

OPEN AND RECREATIONAL SPACES AS THE PARAMETERS OF THE DWELLING QUALITY

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Abstract. *Open and recreational spaces represent the essential content of a residential zone, whose arrangement, equipping and maintaining affects the dwelling quality. The adequate arrangement and maintenance of the open and recreational spaces, environmental comfort and accessibility contribute to the transformation of the aesthetic identity of the functional-spatial unity of the housing ambient they belong to. This paper explores the content and the functional structure of the open and recreational spaces, categories of the said spaces in a housing zone and the basic principles of arrangement, on whose basis an analysis and evaluation of the open and recreational space in the city of Niš territory was done. The conducted analysis has an aim of issuing recommendations and guidelines for the improvement and revitalization of the free and recreational spaces, which determine the dwelling quality.*

1. INTRODUCTION

The housing environment, through its physical and psycho-social component, represents a primary determinant of dwelling as a basic need of every individual. Without an appropriate living quarters (housing), people cannot be productive members of a society, and the family as the primary social group, cannot normally function. The residence is the place for satisfaction of basic existential needs of a man (residence as a shelter), and together with its immediate and wider environment, it represents the physical and social component of satisfaction of psycho-sociological [5] and educational-cultural needs, enhances the life quality and provides man with a sense of belonging to a community.

The said human needs reflect in the daily life cycle [1] of each individual, which comprises the productive work, sleeping and leisure time. The phenomenon of leisure time was defined by Joffre Dumazedier [1] as: "*The leisure time is the set of activities that an individual, of his own free will, may undertake, whether it is rest or entertainment, whether it is becoming more informed or educated, whether it is a voluntary social engagement, or realization of his creative capacities, after he is free from his professional, family and social duties*".

The leisure time and place where it is spent is the measure of the quality of life of a man and the determinant of the urban environment development process, and the open and recreational spaces are essential urban content which complement and enrich the dwelling function. They represent the fundamental components of the residential zone and together with the physical structures, topography and cultural and historical heritage complete its town planning composition and structure.

The residential zone as a whole, ought to provide the satisfactory quality of life of the people. The open and recreational contents, as the additional content of the residential zone, must be adequately equipped, organized and arranged, accessible and attractive so that it has the practical value, which satisfies the recreational needs of a user, and at the same time contributes to the functional-spatial unity of the dwelling ambient and attractiveness of the housing environment, which is very significant, since man spends most of his time in the residential environment.

This paper has explored the roles and significance of the open space for life and health of the people, their treatment through the history, content and functional structure of free and recreational spaces, categories of functional and recreational spaces in the residential zone and their spatial distribution, as well as the basic principles of organization of open and recreational spaces. Regarding that the theoretical postulates and analyses yield a comprehensive understanding of the studied problem only through the synthesis with the empirical research, the paper presents the research¹ of open and recreational spaces in the city of Niš territory.

2. THE THEORETICAL POSTULATES OF ARRANGEMENT AND USAGE OF THE OPEN AND RECREATIONAL SPACES

2.1 Open and recreational spaces - concept

Open and recreational spaces are those spaces where the recreational activities [3] take place (active and passive urban recreation) and the green surfaces, whose significance and the activities taking place on them will be considered further in the text. Urban recreation [8] is a process of psycho-physical regeneration of a man in an urban environment, one of the basic functions of living in city, that a man performs via practicing the recreational activities, using the recreational content and spaces in the urban environment. The significance of recreation in the hygienic – medical terms is manifold – creating of the optimal conditions for rest, refreshment and recovery of an organism in physiologic-psychological terms, regeneration of all the disorders occurring due to the various forms of fatigue and negative influence of the polluted air. In an urban environment, man spends most of his day in the closed spaces, in the transportation vehicles, surrounded by the built structures, asphalt, he is constantly in a hurry, under pressure. One of the best ways to relieve stress is spending time in the open space, which, via its arrangement and greenery should resemble the natural environment. Open spaces are significant for the establishment and strengthening of interpersonal relations and contribute to socialization and getting people together

¹ The research was done in the scope of postgraduate studies at The Faculty of Civil Engineering and Architecture of Niš; Advisor: prof.dr. Petar Mitković

Greenery, as an element of open space, has the manifold importance for the human health. Greenery reduces radiation, improves the chemical composition of air, protects the sidewalk and asphalt covered surfaces from heating up. By its color and aroma it affects the eyesight regeneration, refreshes, and regenerates man in physical and mental terms. It is known that noise has a very strong detrimental effect to man's health, and especially the very hard living conditions which occur in proximity to the major traffic routes. Greenery absorbs a part of the sound energy [5], and also protects from the wind and smoke gusts.

