

A TYPOLOGICAL CLASSIFICATION OF NEIGHBOURHOOD PUBLIC OPEN SPACES: A CASE STUDY OF NOVI GRAD - PODGORICA

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Abstract. *This paper examines the relationship between urban public space and everyday social life, as well as the forms of social interaction as patterns of use of public spaces in collective housing neighbourhoods. Urbanity issues are manifested both at social level by population alienation from the social surroundings, by the lack of joint activities and stay in the neighbourhood public open areas, as well as at physical level, by the lack of the area vitality and security, and neglect. The analysis of the neighborhood spatial form determinants is represented by the universally applicable typology based on spatial and sociological theories about the relationship of urban space and social processes, applicable to areas that generate patterns of people encounters and gatherings. Understanding the relation between human behaviors through the capacity of neighborhood open space contributes to the quality of the open spaces design and especially to enhancing the vitality of the city public spaces. The purpose of this paper is to obtain scientifically based approach to the public space design in a view of its use that may be beneficial to urban planners in the process of urban space regeneration.*

Key words: *public open space, neighbourhood, typology, urban regeneration, social interaction*

1. INTRODUCTION: THEORIES OF THE RELATIONSHIP BETWEEN SPACE AND SOCIETY

Understanding the importance of quality of life and rediscovery of city public spaces resulted in numerous studies aimed at restoring the human dimension of everyday life,

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improving social activities and greater participation in public life of the city open public spaces. Noticeable restraint and disappearance of pedestrian areas and public life in the cities resulted in further alienation of the population. On the other hand, supporting the quality pedestrian environment, with the aim of completing the private life by good functioning in the public domain, offers a wide range of attractive public activities. The acceptance and utilization of the variety of new possibilities in the public life of the city (Gehl, 2011) confirm that pedestrian environment and public spaces where people can meet make an important contribution to the contemporary life of a certain society. Accepting the problem of social inclusion and social connections in routine activities in public spaces, as well as recognizing the importance of recreation and quality environment (Gehl, 2011), significantly contribute to understanding of how important the urban environment is for the overall quality of life (Gehl, 2011; Jacobs, 1992; Lynch, 1990; Whyte, 1980).

Public open spaces accommodate a large number of everyday activities which emphasize the importance and attractiveness of the city public spaces (Gehl, 2011). Given that society progresses and changes over time, there has been a conflict between the defined physical framework and the limitations in the physical sense and the need for the more flexible spaces that support different forms of everyday social interaction.

Understanding of the space users' needs and interests, the social system and the cultural context, as well as the values and symbolism of the public open spaces of the residential building blocks are taken as the starting points for the transformation of space. In this paper we deal with the complex relationship between the urban public space and its user, as well as the physical and social components of this relationship. The interrelationship between the physical characteristics of an urban structure and architecture of the public open spaces and the users' activities, are investigated through a symbolic content that arises in the context of daily and occasional activities.

The polygon of the research are public open spaces at the level of the city zones with a predominantly residential function, built in the second half of the 20th century which will be investigated through a case study of public spaces of Novi Grad in Podgorica. It is founded on an undeveloped land and characterized by an orthogonal system of city blocks of different size, different building dimensions, and different organization, with the dominant residential function.

The complex relationship between space and society as a basic framework for the use of neighbourhood public spaces and social activities related to space can be interpreted by Structuration theory of Anthony Giddens and the Space Syntax Theory of Bill Hillier and Julian Henson. According to these theories, the society is structured and established through space (Giddens, 1984; Hillier and Henson, 1984).

Anthony Giddens develops the concept of structuralization, which attempts to understand social behaviour by resolving the competing views of structure: agency and micro-macro perspective. Giddens's structuration theory is based on the structure duality: the structure, as an organized set of rules and resources is an integral part of the social systems and includes actors' activities in time and space. According to the structuration theory, in everyday social life the moment of activity production is also a moment of its reproduction. Some of the

concepts of the structuration theory are time-space distancing, routinization, and system integration.

The theory of space syntax deals with the relationship between structure and society in terms of urban and architectural production of space. The understanding of this theory made it possible to determine the basic analytical research apparatus of the study on neighbourhood public spaces use in the form of key related concepts: spatial practice, everyday life, routinization, meanings, co-presence, interaction, configuration and space appropriation. The theory deals with the relationship between primarily pedestrian movement and configuration of urban space. Hillier's empirical studies support his idea that the movement in a certain space can be accurately predicted from the spatial analysis of the configuration and structure of the urban grid. Using complex mapping and mathematical techniques, Hillier's analysis is based on key geometric properties of the spatial configuration of urban areas.

