectives (table1.) Data processing was based on the arithmetic mean and then on the comparative analysis of the results. The respondents classified into two categories of 150 members. The classification was based on the following criteria: education, profession and implied that the respondents know each other well or partially identified spaces. Since that the scales are identical for all respondents, age groups from 15 to70 years participated in the survey. The first group of respondents was users of the space, regardless of education, while the second group consisted of students of the third and fourth year of: architecture, urban planning, landscape architecture and horticulture and related disciplines: arts, social and humanities sciences.

4. The Research Process

The research process consisted of several stages. The first phase included a survey of the users of the area through observation of identified twelve different public open spaces of the city (Table 2) at the semantic scale from 3 to 3 and 15 bipolar adjectives (Table 1) Data processing was performed by using of methods of arithmetic mean in the second stage. The third stage involved a comparative analysis of the results.

The results of the survey research provided data on desirable visual resource of the city, their advantages and disadvantages, respectively the subjective criteria that can serve as objective templates for the creation of open public spaces of the city that will achieve positive visual impacts on users. Through comparative analysis of arithmetic means for estimating the value of evolved group of respondents for the each photograph, as well as a comparative analysis of the results obtained for the 12 photographs that depicted the observed spaces, has come to a conclusion about the most desirable visual resource of the city, which can serve as a general criterion for the design of public open space regardless of the purpose. It is also, based on the analysis of results, determined which public open spaces of Niksic have sufficient visual - aesthetic characteristics, and in need of revitalization. The results can be used as guidelines in the process of creating of public open spaces of Niksic.

Table 2. Overview of the images that have participated in the survey

<p>1 The central square</p>			<p>7 The hospital complex</p>
<p>2 The central city street</p>			<p>8 Markets</p>
<p>3 Walking street - the promenade</p>			<p>9 Graveyard</p>
<p>4 The circular flow square</p>			<p>10 Indoor housing block</p>
<p>5 The Central Park</p>			<p>11 A semi housing block</p>
<p>6 The monastery complex</p>			<p>12 An open housing block</p>

5. The Results of the Research and Discussion

The research results show following: (Arithmetic mean for 12 typical public open spaces of Niksic-fig.1-12).

5.1. Photo 1: The central square (Fig. 1a)

The central square in Niksic called "The Liberty Square", which for its size and position is in a dominant position in the structure of the city, does not have fully developed shaped criteria that provide a desirable subjective visual perception of the space. The respondents evaluated it positive on the basis of other factors impact, such as memory values and specific historical significance, as the most important gathering centre. However, according to the majority of criteria it was evaluated negatively. Functionality, availability and security are highly valued. We must take into account that the square did not significantly changed its physiognomy from the beginning, in the late 19th century and that it is oversized in relation to the vertical regulation of objects that form it, and because of that it is evaluated as cold and insufficiently proportionate. Also the reasons for negative evaluation are insufficient amount of natural elements, as well as the lack of harmony and quality of facilities on the square. The square is approximately evaluated the same by both groups of respondents.

5.2. Photo 2: The central city street (Fig. 1b)

The central city street, called "Njegoseva Street" intersects the central square in two symmetrical parts, which contributes to the harder perception of the square as the complete space, especially due to the visual emphasis of asphalt that it is defined, but the street itself. The street is part car and part of pedestrian character, which contributes to its dynamics. Attractiveness was evaluated with high scores among the respondents who were the users of the space, due to the large number of coffee bars that are placed on both sides for the most part of the streets, while the experts evaluated this criterion as negative. The social dimension in both groups was evaluated highly. Other criteria are the most positively evaluated, except attractiveness and diversity. The second group of the respondents evaluated the arrangement and interesting lower. Natural elements are not present.

