

The role of medium and technology in perception, recognition and presentation of urban open space qualities

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Abstract

This paper explores the relation between urban *open space qualities* (their perception, recognition and presentation) and the possibilities of different medium and technologies to represent them during the design process.

Starting with Tom Turners hypothesis that "*the medium is the message*" we shall first discuss the relation between values of open space that were promoted in different urban theories and the designer's choice of different medium to represent them.

Secondly, the relation between new technologies and contemporary approaches in defining values in open space design will be established and the possibilities of using new technologies (digital imaging, video, 3d modeling...) in perceiving, mapping, analyzing and expressing complexity of state and development of contemporary urban landscapes - will be explored.

In relation to this, we'll finally try to identify the influence that new technologies may have on education in the field of urban open space design.

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1. Introduction

Identification and understanding of the urban open space quality depends on the possibility to recognize and formulate quality factors and to express them in appropriate way. In a cyclic process of urban open space design - various mediums, methods and techniques are used for this purpose.

Is there a relation between the perception and recognition of urban open space values and the designer's choice of different medium to represent them? Does the way of marking and presenting these values change over time and does it evolve with our changing perception of preferred urban open space qualities? How do the new technologies influence open space design process in this field? These are the questions that are to be explored in this paper.

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We shall first discuss the relation between values of open space that were promoted in different urban theories and the designer's choice of different medium to represent them - as an element of distinction, interpretation, conceptualization and realization of different qualities in one public space.

Secondly, the relation between new technologies and contemporary approaches in defining values in open space design will be established and the possibilities of using new technologies (digital imaging, video, 3d modeling...) in perceiving, mapping, analyzing and expressing complexity of state and development of contemporary urban landscapes - will be explored. In relation to this, we'll finally try to identify the influence that new technologies may have on education in the field of urban open space design.

2. Conceptualization and presentation of different urban open space values and qualities

Different design theoretical approaches, developed in different periods of city evolution, favored different urban open space values and qualities. Though it is now broadly accepted that urban open public space should be both functional and pleasant, that it should enable human communication and interaction but at the same time protect and enhance its ecological values, evolution of open space quality concept through history shows tendency to favor *one quality dimension* of open space and to present it in a particular way by choosing specific *medium* that also depended on existing level of technology development.

In the following part, by parallel textual and visual survey, we shall try to present some typical and distinctive ways of visual marking of different approaches to understand quality and meaning of urban space thus confirming Tom Turners thesis that "*the medium is the message*" - specifically - message of what quality of open space presented theory favors the most.

2.1. Functional city- city as a machine, Open space - green space

Old, probably as a first city – the idea about functional city emerges as a reaction to overcrowded and over built cities in XIX century. Though accepting the need for various data and information in survey design phase (input) this urban concept had one serious anomaly - it tended to form universal solutions (output), independent of context and scale. It has caused several serious problems at both functional and physical level. Magical word – efficiency – was developed in different organizational concepts but has experienced the most critics in interpretation of functional segregation personified in the Ville Radieuse. On the physical level - extermination of demand for “sun, space and greenery” led to disintegration of a physical structure. Great amount of open spaces, identified as green spaces, didn't consequently mean its qualitative use. The idea about city - efficient like machine is expressed by *basic linear drawing* which, though it contains nature, does not contain people. (Figure 1a)

2.2. City as a public scene – city as a collage, Open space - public space

In response to the problems of functional city, affirmation of *social* values of urban space took place in the 60's and 70's of XX century. City was recognized as a public scene/stage for different actors. Diversity of their rolls and relations, as well as the variability of urban surrounding was presented the best in technique of collage

(figure 1b). [6]. This phase of open space quality concept evolution brought the need not only for various inputs in defining urban open spaces but also for various outputs-solutions - since it underlined necessity to fulfill various human needs and uses of urban open spaces. In addition to collage providing a presence of people in urban space, city collage was formed as well as the postmodern collaging of already affirmed traditional values [4]

2.3. City of coexisting programs – diagram city, Open space- program space

80's and 90's brought us deconstruction of architectural and urban space which is followed by breaking with traditional cause of form and function. Urban open space function is perceived in all of its variability and its ability to accept different programs composed in regard to different time's or user's horizons is recognized. Conceptual approach to love and interpret city as it is, with all its complexities and nonperfections and to design open spaces according to this was helped also by computer and digital technology development. This understanding of urban spaces values expresses itself visually by coexisting abilities and articulation of different programs and expresses by *diagram*, more exactly, by “*verbal sketch*”. (Figure 1c)