Henri Lefebvre, dealing with the use of urban public spaces, agrees that space should not be viewed only as a physical place, but as an entity produced by the society; how space is produced and experienced and by whom. Lefebvre develops a unitary theory that combines three fields we are concerned with: the physical (nature, the Cosmos), the mental (including logical and formal abstractions) and the social. In other words, we are concerned with logico-epistemological space, the space of social practice, the space of sensory phenomena, including products of the imagination such as projects, symbols and utopias (Lefebvre 1991).

A number of European and American architects and urbanists deal with the urban public space from the perspective of experience and perception, by exploring the relationship between urban structure, architecture and man as a social interaction product in order to create active public life in the city. (Gehl, 2011; Jacobs, 1992; Lynch, 1990; Whyte, 1980).

In *Life Between Buildings*, Jan Gehl (1996), adopts as acceptable the relationship between design and activities. He agrees that with certain regional, climatic and societal restrictions, the urban design may influence the number of public space users, the activities types and their duration in particular space. The primary goal of the city public open spaces study is to gather information on methods and procedures for possible urban regeneration of functionalist blocks with predominantly residential function built in Europe in the second half of the 20th century. Analysis and synthesis are general scientific methods applied in this research, while the method of case study is used for critical research and for description of the studied behavioural phenomenon - social interaction and the associated spatial context.

2. THE CONCEPT OF THE NEIGHBOURHOOD UNIT

The concept of the neighbourhood unit that was developed by Clarence Arthur Perry in 1929 aspires towards organizing space in a way that is more pedestrian-friendly and so allow for better socialization of the population. (Carmona et al, 2002). Perry developed the concept of the hierarchy of roads within the residential blocks that would increase pedestrian safety. In accordance with the principles of neighbourhood unit planning, places of everyday large gatherings such as shops and markets should be sited at the edge of neighbourhoods, at

major street intersections, while schools and parks should be centrally located. Setting the residential roads hierarchy has resulted in fragmentation of urban areas into enclaves that influenced the enhancing of the sense of identity, community, safety and security for the units` residents. By developing the idea of community centres, Perry came to the concept of a network of community centres associated with a broader program of cooperation between local communities.

The negative aspects of large transportation systems, mass migration, decentralization and implementation of technocratic planning principles after the World War II caused the search for a new role for cities and promotion of architecture and urban planning with the aim to create a better quality of life (Mumford, 1954; Jacobs, 1992). Jacobs (1992) directed negative criticism to the functionalist planning concept that gives primacy to physical form over social processes. The physical space is just one of the urban elements, and through social interaction we can get to the socio-spatial components that determine the spatial transformation of collective neighbourhood.