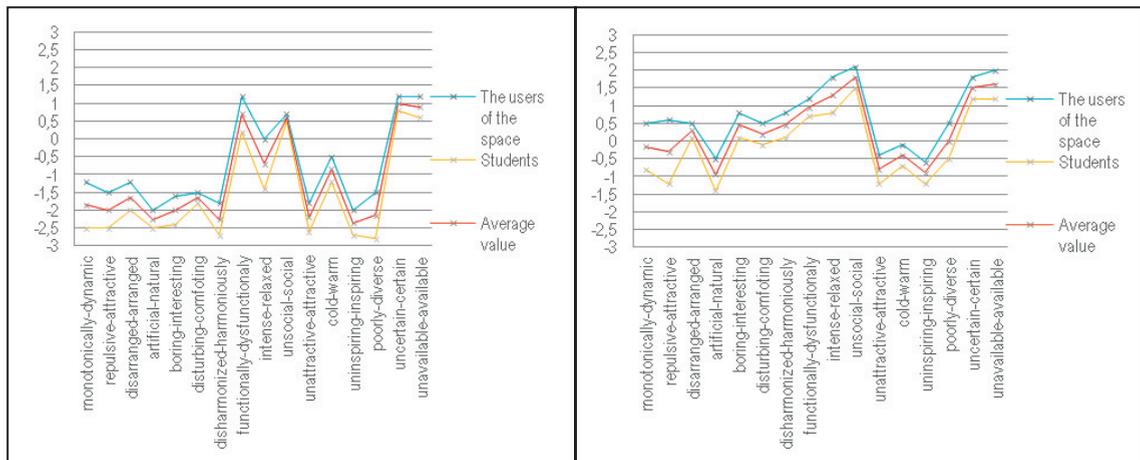


Fig. 1. (a) Photo 1: The central square ; (b) Photo 2: The central city street

5.3. Photo 3: Walking street - the promenade (Fig.2a)

Both groups of respondents evaluate walking street- the promenade quite positively, especially when it comes to the social aspect, security, availability, organization, relaxation, functionality. Attractiveness and diversity are poorly evaluated as well as dynamic, inspiring, and heat. Natural elements are evaluated medium in both groups of respondents. The promenade has identity significance for the city as a unique exclusively pedestrian articulated place, a place of social processes, recreation, meeting place, which is why it would be desirable to enrich the this space with contents. When relationship between developed and undeveloped is concerned, there is a visual disruption in certain segments so the visibility in some segments is reduced.

5.4. Photo 4: The circular flow square (Fig. 2b)

The circular flow was negatively evaluated in the most criteria by both groups of the respondents. That is, in a large extent, contributed by disharmony between the built and free space, lack of attractiveness of the center- the circuit, as well as the dominance of vehicular traffic. This public open space, although recent revitalized, does not contain enough high visual value. Among the considered criteria, something better was evaluated the functionality and availability, while harmony and proportionality were higher evaluated in the first group of the respondents. Dynamism was evaluated with better ratings, because of the higher frequency of vehicular traffic.