One must not forget the aesthetic action of greenery [6]. Greenery enlivens the space with its color, and serves as a contrast to the built, artificial, grey, noisy and polluted environment, and arouses an aesthetic pleasure at man. Open spaces in the housing environment, in the conditions of modern urbanization, represent optimal and necessary spaces for psychical and physical development of children, because, via various activities and playing, a child acquires knowledge for the entire life and develops communication skills, creative activities.

Open and recreational spaces, in different forms, are present in all the periods of the building history, and the manner of its organization was affected by the actual social system. A significant contribution to the problems of open and recreational spaces was given by the La Chartre d'Athenes [1] in 1933, where was emphasized that the open spaces are most frequently insufficient, usability is low for the majority of users, and that it was necessary to design the housing complexes with the appertaining open spaces for the leisure time and recreation, and that the new greenery surfaces ought to be treated as the extension of dwelling.

2.2 Contents and functional structure of open and recreational spaces

Recreational spaces of a city [8] are all the city spaces which are used for recreation, with appropriate arrangement and equipment, contributing to the satisfaction of the recreational human needs, and are intended for the daily or occasional recreation. There are several forms of urban recreation: psychical, physical, psycho-physical; active and passive recreation, and they differ in the degree of organization of the recreational activities, degree of psycho-physical strain, manner of partaking and course of the recreational activity. The recreational activities may be organized, partially organized and unorganized (spontaneous), and the recreational spaces may be: open and closed.

Further in the text, the open spaces will be considered. As Ž.V. Nederal [9] stated: *"Open space, as a functional space comprises spaces used in a certain manner and for certain purpose, with a role in forming the city and providing the ecological conditions of healthy dwelling. Their roles in the housing zone are: spaces for communication, leisure time and recreation, varied usage spaces such as the integral spaces with the city content, preservation of the environment, formation of the urban image of the city, segregation of the built-up city area."*

Organization of the open spaces is connected to the functional, aesthetic and ecologic requirements in city planning, depends on the building tradition and the specifics of the city. Intertwining, interlinking and integration are the basic principles of the arrangement of the open and recreational spaces, and since in each environment, the manner of recreational usage of space differ, the required conditions for the certain contexts, the same "pattern" of arrangement of the recreational spaces cannot be applied in the different urban environments. In order to even consider the usability of open spaces, it is necessary that they be used for recreational purposes and that they have the appropriate content.

2.3 Classification of open and recreational spaces

Depending on the manner of usage of open and recreational spaces, there is a classification [8] in respect to the: required properties and characteristics of space, degree of enclosing, presence of different sorts of content, time of usage, manner of linking, accessibility level, number of users, position. It is also possible to have a classification of the open and recreational spaces depending on to how large housing group within the housing zone they belong to. The different categories assume different functions and contents, which are affected by the gravitational area and needs for everyday or occasional usage of the open space. In this paper, the classifications of the following authors - Ž.V. Nederal [8], R. Galić [4], B. Mirković [6] and B. Maksimović [5] - were systematized, and the following size typology of open and recreational spaces was derived as well:

A) Recreational spaces as the integral part of the residence - this category consists of gardens, balconies, roof terraces, as presented with Figure 1:



Fig. 1. Individual yard in Niederkassel

B) Common recreational spaces of the residential unit group:

- **Recreational spaces of the primary housing group** – belong to the housing group up to 1000 residents, and they are located immediately near to the housing structures, at 50 – 100 m distance. In Figure 2, there is the free space with the sitting benches, greenery and central fountain for a group of residential buildings in Berlin.

- **Recreational spaces of the primary housing group** – belong to the housing block with 350-450 household, that is, 1-2000 residents, and they are located at 150-200 m distance from the place of residence. In Figure 3 there is the recreational space of the housing block in Berlin [6].



Fig. 2. Open space in Berlin



Fig. 3. Open space in Berlin

- **Recreational spaces of the neighborhood**—belong to the residential neighborhood with around 4500-8000 residents, and the walking distance is 250-300m. An example of the recreational space of the neighborhood with 6 primary residential groups whose open spaces are opened towards the central open space, a park intended for recreation and isolated from the motor traffic is given in Figure 4.