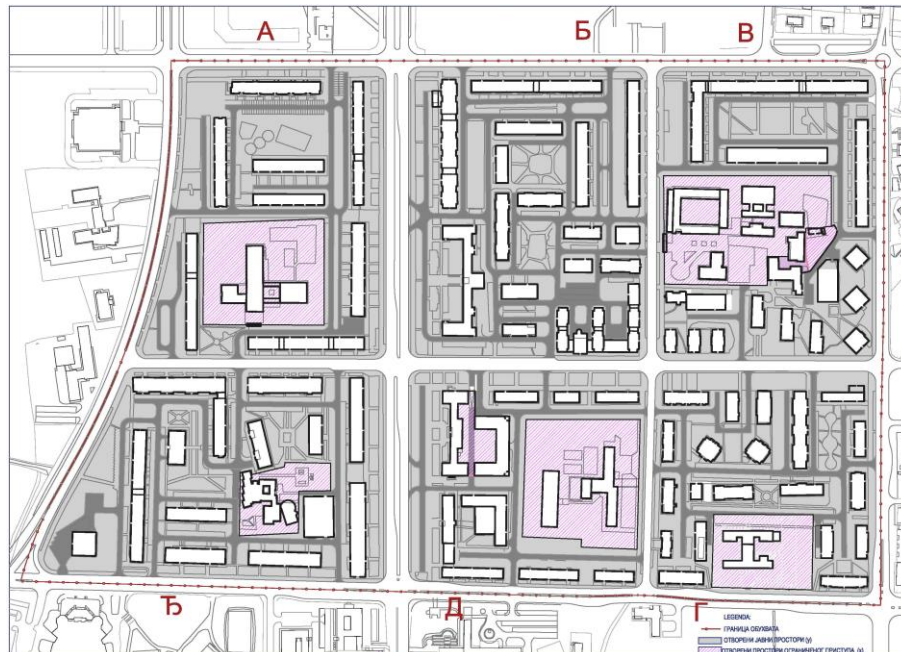


Fig. 1 A map of public open spaces, Novi Grad

In the space that belongs to the Detailed urban plan of Novi Grad,(Fig.1) and contains six block separated by the streets, we can recognize the basic principles of neighbourhood planning applicable to any urban context. This urban unit is organized in the system of functionalist buildings located not only along the edges but also within a block due to its size,

following an orthogonal system of alignment, creating a network of routes and green open spaces - parks, recreational areas, and green areas next to residential buildings or linear greenery along the pedestrian routes.

The concept design of Novi Grad contains kindergarten and elementary school for residents who gravitate to this area, as well as two high schools open to children citywide, and the student dormitory complex, appropriately located near university buildings distributed in the contact zone. This part of the city does not have a square as a center of the neighbourhood, and local shops are located in buildings along the road, that is along the busiest pedestrian routes. A small number of business places in the area of Novi Grad provide daily interaction of residents and visitors of the area. It is important to emphasize that the fenced spaces with limited access containing educational and administrative buildings are not taken into account in the analysis of public spaces, since they are considered as less variable categories. The internal street system is spread within the block providing good connectivity.

3. ANALYTICAL MODEL

Starting from the selected theories on the relationship between space and society (Giddens, 1984; Hillier and Henson, 1984; Lefebvre, 1974), then, from the assumption that different spatial, social and cultural contexts produce different social effects, and that the organization of space and the physical framework may affect the activities and relationships between people (Whyte, 1980, Hillier, 1984, Stevens, 2007, Gehl, 2011), the question of approach to public open spaces design arises in terms of urban regeneration of the city zones with predominantly residential function in a dynamic and contemporary cultural context.

According to the structuration theory, everyday actions are repeated across time, and related to the routes traced in space and conditioned by the actors' abilities. The routine is the *basic* element of everyday social activities. Repeated activities undertaken in a similar manner every day are the basis of the recursive nature of social life. The co-presence and awareness of actors express contextuality of interaction, in an appropriate time and space. The structuration theory is suitable for research of social phenomena and organization of micro and macro locations.

The *Space Syntax Theory* explains the relationship between space and its daily use, through the relationship between urban space functions and forms (Hillier, 1984). Hillier and Hudson established a new method of analysis of spatial pattern with emphasis on the relation between local morphological relationships and global pattern. The methods are applicable to the processes of detection and quantification of various local and global morphological characteristics. On this basis, a descriptive theory is established explaining spatial patterns that carry social information and content. The method of spatial integration analysis is developed within space syntax framework to be used in the analysis of spatial forms in relation to the activities and movements in space.

Henri Lefebvre develops the concept of space appropriation and defines it as various individual and group spatial practices in which space is modified, shaped and adapted by

experts and all space users. Social life is developed and understood through daily practice - by human activities that aim at self-realization. Since the study deals with the relationship between urban structure and architecture and public open spaces of an urban zone in the context of everyday use, Lefevre unitary theory can serve as an aid in the development of a typology for investigating the potentials of public open spaces in the respective urban zones.

4. TYPOLOGY OF PUBLIC OPEN SPACES IN RESIDENTIAL BLOCKS IN THE FUNCTION OF MODERN HOUSING

Through using theoretical assumptions laid out above, we conclude that urbanity is not only a spatial but also a sociological phenomenon, so urban space regeneration can be viewed not only from the physical, but also from the sociological perspective and neighbourhood spatial forms should be compared to their everyday use patterns. By defining the criteria and indicators for investigating neighborhoods public spaces in terms of their use and their impact on social activities, we establish a typological classification, which would serve to formulate patterns of spatial transformation.