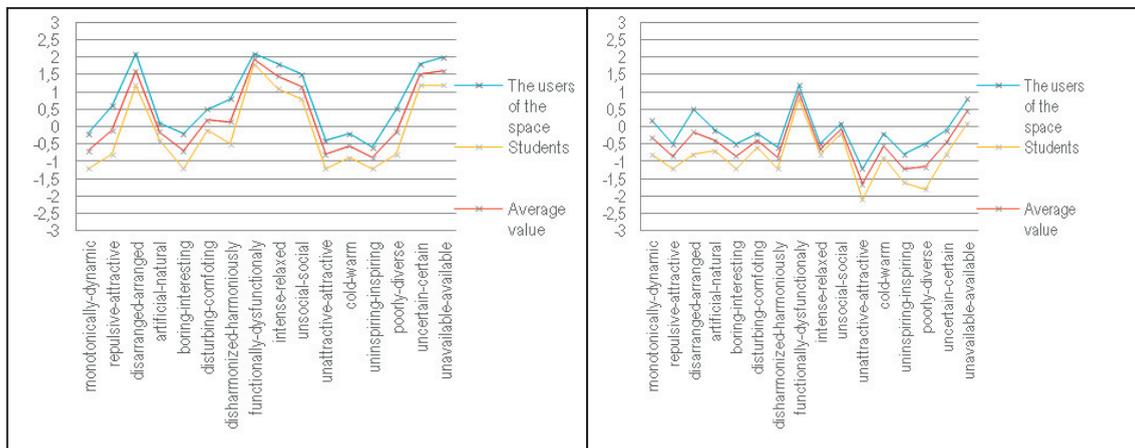


Fig. 2. (a) Photo 3 : Walking street - the promenade; (b) Photo 4: The circular flow square

5.5. Photo 5: The Central Park (Fig. 3a)

The central Park is highly valued on the semantic differential scale. This is a result of high levels of greenery and very little erosion of natural background. That also contributes elements of availability, harmony, relaxation, functionality, while attractive, associatively, diversity were lower evaluated. Other criteria are of the average values. The park spaces are of great significance to the overall visual experience of space and a must see for population staying in the open space in the city.

5.6. Photo 6: The monastery complex (Fig. 3b)

As opposed to the town square, the monastery complex in Niksic was evaluated very highly, although they were built during the same period. The positive impact on the subjective visual perception has the monastery architecture itself, the relationship between the built and unbuilt space, the legibility, and a large amount of vegetation. All criteria were evaluated positively, whereby the diversity was the lowest evaluated of the proposed adjectives. The presence of vegetation has calming effects on the viewer, more natural, more relaxed, harmonious, and dynamic. The monastery complex in this regard, based on subjective evaluations, occupies a high position.

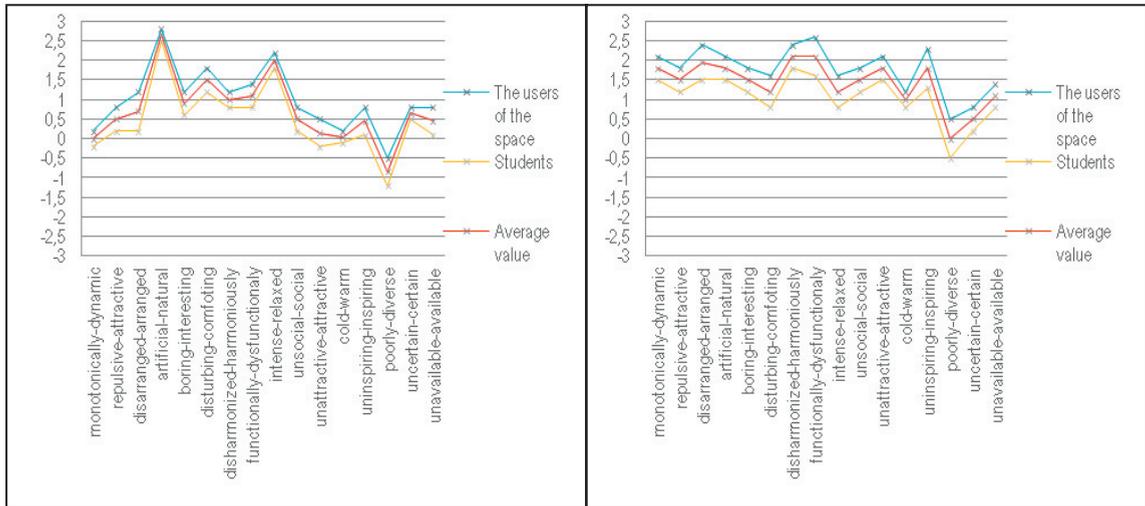


Fig. 3. (a) Photo 5: The Central Park ; (b) Photo 6: The monastery complex

5.7. Photo 7: The hospital complex (Fig. 4a)

Hospital complex, although partially covered by photos, surveyed users of the space evaluated it positively due to large amounts of vegetation as well as proportionality, function, regulation, security, availability. The second group of respondents evaluated lower diversity, dynamism, inspiring, while both groups approximately evaluated the attractiveness. Hospital complex does not have enough diverse content, primarily mobile property to stay outdoors, which reduces the overall visual experience in the space.