- **Recreational spaces of the housing complex** – belong to the residential community with residents, and the walking distance radius is 500-600m. In Figure 5 there is a recreational space of the housing complex with 10000 residents:



Fig. 4. Residential neighborhood in Berger

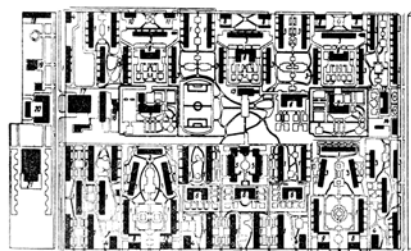


Fig. 5. Residential complex in Kharkov

C) Tertiary open spaces:

- **Open spaces of the residential district** – are intended for the residents of the residential district with 30000–50000 denizens (in case of the larger cities, up to 150000 inhabitants. The service radius is 1000–1500m, and the walking distances are 15–20 minutes. Those are the specialized or multi-purpose independent recreational spaces, open recreational spaces which are no a part of the residence (within a school, shopping mall), linking open recreational spaces (parks, squares, promenades, connecting greenery) and the recreational park for 40000 users may be seen in the Figure 6.

- **Leisure time centers** – they represent the recreational spaces of the city and they are intended for the daily use and the spare time during the weekends, for the rest, sport, recreation, entertainment. Apart from the greenery for the passive rest, they also contain the sports terrains and the spaces for the child's play, as well as the covered sport arenas, so that they can be used regardless of the season. Leisure time center for 12000 users can be seen in Figure 7.

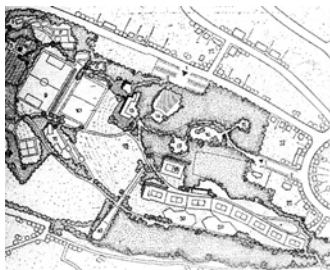


Fig. 6. Recreational park

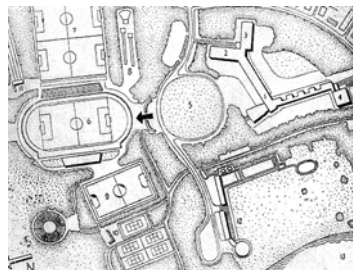


Fig. 7. Center for leisure time

2.4 Principles of organization, arrangement and usage of the open and recreational spaces

The initial point in design of the open and recreational spaces are the properties of the urban landscape [8] and the specifics of the each urban environment. Each recreational space is unique in terms of the sort contents, manner of activities unfolding there, intensity and the way of usage, size, capacity, interrelatedness with other urban content. The required size and capacity of the recreational space are conditioned with: sorts of activities, manner of unfolding, specifics of the environment, time-spatial organization, environment protection, ambient values.

In order to use the open spaces on a daily basis, it is necessary that there exist a culture and a habit of using them, which is affected by the proximity, accessibility, knowledge that they may be used at any time of day, the attractiveness of the open space ambient and its vital value. Attractiveness is contributed by the intimate environment character, domestic garden, isolated from the traffic routes and dynamic urban life, as well as the varied offer of the recreational content. The noisy sport playgrounds should be located between the primary open spaces, at a sufficient distance from the buildings. The Figure 8 presents an attractive open space of the residential building in Norderstedt [6] with arranged lawns and a pond which gives place an appearance of the pleasant and peaceful garden:

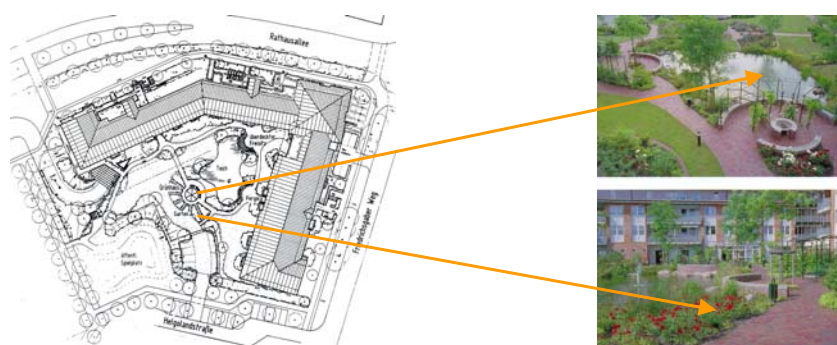


Fig. 8. Primary open space with the water surfaces

The qualitative presence comprises equally rich and complex structures of various spaces harmonized with the requirements of the users. This comprises that there should be terrains for sport and gymnastics, that is, tennis, volleyball, basketball courts, football pitch, bowling hall, table-tennis facilities, a solarium and it is desirable to design a small pool which would create an attractive space for children and the adults. It is very important to provide the constant change of the activities sorts [5], and the ways of using the space, and as many different activities for the individuals as possible, according to the change of life style and the needs of the inhabitants and the new discoveries. The changes also appear due to the growth of greenery during a year, and it is very necessary that the users of the space are commonly interested in the maintenance of the greenery.