By applying the Space Syntax techniques for making axial and convex maps, the classification of public open spaces was made:

- in relation to the degree of space integration,
- in relation to the constitutedness of the space, i.e. the number of buildings that are directly accessible to a public space or that are not directly accessible to a public space (unconstituted space),
- in relation to permeability - in terms of whether the axial lines end or pass through a convex space. This criterion applies to the frequency of everyday encounters – the chance or the foreseen ones, since the convex space in which axial lines end can be treated as a destination point in case it is unconstituted, or as a boundary between private and public domain in case it is constituted by the buildings.

The axial map is a graphical representation of the possible movement directions through a public open space using the straight lines that indicate the direct accessibility and visibility. The primary value measured by the space syntax technique of axial maps is the depth of configuration and an integrative value of any unit space or system. The convex map presents the spatial forms defined by the built structure, constructed so that the imaginary straight line could be drawn from any point to any other point in the space without going outside the boundary of the space. While the axial lines let the strangers in the spatial system, convex spaces are organized as the belonging to the residents of those parts of the urban system (Hillier, 1984).

The axial map contains the numerical properties that can be used to express the total connectivity of all the trajectories in the system, the permeability of the system, measurability of other lines and overall organization of space, which allows us to compare the system (in this case, the blocks of Novi Grad). The integrative value of the axial lines shows its importance and position in the system, according to its connections with other axial

lines. This value varies depending on the number of steps-changes of direction from the system - block edges (shown in Fig. 2 and Table No.1).

Table 1 The depth from the system edge per block

Block label	A	B	C	D	E	F
One step	4	4	4	4	4	4
Two steps	8	14	15	13	10	8
Three or four steps	4	10	1	3	1	12

Table 1 shows the degree of integration of space per block. The difference in the degree of blocks integration is most noticeable with the index of tertiary integrated space. Referring to Figure 2 and Table 1, we can notice that most changes of movement directions from the peripheral street to the building entrance happened in block B (the only one that does not have an enclosed space of restricted access) and in block F. Only one change in the third step in Blocks C and E indicates a relatively "shallow" spatial configuration of the system, due to the fenced high school complexes that occupy the central position of the blocks.

Based upon the analyses of the public open spaces performed by making the axial maps of movement directions within the blocks, a classification of space was made according to the degree of its integration - number of levels, or changes of direction:

- primary integrated (I1)
- secondary integrated (I2)
- tertiary integrated (I3)

Integrative value for the first level of depth corresponds to the criterion of the *primary integrated space* (I1), as the most integrated public space containing one level of axial lines (one step) that connects the street with the entrance to the building;

The second level of depth criteria of *secondary integrated spaces* (I2) corresponds to public areas which contain two levels of axial line or two changes in movement directions; Third and fourth level corresponds to tertiary integrated space (I3). These criteria are significant for pedestrian access to the space in the system.

According to the constitutedness of the space by the buildings with the entrance position that will allow better permeability, the public open spaces could be:

- public open spaces constituted by the buildings with entrances oriented towards the public space,
- public open spaces constituted by the buildings without entrances oriented towards the public space.

The constitutedness of the place is shown on a map of building-space indexes (Fig. 3) relating to the number of objects that are adjacent and directly permeable to the convex space. The index will have a zero value if the building entrance is not oriented towards the adjacent studied space.

Novi Grad has a very fragmented grid of convex spaces, but also many buildings whose exits are oriented towards one convex space. Such configurations reduce closest neighbourhood relations to only one building. The exceptions are particular convex spaces at peripheral streets, where several buildings have a common convex space, although there is a possibility of meeting not only the neighbours, but also the strangers in these, primary integrated convex spaces.