5.8. Photo 8: markets (Fig. 4b)

Markets, an important place of social processes, in Niksic occupies a central position, close to the central square. By the recent revitalization, its availability from two sides has been abolished. By the revitalization one side has been closed, so that it has lost its original identity. The survey results show that both groups of respondents, according to most criteria, negatively evaluate the market on a scale of semantic differential.

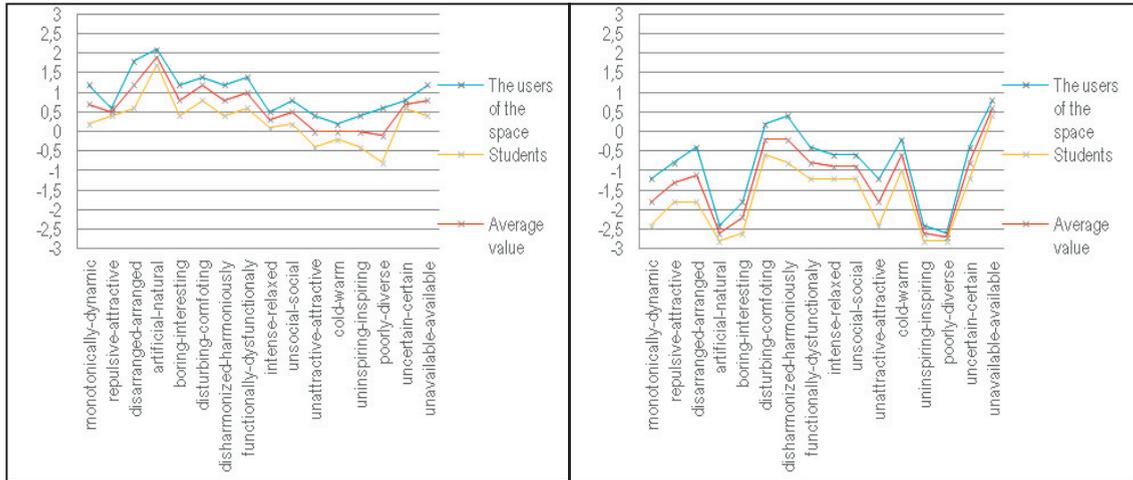


Fig. 4. (a) Photo 7: The hospital complex ; (b) Photo8: Markets

5.9. Photo 9: Graveyard (Fig.5a)

Specific public open space Cemetery was taken for analysis, especially in order to conclude how users perceive this kind of space program. The survey concluded that there is no indifference to this type of public open space, but it is considered with a high level of interest for the proper treating and decorating. Here are some of the criteria were evaluated lower because it is the most specific program, such as associatively, inspiring, especially when the first group of respondents is concerned, but certain criteria are highly evaluated as functional, dynamic .. Structure, availability, naturalness are slightly less evaluated.

5.10. Photo 10: Indoor housing block (Fig. 5b)

Housing public open spaces include particular effectiveness that includes a wide range of activities. They need to present a particular type of prolonged housing, including a careful analysis of different factors when designing. Indoor housing block in the central zone of Niksic was negatively evaluated, it contains a certain level of greenery but random, it is unattractive, uninspiring, monotonous, and partially available.