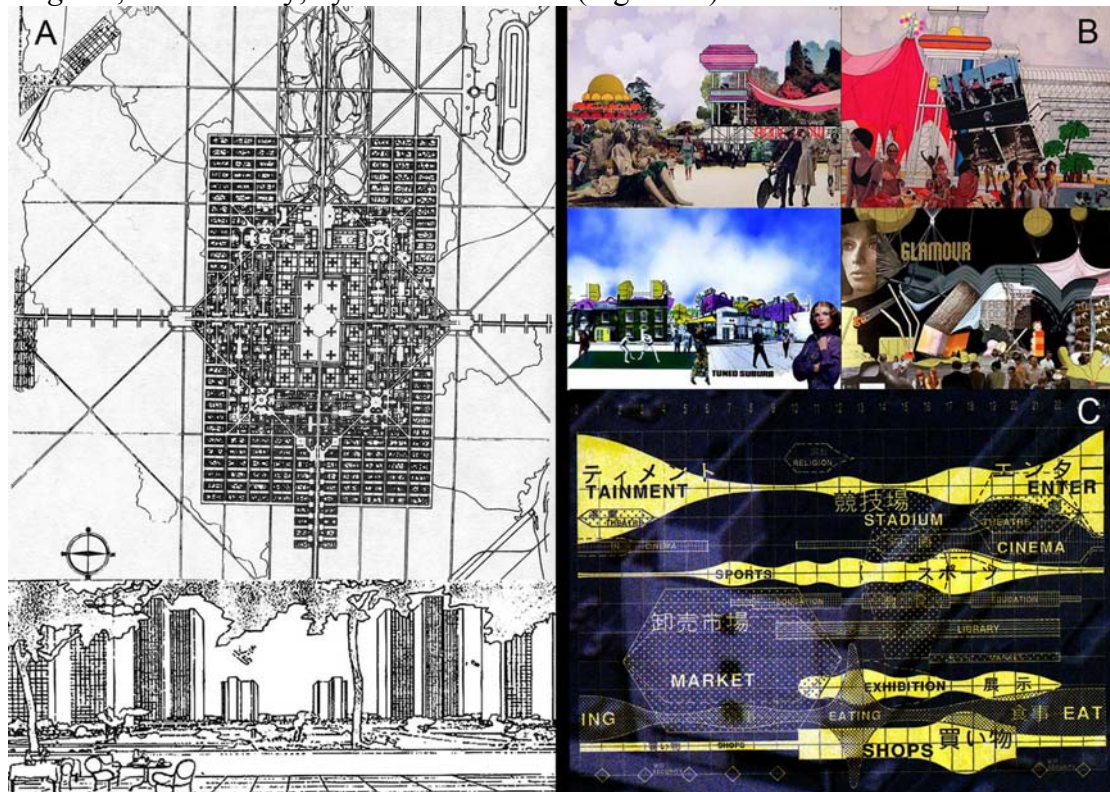


Figure 1a –Functional city, linear drawing, Le Corbusier

Figure 1b –City as a public scene – collages, Archigram

Figure 1c – City of coexisting programs -diagram city, Yokohama, OMA

2.4. Urban open space theory and its presentation

This elementary presentation of basic ideas about favorable qualities of urban open spaces, though confirming tendency to unitarism in urban design theory, showed us that the growth of knowledge and experience about urban environment:

- a) depends on technological constraints to gather, use and interpret data and generate conceptual framework
- b) change not only the urban open space quality concept through time but its visual presentation as well.

It is possible to see that designer's choice of medium in all presented theories - linear drawing, collage and diagram-verbal sketch - stands in relation to both:

- technology development that enables *visual presentation* of designers vision but also to
- designers choice of medium to *visually express favoured non visual space qualities*

At this point we come to the questions: *how do we define urban open space quality concept today and use new technologies to help us improve perceiving, mapping, analyzing and expressing complexity of present and future development of urban open spaces?*

3. New technologies and contemporary approaches in defining values in open space design

3.1. Contemporary urban open space quality concept: Open space polyvalence in “layer” city

The urban environment as perceived at the beginning of 21st century is both a living environment and artifact that envelopes a very complex group of living and nonliving things which can be recognized in different space levels with their complexity and richness by whom they reflect all complexity of biological and social structures which existential and living space they represent.

Eliminating causality between form and function resulted in creating conditions for simultaneous affirmation of multivolume values of urban space. *Complexity of urban space is perceived as its value.* It is not understood as a chaos, but more like harmonization of order and the accidental, standing halfway between these two extremes, possessing an internal structure. The more complex structure is – the possibilities of different perception of space values are bigger – and it possesses much bigger domain of relative meanings so that more people appreciate its value. [1] This quality of structure, supplies prerequisite to achieve creative urban environment. This way defined *complexity of the environment* – which means overlapping and integrating different space values (ecological, aesthetical, functional, social) – *is perceived as its value.*

Development of various computer technologies brought us new possibilities to segment particular levels/networks of values, to connect them with data basis and to present them through “layers” sedimentation (Figure 2.). Opposite to the rationalist tradition of deterministic planning [5]- in contemporary design approaches this is not used only in a survey phase but also in synthetically phases of the design process and it is strongly connected with a decision support systems as GIS .