Belonging of the open space to the primary residential group [8] is its primary functional value, from which derives the belonging of the inhabitants to this space and the mutual feeling of closeness. The belonging is connected to the physical distance, but also

comprises the feeling that the space really belongs to the users and that they can arrange it and use it according to their needs and take part in its maintenance. The emphasis of the space boundaries contribute to the feeling of belonging, which may be achieved by the partial surrounding with the residential buildings and the high greenery. The total enclosure with the building would create a feeling of isolation, and obstruct ventilation, and would also effect heat emission from the wall mass, which would create an unfavorable microclimate and inappropriate resting ambient. It is also desirable that there is an immediate connection of the open spaces with the entrances in the residential buildings⁶, as well as absence of the motor traffic and car lots between the buildings and the open space, that is, a principle of hierarchy, segregation or differentiation of traffic should be obeyed [7]. Total separation of motor and pedestrian traffic is applied at Radburn system, by enabling the residents to access their dwelling place with cars, while the movement of the pedestrians is organized in the open space, protected from the traffic and noise, which ensures the safety of the residents. In the housing settlement in Berlin, in Figure 9, the said principles were applied:



Fig. 9. Residential complex in Berlin

Adequate allocation [8] of the open space results from the clearly defined contents and the manner of usage of space and the favorable spatial-temporal distance of users (walking distance and traffic connections). This comprises: accessibility, adequacy of space usage, good spatial-temporal connection, protection of man while he is there, protection from the pollution, preservation of the flora and fauna, visual quality of the environment, linking to the surrounding landscape.

The continuity of open spaces [6] and the organic link to the greenery is significant realization of the pedestrian communication from the residence to the park of the residential community or the district park. The continuity in functional and spatial linking and the way of arrangement of the recreational spaces facilitates multi-purpose usage of spaces, their connecting and integration.

The increase of the recreational function of the open spaces is achieved by their integration with the network of pedestrian course, thus forming the pedestrian zone, pedestrian street, playground street, alley/promenade. It is desirable to avoid placing the main linking pedestrian courses directly through the open spaces, for it would disturb the recreational activities. It is important to provide an number of quality paths for users.

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Fig. 10. Open spaces of the residential buildings group in Erlangen

One of the main characteristics of the open spaces is their life value, making them attractive for the urban recreation of the users. The life value of the open spaces are affected by the natural conditions, town planning conditions, size and form the inherited blocks, position of the parking lot and waste disposal sites [6].

In design of the open spaces, the favorable natural conditions should be used in achieving better of dwelling and recreation conditions. Those comprise the nearness of a park, preservation of the existing old plants and the stable soil. From the topographic point of view, the most suitable soil for the open spaces are those porous lots, slightly inclined towards south. The inclinations higher than 10-12% require constructions of ramps, staircases, but facilitate level separation of the space, and creation of more dynamic compositions. The relief, the mounds and hillocks, can be very interesting for child's play (climbing, sleigh riding) as may be seen in Figure 11 [4]:



Fig. 11. Mounds for child's play in the residential area of Hellersdorf in Berlin

It is desirable that the children playgrounds [6] be very easily observable from the residential building for the parental supervision, and it is also desirable that the sport grounds for the adults are located near the children playgrounds. As the children mature, learn, through the play, not only the completed playgrounds should be designed, but also the spaces for the creative activities of the children (making huts, flying kites). In the Figure 12 there is an open space for child's play in the residential block in Berlin [4], observable by the parents:



Fig. 12. Children playground in Berlin

In the compositional sense, the significant aesthetic and refreshing element of the open spaces is water, as well as greenery, whose manifold importance has already been mentioned. Greenery can simultaneously be treated as the motivation for visiting the open space, condition for the recreational activity and as the bioclimatic and aesthetic influential factor.

The natural properties of the terrain should as much as possible contribute to the satisfaction of the recreational needs of the users, but also to improve the micro and mezzo climate of the urban area, contribute to the development of the appropriate plant species, decrease and neutralize the pollution and noise and establish the favorable proportion of nature and built-up area.

As to the town planning conditions, of primary importance is that the size of the primary residential group and its open space influences the contents and their spatial organization, and especially at children playground and sport terrains. The characteristics of the

open spaces depend on the form of the primary residential group and its openness to other open spaces. The number of floors of the buildings and the orientation affect the insolation of the open spaces; in the summer shading of those spaces is desirable, in the winter it is not.

From the aspect of the increase of population density [5] and providing larger space for the open area, the higher buildings are more desirable, but if their lengths are too big, they may act unfavorably in psychological terms, and the noise annoyance also increases. The residential towers are more suitable because of the better insolation, better air circulation and continuity of green spaces network. In the inherited blocks, it is very difficult to organize the open spaces because of the existence of useless low structures which should be demolished in order to create a unified open space.