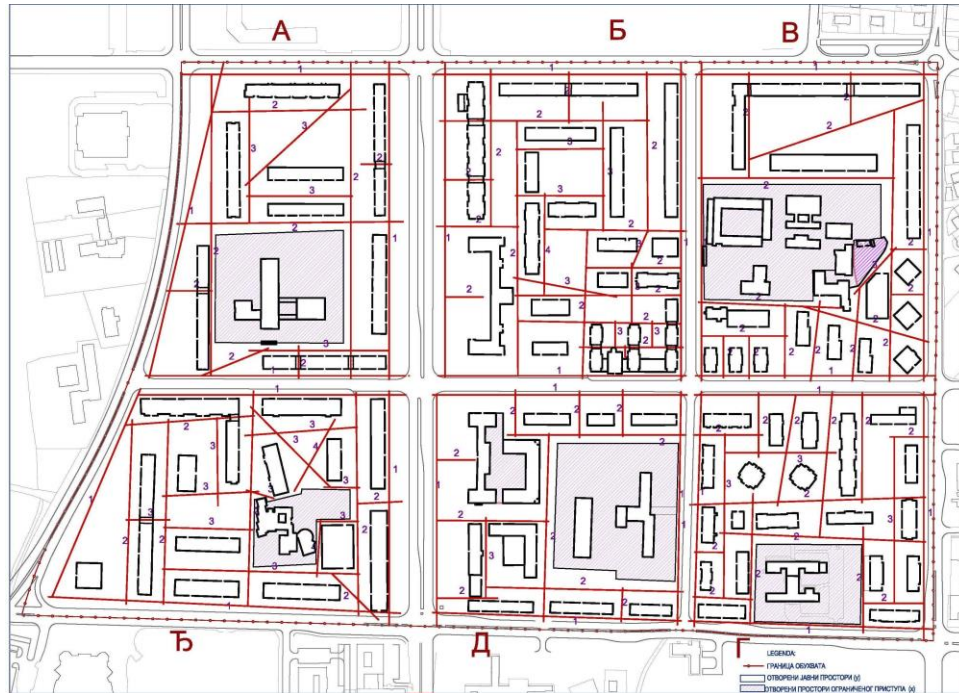


Fig 2 The map showing the depth - a number of steps from the system perimeter

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In relation to the permeability – depending on whether the axial lines end or pass through convex space, the public spaces can be:

- permeable open spaces (P)
- impermeable open spaces (I)

The impermeable public open spaces belong to spaces that do not have access value as they do not connect the open and the closed spaces and they are not on every day used paths in terms of easier socialization, unless they have a specific function that will gather more users in one place. These are usually spaces that are not arranged or that are just treated by soft landscaping. Hillier defined them as "trivial islands" – they are out of pedestrian movement lines and they are not defined as islands in a spatial sense. If these places do not have a clearly defined purpose (children's playground, recreation, rest), they should be arranged so to give users a reason to stop or to spend some time in those spaces. Equally important is the link with other places in terms of stronger integration that would make them easier to find.

The convex spaces that are outside the main movement lines in everyday use, and that are used as an optional routes or the sites for optional activities, have the weakest constitutedness, according to Jan Gehl's division of public space (2011). Its use often depends on the comfort and arrangement (the backyards, the unlit spaces). Optional spaces may also be found in the peripheral streets if the buildings are positioned perpendicularly to the street, a gable do not have an entrance. Such spaces can be found in Novi Grad, as a green space between the street and the buildings without specific purpose.