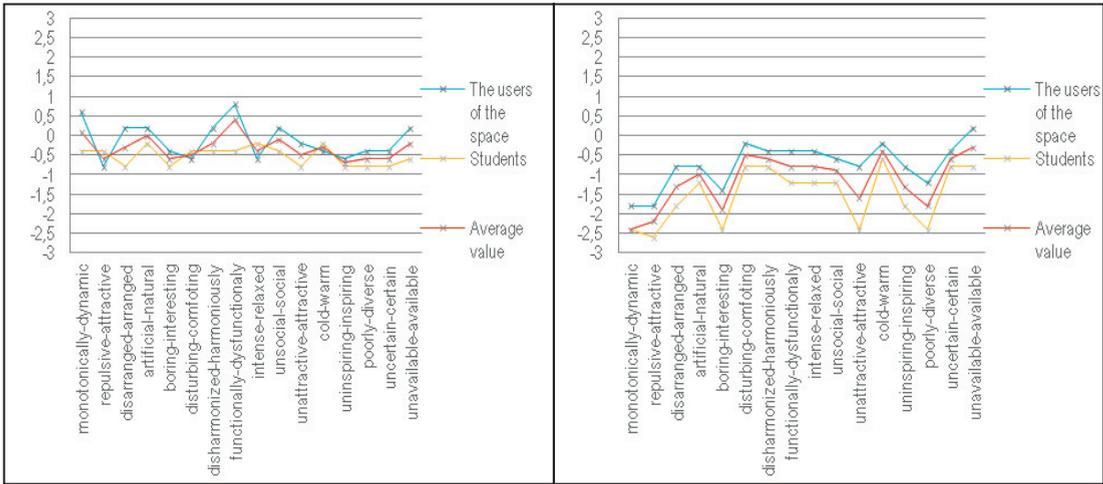


Fig. 5. (a) Photo 9: Graveyard; (b) Photo 10: Indoor housing block

5.11. Photo 11: A semi-housing block (Fig. 6a)

Semi-housing block was evaluated slightly well than the previous one, but even it is not on the positive side of the scale of semantic differential in both groups of respondents. Proportionality was little better evaluated, while the other elements are evaluated low.

5.12. Photo 12: An open housing block (Fig. 6b)

The best-valued housing open space of the analyzed is not characterized by a high level of attractiveness, diversity, dynamism, but it is functional and available. It is necessary to invest more energy, generally, in the revitalization of open spaces in the collective housing in Niksic.