In design of the open spaces, it is necessary to take into account the position of standing traffic. In the recent period, in residential areas, very often the standard of the parking space is neglected, especially in the central city zones. The insufficient number of the parking lots has a consequence of the people parking in the open spaces, sidewalks, green surfaces, which functionally and aesthetically spoil the concept of a residential area. For the new residential areas, it is possible to design parking of up to 1/3 of vehicles in the garages, and the rest outdoors [7]. The dominant form of parking, and the cheapest one are the open parking lots, which can be solved as separate surfaces out of the running traffic or as allocated lanes within the traffic roadway profiles. From the aspect of arrangement of the open spaces, the most favorable, but the most expensive are the underground parking lots. When choosing the sites for the group parking lots and garages, according to prof. PhD P. Mitkovic [7], one should take into account: "*terrain morphology, insolation (less insolated surfaces are more desirable), drainage conditions, access roads from the traffic courses (manner of access and distance), distance of the entrance and the pedestrian link with them, protective greenery for separation from the recreational spaces and flats.*" The problem of nearness of garages and residential buildings poses two contradictory requirements. On one hand, there is a factor of the nearness of the access to the building, and on the other hand the air pollution factor and motor traffic noise, and the reduction of the open space surface area because of the garages. One of the solutions is making the multi-storied garages at the periphery of residential community. Author A. Persin deems that the minimum distance for the small garages should be 50 m. The most unfavorable position of the parking space is on the widened area close to the entrance, parallel to the longer side of the building, and more favorable is along the head walls. An example of locating the garages in respect to the open space and the residential buildings may be seen in Figure 13:

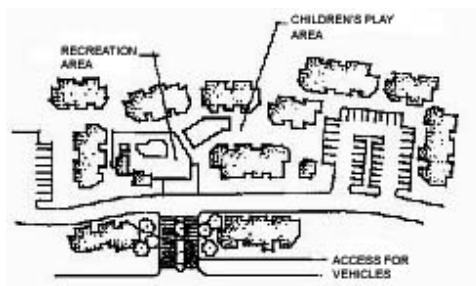


Fig. 13. An example of location the parking space

In order to attain the ecologic comfort and satisfy the basic hygiene requirements, the waste disposal sites should not be located immediately near the residential buildings. The most favorable position is along the head walls, as far as possible from the open spaces, and it is desirable to design separate spaces for the fence of decorative greenery. An example of an adequate enclosing of the waste disposal area can be seen in Figure 14 [4]:



Fig. 14. Waste disposal area in front of the residential building in Berlin

3. REVIEW OF THE OPEN AND RECREATIONAL SPACES OF NIŠ

The analysis of the open and recreational spaces of Niš was performed according to the size typology of the open and recreational spaces present in the housing zone, in order to consider their spatial-functional, ecologic, organizational and exploitation characteristics. The analysis encompasses all the categories of open and recreational spaces from the Niš territory, placed in different parts of the city. The characteristics of the selected spaces are systematized through the situation, tabular representations and photo-documentation, and they were analyzed on the basis of the following criteria: dimensional characteristics of space, categories of users, types of contents and activities, time of usage, degree of activities organization, degree of attraction, equipment level, arrangement level and hygienic conditions. Each category is presented through the summed up description of the analyzed characteristics and the tabular presentation of the present activities, arrangement degree, equipment degree and hygienic conditions, and the representative sample is presented through the situation and photo-documentation.

In the category Open Spaces integral part of the residence, four individual yards were analyzed. Considering that it is a private property, the yard areas are quite different, the users are the tenants of the building, according to the level of organization they belong to the unorganized spaces, usage is daily, according to the level of attraction they represent the open space of a smaller city unit, and other characteristics may be seen in the Table 1. The representative sample is the individual yard in the Zlatiborska street, that can be seen in Figures 15 and 16.

Table 1. Open spaces integral part of the residence

	Type of contents and activities	Equipment level	Arrangement degree	Hygienic conditions
Bulevar Mediana	1. Sitting, rest, ind. sport, 2. Green area	Excellent	High	Favorable
Zlatiborska	1. Sitting, rest, ind. sport, 2. Green area	Excellent	High	Favorable
Narodnih Heroja	1. Sitting, rest, 2. Small green area	Bad	Low	Unfavorable
Vojvode Tankosića	1. Sitting, rest, 2. Small green area	Bad	Low	Unfavorable



Fig. 15. Modern equipped yard



Fig. 16. A view at arranged green areas

The common characteristic of the open spaces of primary and secondary housing group is that the users belong to all age groups, usage is daily, property is semi-public, and according to the attraction level they are the free space of a small city unit, and they belong to multi-purpose spaces. From the category Open spaces of the primary housing group, 5 samples were analyzed, whose surface area ranges between 0.06-0.22 ha, according to the degree of organization belong to unorganized spaces, and the remaining characteristics can be seen in Table 2. As a representative sample, the open space in the Bulevar Nemanjica street was chosen, and it is represented by the Figures 17 and 18.