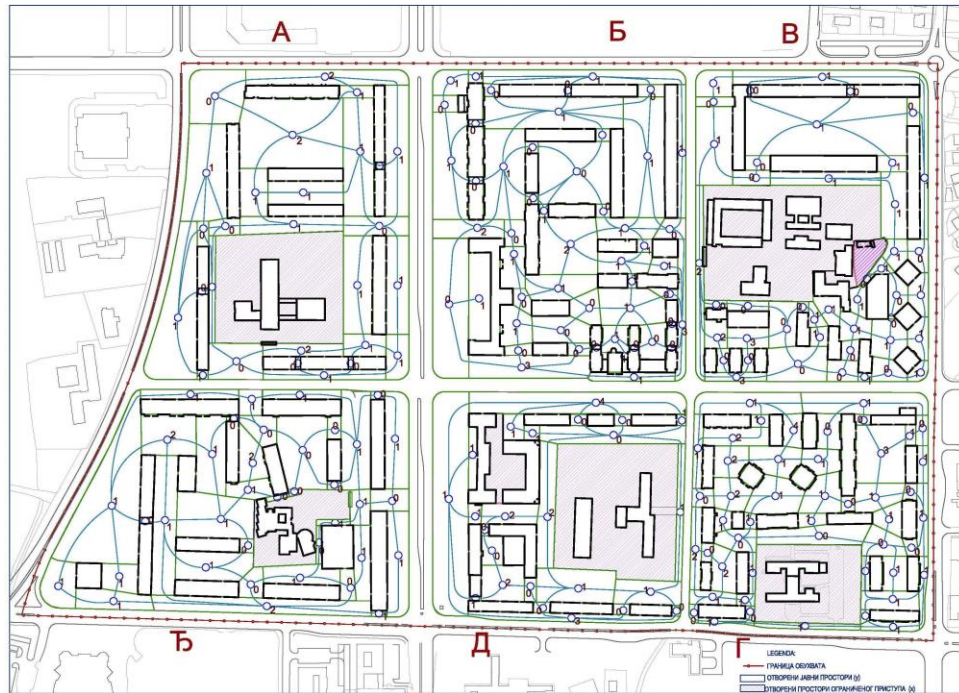


Fig. 3 The axial map of building-space indexes

Based on these criteria dealing with spatial relationships, the combination of 12 types of public spaces or spatial patterns was obtained, which refer to the interconnectedness of public spaces and connections of buildings with public open spaces.

The relationship between space and society presented through encounters, gatherings, interaction, represents the patterns of space use by a group of people. The urban space can be created so to encourage social activities, which would be one of the postulates of the space urban regeneration. The division of space creates local identities, which reduces the integration into a broader system and the vitality of the area.

In determining the functional types, we notice the interaction of function and form, where the function determines the shape, design and use, as well as the involvement of other functions such as the most present one –the function of movement.

5. CONCLUSION

The neighbourhood public space as a socio-spatial whole and the place of co-presence of neighbours and strangers is a way of linking the local organization of space and society with the global system of the city. By designing the form and the network of open public spaces of the city according to the principles arising out of the context, we direct patterns of use of public space towards encouraging social activities by supporting the simultaneous presence of people and encounters as a necessary precondition for actors` interaction and communication.

The proposed typology, based on sociological theories of the relationship between space and everyday use practices and analytical theories of spatial patterns in relation to patterns of use has the function of checking the possibilities of public spaces to generate user interactions, on the basis of which we recognize the places where changes are welcomed, in terms of directing the movement, retention, encounters and the intensity of use. The proposed typology related on spatial pattern of use can become part of a wider urban regeneration strategy of the neighbourhood public space as a part referring to the principle of spatial elements relations. This approach is complementary to the intuitive urban planning practice in the design of urban space.

Within the case study of the neighbourhood of Novi Grad, one of the central districts of Podgorica, which has been built in the second part of 20th century, following the urban functionalist conception of free-standing buildings in space, along with theoretical considerations, the patterns of spatial transformation were established and can be accepted as general recommendations to redesign the urban public open spaces, in terms of improving physical conditions for intensive socialization of the population and increasing the vitality of the place. The proposed typology should be applied in the future research to asses higher number and wider range of neighbourhood public places for the purpose to recognize and compare the spatial configuration in terms of use, and common characteristics between them.

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TIPOLOŠKA KLASIFIKACIJA OTVORENIH JAVNIH PROSTORA SUSEDSTVA: STUDIJA SLUČAJA NOVI GRAD U PODGORICI

Predmet ovog rada je problematika odnosa javnog gradskog prostora i svakodnevnog društvenog života, odnosno oblika društvene interakcije kao obrazaca upotrebe javnih prostora susedstva kolektivnog stanovanja. Problemi urbaniteta se ispoljavaju kako na društvenom nivou kroz otuđenost stanovništva, manjak zajedničkih aktivnosti i boravka u otvorenim javnim prostorima susedstva, tako i prostornom, kroz nedostatak vitalnosti prostora, zapuštenosti, sigurnosti. Analiza određenosti prostorne forme susedstva iskazuje se kroz univerzalno primenljivu tipologiju, zasnovanu na prostornim i sociološkim teorijama o odnosima urbanog prostora i društvenih procesa, primenljivu za prostore koji različito generišu obrasce prisustva susreta i okupljanja ljudi. Razumevanje relacija ljudskog ponašanja kroz kapacitet otvorenog prostora susedstva doprinosi kvalitetnijem oblikovanju otvorenih prostora a naročito unapređenju vitalnosti javnih prostora grada. Cilj je dobijanje naučno zasnovanog pristupa oblikovanja javnog prostora kroz upotrebu, koji može poslužiti kao pomoćno sredstvo planerima u procesu urbane regeneracije prostora.

Ključne reči: *otvoreni javni prostor, susedstvo, tipologija, urbana regeneracija, društvena interakcija*