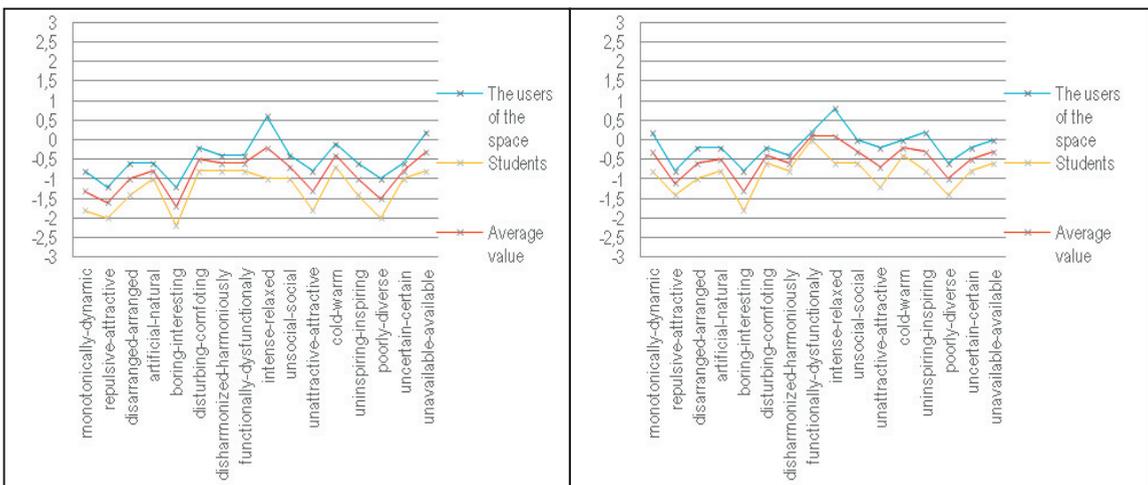


Fig. 6. (a) Photo 11: A semi housing block ; (b) Photo 12: An open housing block

Through comparative analysis it was determined that on the scale of semantic differential was best evaluated photo number 6 (+1.40), after it, the photo number 5 (+0.74), then the photo number 7 (+0.64), then the photo number 3 (+0.35), least positively was evaluated the photo number 2 (0.32), while the others photos were evaluated negatively: the photo 9 (-0.31), the photo 12 (-0.49), the photo 4 (-0.50), the photo 11 (-0.89), the photo 1 (-1.20), the photo 10 (-1.21) and the lowest was evaluated the photo 8 (-1.24).

5. Conclusion

The city is not a state but a process, which the certain facilities are created, developed, integrated and removed, along with the development of society and social needs and interests. Visual experience of the space directly reflects its general value. Complexity, dynamism and continuity of life processes and activities, as well as their mutual conditionality, indicate the importance of an integrated approach to planning and design of the physical structure of the city. Unbuilt spaces, as well as the building blocks participate in the development and design of the urban ambience. In addition, their participation is mutually conditional, what is equal and inseparably, as each new structure is being developed on some free surface, parcel and it is very important on which place it will be created and in what relation it will be with the environment.

Public open spaces of the city are seen first as a visual aesthetic and functional ambiances, as the center of events, the atmosphere, the meeting, as a place of rest, leisure, recreation, companionship as well as inspiration with the articulate spaces that direct us to the indoor environment and prepare us for new impressions and experiences. Furthermore, flexibility, transparency and the border as links are the urban language of organization of these ambiances. From their character depends, to a large extent, the overall experience of urban space, as well as complexity of forming collective memory. Subjective visual perception helps in identifying and establishing the criteria for the design of desirable public open spaces of the city in the 21st century, with emphasis on visual - aesthetic dimension.

Twelve analyzed public open spaces of Niksic by users and experts, suggests that poly functional, dynamic, associative, homogeneous, inclusive, accessible, authentic spaces with an emphasis on natural elements, achieve desired visual effect on users. This is confirmed the statement that: green open spaces in every form are essential for life in our increasingly urbanized society (Mambretti, 2011). Spaces that do not have clearly defined visual identity in the structure of the city were negatively evaluated, as well as one which is monofunctional, program indefinite and with low content of vegetation. By the comparative analysis of results obtained from various groups of respondents, it was concluded that there is some overlap when perception of space is concerned; however they differ depending on the expertise and the specific needs and the aspirations of the respondents.

The development of the city is process and experts and users participate in it, and the way to achieve a humane and healthy urban ambience is based on the integrity of all its parts, which is reflected as dominant through visual experience. Visual subjective perception is indispensable factor in that process. It is concluded that an open public spaces of Niksic as the primary visual resource of the city have potential, but it needs their revitalization, especially in terms of content and dynamics.

The contribution of this study is that the overall objective desirable visual effects of public open space are identified on the basis of subjective evaluations, which can serve as guidelines for the rehabilitation of existing and design of new open spaces of the city. Is desirable that the future directions of research would be based on the identification and analysis of specific public spaces of certain typologies independently and at the city level to identifying specific desired visual effects and criteria for the design of these spaces. It is necessary to expand the scale of semantic differential and bipolar attributes, to adapt it to every type of public space of the specific purpose that is being studied. Recommendations for

appropriate design of public open spaces start from the fact that in this process should involve the users premises and their needs. Subjective visual experience of space is of primary importance for the creation of desirable public spaces of the city.