Table 2. Open spaces of the primary housing group

	Type of contents and activities	Equipment level	Arrangement degree	Hygienic conditions
Bulevar Nemanjića	1. Open space for rest, socialization 2. Green area 3. Basketball court	Bad	Low	Unfavorable
Bulevar Nemanjića	1. Open space for rest, socialization 2. Green area 3. Children playground	Average	Average	Partially favorable
Božidar Adžije	1. Open space for rest, socialization 2. Green area 3. Basketball table	Bad	Low	Partially favorable
Nade Tomić	1. Parking - garage no contents - activities	No urb. equipmen	Low	Unfavorable
Kej 29. Decembra	1. Basketball court 2. Parking - garages 3. Green area 4. Walking paths	Bad	Low	Partially favorable

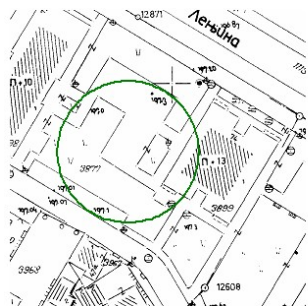


Fig. 17. Situation



Fig. 18. Children playground

From the category Open spaces of the secondary housing group, 5 samples were analyzed. According to the organization degree, they belong to the partially organized spaces, the surface areas range between 0.2-0.66 ha, and as a representative sample, the open space from the Bulevar Nemanjica street was chosen. The remaining characteristics can be seen in table 3, and the space is presented in the Figures 19 and 20.

Table 3. Open spaces of the secondary housing group

	Type of contents and activities	Equipment level	Arrangement degree	Hygienic conditions
Bulevar Nemanjića	1. Open space for rest, socialization 2. Green area 3. Children playground 4. Amphitheater (out of order)	Bad	Low	Unfavorable
Pariske Komune	1. Open space for rest, socialization 2. Green area 3. Basketball court	Bad	Low	Partially favorable
Knjaževačka	1. Open space for rest, socialization 2. Green area 3. Basketball court 4. Children playground	Bad	Low	Partially favorable
Nikole Pašića	1. Open space for rest, socialization 2. Garage 2	No urb. equipment	Very low	Very unfavorable
Bulevar Mediana	1. Basketball court, 2. Greenery 3. Walkway	No urb. equipment	Low	Partially favorable



Fig. 19. Situation



Fig. 20. Green area

In the category Open spaces of the neighborhood, the parks and recreational spaces in the schools were analyzed. The users belong to all age groups, according to the organization level they belong to the organized spaces, they are intended for weekly leisure time, the property is semi-public, according to the attraction level they belong to the open spaces of the part of the city and other characteristics may be seen in table 4. Five samples were analyzed from this category, and the recreational space of the "Sveti Sava" primary school was chosen as a representative, and it was presented by Figures 21 and 22.

Table 4. Open and recreational spaces of the neighborhood

	Type of contents and activities	Equipment level	Arrangement degree	Hygienic conditions
Nikole Pašića	1. Sitting, walking, rest 2. Green surfaces	Average	High	Favorable
Bulevar Nemanjića	1. Sitting, walking, rest, socialization, 2. Green area	Excellent	High	Favorable
Romanijska	1. Tennis, 2. Basketball 3. Small football	Excellent	High	Favorable
Rad. Domanović	1. Basketball, volleyball, basketball 2. Green area	Excellent	Average	Partially favorable
Sveti Sava	1. Football, basketball, volleyball, handball, jogging, bicycling 2. Green surface površine	Excellent	High	Favorable



Fig. 21. Situation



Fig. 22. New Basketball Court

In the category Open spaces of the housing complex three samples were analyzed, users belong to all age groups, according to the organization level they belong to partially organized spaces, and they are intended for the weekly leisure time, it is a public property, according to the attraction level, they belong to the open spaces of the part of the city and the remaining characteristics may be seen in the table 5. As a representative, the space in the quay was chosen (Narodnih Heroja street) in the Figures 23 and 24.