References

- Arnheim, R. (1954). *Art and Visual Perception*. London: Cambridge University Press.
- Arnheim, R.(1969).*Visual Thinking*. Berkeley: University of California Press.
- Arnheim, R. (1977).*The Dynamics of Architectural Form*. United States,:University Presses of California, Columbia and Princeton.
- Asihara, Y. (1983). *The Aesthetic Townscape*. Cambridge, MA: MIT Press.
- Carr, S., at all. (1992). *Public Space*. New York: Cambridge University Press.
- Carmona, M.,at all. (2003).*Public Places - Urban Spaces: The Dimensions of Urban Design*. Oxford: Architectural Press.
- Cullen, G. (1959) .*Townscape*. London: Architectural Press.
- Do, E. Y.L., & Gross, M. D. (1997). *Tools for Visual and Spatial Analysis of CAD Models -implementing computer tools as a means to thinking about architecture*. In R. Junge (Ed.),*CAAD Futures 97* (pp. 189-202). Munich: Kluwer.
- Gibson, J.J. (1950). *Perception of the visual world*. Boston : Houghton Mifflin Company.
- Gibson, J. J. (1979). *The Ecological Approach to Visual Perception*. Boston :Houghton Mifflin.
- Ittelson, W.H. (1960). *Visual Space Perception*. New York: Springer.
- Koffka, K.(1935). *Principles of Gestalt Psychology*. New York: Harcourt-Brace&World, Inc.
- Lennard, S. H. C., & Lennard, , H. (1984). *Public Life in Urban Places*. N.Y. ,South Hampton: Gondolier Press.
- Lennard, S., Crowhurst, H., & Lennard, H.L.(1993).*Urban space design and social life*.In B. Farmer, & L. Hentie (Eds.),*Companion to Contemporary Architectural* .New York :Routledge Inc.
- Lothian, A.(1999). *Landscape and the philosophy of aesthetics:is landscape duality inherent in the landscape or in the eye of beholder? Landscape and Urban Planning*, 44, 177-198.
- Lynch, K. (1960).*The image of the City*. Cambridge : MA:MIT, Pres.
- Mambretti, I.M. (2011).*Urban Parks Between Safety and Aesthetics: Exploring Urban Green Space Using Visualisation and Conjoint Analysis Methods*. Zürich : vdf Hochschulverlag AG an der ETH Zürich.
- Mumford, L.(1968).*Grad u istoriji*. Zagreb: Naprijed.
- Mumford, L. (1970). *The Culture of Cities*. New York: Harcourt Brace Jovanovich.
- Marcus, C. C., &Francis ,C.(1990).*People Places: Design Guidelines for Urban Open Space*. New York: Van Nostrand Reinhold.
- Osgood, C. E., Suci, G. J., & Tannenbaum, P. H. (1957). *The measurement of meaning*, Urbana:University of Illinois Press.
- Perović S.(2010a) *Internacional conference GNP 2010. New approach to the organization of unbuilt spaces in forming the physical structure of the city. Zbornik radova GNP.Podgorica*: Univerzitet Crne Gore, Građevinski fakultet.
- Perović S. (2010b) *Internacionalni simpozijum studenata doktorskih studija-Phidac 2010*. Nikšić in context visual urban culture. *Zbornik radova Phidac 2010*. Novi Sad.
- Radović, R.(2003). *Forma grada*. Beograd :Orion art; Novi Sad: Stylos.
- Rossi, A. (1966).*The Architecture of the City*. Cambridge: The MIT Press.
- Spreiregen, P. D. (1965).*Urban design: The Architecture of Towns and Cities*. New York:McGraw-Hill.
- Stea, D.(1978).*Environmental perception and cognition: Toward a Model for :Mental Maps*. In R.Kaplan, & S.Kaplan(Eds.), *Humanscape: Environment for People*. Boston: MIT Perss.
- Winters, N. B. (1986).*Architecture Is Elementary: Visual Thinking Through Architectural Concepts*. Salt Lake City: Gibbs Smith Publishers.
- Wooley, H.(2003). *Urban Open Spaces*. London: Taylor & Francis.