Table 5. Open and recreational spaces of the residential complex

	Type of contents and activities	Equipment level	Arrangement degree	Hygienic conditions
Knjaževačka	1. Closed tennis court 2. Green area 3. Basketball/football/volleyball courts	Average	Average	Partially favorable
S. Mladenovića	1. Volleyball/ football courts/ 2. Green area	Bad	Low	Partially favorable
Kej Narodnih Heroja	1. Basket/football/handball/volleyball/tennis/squadh 2. Gymnastics 3. Green area	Average	Average	Favorable

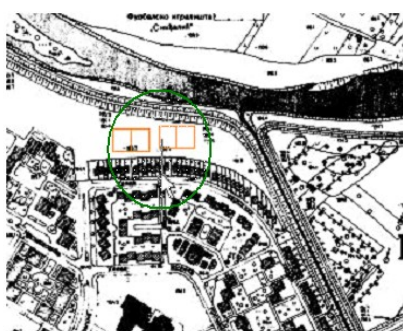


Fig. 23. Situation



Fig. 24. Enclosed sport courts

In the category Open spaces of the residential districts, it is characteristics that the users belong to all age groups, according to the degree of organization they belong to the organized spaces, they are intended for the weekly leisure time, the property is public, the surface area is 1-5ha, and according to the attraction level they represent the open spaces of the part of the city. Four samples were analyzed from this category, and the remaining characteristics were represented in table 6. The representative sample is the Sveti Sava park, shown in the Figures 25 and 26.

Table 6. Open and recreational spaces of the residential district

	Type of contents and activities	Equipment level	Arrangement degree	Hygienic conditions
Nišavska	1. Basketball, volleyball, handball, football 2. Green area.	Average	Average	Favorable
Trg Vojske	1. Sitting, walking, socialization, rest, 2. Green area	Excellent	High	Favorable
Kej	1. Walking, socialization, rest, jogging 2. Green areae	No urban equipmente	Average	Favorable
Park Sveti Sava	1. Walking, socialization, rest, 2. Chess 3. Child's play, 4. Green area, 5. Catering and shopping, 6. Church	Excellent	High	Favorable



Fig. 25. Situation



Fig. 26. Central plateau in park

In the category open spaces of the city, four samples were analyzed, and their characteristics can be seen in Table 7. Users of these spaces belong to all age groups, according to the organization degree they are organized spaces, and they are intended to the weekly leisure time, the ownership is public, the surface area is 19-22ha, and according to the attraction level they belong to the open spaces of the larger part of the city, and the representative example is the Cair park, shown in the Figures 27 i 28.

Table 7. Open and recreational space of the city

	Type of contents and activities	Equipment level	Arrangement degree	Hygienic conditions
Park Čair	1. Sitting, walking, rest, socialization, 2. Child's play, 3. Green area, 4. Basketball/football court 5. Stadium / sport hall	Modern urban equipment	High	Favorable
Tvrđava	1. Walking, resting, soci-alization, 2. Child's play, 3. Green area, 4. Open theatre, museum, gallery, history archives 5. Catering	Modern urban equipment	High	Favorable
Kej Živote Došića	1. Sitting, walking, rest, socialization, 2. Green area 3. Trampoline 4. Catering	Modern urban equipment	High	Favorable
Jadranska	1. Open and closed tennis courts	Modern urban equipment	High	Favorable



Fig. 27. Situation



Fig. 28. Attractive walking ambient

4. CONCLUSION

Open and recreational spaces are the integral contents of the housing zone where the psychic and physical energy of man are regenerated and the creative and intellectual development of human personality takes place, that is, the numerous functions important for the quality of dwelling and life in the urban environment. The adequate organization and maintaining of this spaces, ecologic comfort and accessibility contribute to the transformation of the appearance of the environment they belong to and to functional-spatial unity of the residential ambient. In arrangement of open and recreational spaces it is necessary to consider the specifics of the urban environment, users' requirements, building tradition and developmental characteristics, then the potential modi of recreational usage of space, degree of arrangement and equipment, as well as the required specific characteristics of space for the activities. A higher level of quality of open and recreational spaces doesn't have to comprise higher quantitative presence, that is larger surface area of the recreational space. Considering that there are no standards in our country for the open and recreational spaces, it is necessary to work out the regulation and standard values related to the size of the recreational space, time-space distance, accessibility, equipment. As any urban environment is subject to changes and transformations of the age structure of users, the current needs of the users may not be established for the future, for they can mean limitation in using of space.

An analysis of open and recreational spaces in Niš shows that degree of arrangement and equipment is different in different categories of space. As to the category – recreational spaces integral part of the residence, the general conclusion cannot be made, because it is the private property, so these spaces are arranged and organized depending on the needs, taste, but also the financial might of the owners. As the individual residential buildings in Niš are not grouped according to the financial might of the population, apart from some of the districts in Niš which are populated by the poor population, in the same residential block and complex there are side-by-side the modern equipped and arranged individual yards, but also the unattractive and neglected yards.

The residential buildings in the category of common recreational spaces of the group of residential units are built about twenty years ago, when there were no standards related to the arrangement of the open and recreational space. It is characteristic that they were built as the buildings for social dwelling, meaning satisfaction of the elementary housing requirements and minimal arrangement of the appertaining open spaces. After the privatization process, the ownership of the appertaining open spaces of the residential buildings was not regulated. As a consequence, the urban equipment is obsolete and is maintained by the individual tenants. The destructive behavior of the tenants in open spaces is obvious, and one of the reasons is that the spaces themselves look dehumanized and have no life value.

In the category common recreational spaces of the primary residential group, according to the degree of arrangement, two types of open spaces can be noticed. The first type open spaces whose arrangement is adequately designed and constructed for the level of dwelling, and the contents designed according to the needs of the users, but in time degraded, and were not maintained, so that the present degree of arrangement is very low and these spaces don't meet the needs of the population. The second type are open spaces where the parking lots are dominant, alongside garages and waste disposal sites. Most

often this is the only content, so the spaces have no recreational value. These spaces are typical for the central city zone, with the closed type of building and internal yards characterized by the bad hygienic conditions.

It is common for the recreational spaces of the secondary residential groups that they have generally sufficient surface area designed, but the degree of arrangement and equipment is low, and the contents do not suit the users requirements. Also, the pedestrian and motor traffic are mixed, and in some locations, parking lot are placed within the open spaces and children playgrounds. Arrangement and equipment of the recreational spaces of the neighborhood is satisfactory because their maintenance is in the competence of the city (city parks), that is schools they belong to. Investment in this category of recreational spaces are evident, but the more modern urban equipment is desirable and the higher hygienic level. The recreational spaces of the housing complexes is characterized by the low level of arrangement, neglected status and damaged urban equipment.

The degree of arrangement of district recreational spaces differs depending on the part of the city where they are situated. Those in the more active part of the city have the representative character and arrangement and equipment are on the higher level, and the hygienic conditions are favorable. Those situated in the periphery of the city have the lower level of arrangement, bad hygienic conditions, and less finances are allocated for their maintenance. Recreational spaces of the city are characterized by the high degree of arrangement and equipment, contemporary urban equipment, openness to changes and new contents, which enhances their attractiveness, representative and commercial character and attraction for the users form the entire city. Yet, it is necessary to constantly invest in the arrangement of these spaces, in accordance with the constant city development.

Considering the fact that in Niš there are both arranged but also the neglected and disordered open spaces, with no usability value, which with their inadequate contents and organization look unattractive to the users, revitalization action is necessary, but also the construction of new spaces for this purpose which would fit in the modern city ambient and contribute to the level of dwelling quality. For some categories of open and recreational spaces it is necessary to resolve the ownership, which would define the competence of maintenance and enable their adaptation. It is important to define the quality standards at national level, and the most important is to improve the housing conscience of the users and their dwelling culture, which is a global goal of any society. The determined characteristics of open and recreational spaces are an important basis for the beginning of the revitalization of these spaces in the territory of the city of Niš. In order to improve them at the level of the individual residential neighborhoods and the level of the city, it is necessary to work out the criterion on whose basis an in-detail evaluation of each individual space could be conducted and the concrete recommendations and guidelines for the improvement of its usability value and the improvement of the dwelling quality could be determined.

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SLOBODNI I REKREATIVNI PROSTORI KAO PARAMETRI KVALITETA STANOVANJA

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Slobodni i rekreativni prostori predstavljaju esencijalne sadržaje stambene zone, čije uređenje, opremanje i održavanje utiče na nivo kvaliteta stanovanja. Adekvatno uređenje i održavanje slobodnih i rekreativnih prostora, ekološki komfor i dostupnost doprinose transformaciji estetskog identiteta funkcionalno-prostornoj celovitosti stambenog ambijenta kome pripadaju. U ovom radu su istaživani sadržaj i funkcionalna struktura slobodnih i rekreativnih prostora, kategorije u stambenoj zoni, osnovni principi uređenja, na osnovu kojih je izvršena analiza i vrednovanje slobodnih i rekreativnih prostora na teritoriji grada Niša. Sprovedena analiza ima za cilj davanje preporuka i smernica za unapređenje i revitalizaciju slobodnih i rekreativnih prostora, kao determinatni kvaliteta stanovanja.