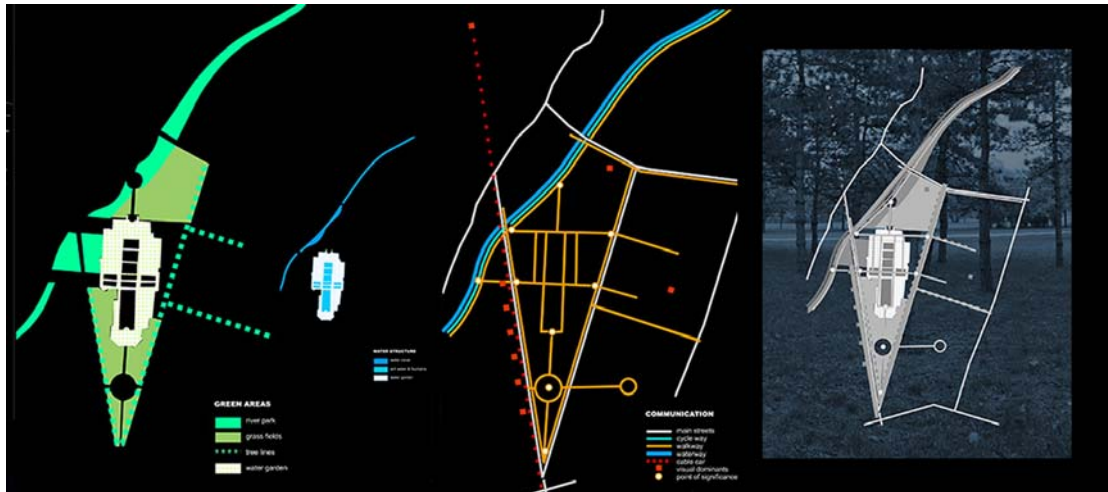


Figure 2 – Crossing project - layer sedimentation of open space networks: vegetation, water, communication, synthesis, Competition entry for Blonie, Krakow, authors: Živković J., Petrović S., Milić V., Đokić V. Đukanović Z.

3.2. Instability and variety of urban quality concept environment

The idea of urban open space quality is a very broad and ambivalent category and it depends on large number of factors. We speak about aesthetic but also about social, economic, ecologic and many other values and qualities of open spaces in urban areas. On the other hand, quality itself, is a category defined by civilization, and therefore also a variable category that stands in relation to a) *change of human needs and priorities* in life, b) *growth of human knowledge* that influence our ability to identify and define urban environmental quality factors and c) *growth of experience* in implementing theoretical models in a particular social, economical, political and cultural frame [7].

Development of technology as a part of overall civilization development can be seen as a tool to deal with this complex and changing design environment. This is particularly important in a changed planning and design environment in which public participation and interdisciplinary approaches take an important part. Both VR (virtual reality, digital image manipulation...), 3d modeling and other concepts of idea visual and multimedia presentation and decision supporting systems (such as GIS) have significant role in enabling and enhancing communication in open space planning and design process.

4. New technologies and education in open space design

4.1. Open space design process

Basic design process[RIBA] is usually divided in four phases:

- (1) *Assimilation*: the accumulation of general information and information specially related to the problem
- (2) *General Study*: the investigation of the nature of the problem: the investigation of possible solutions
- (3) *Development*: the development of one or more solutions
- (4) *Communication*: the communication of the chosen solution/s to the client [9]

Designer goes through a series of linked decisions which form a clearly defined sequence which is described as *analysis, synthesis, appraisal and decision...* During the analytical stage, goals and objectives are classified and pattern of information are sought. Synthesis is the stage where ideas are generated and it is followed by a critical evaluation of the alternative solutions against objectives, costs etc.that after several iterations bring us to decisions. [9]

In a similar way landscape architects design process can be described [8]:

- (1) *Inventory/research*: includes site inventory and program research
- (2) *Analysis*: site analysis: constraints and opportunities, spatial diagrams
- (3) *Synthesis*: active zone plan that leads to preliminary site design

New computer technologies can be strongly connected with design process in its different stages. They are usually divided into two main categories: GIS and VR. Where VR and multimedia has been concentrated around the creation of virtual environments and real-time visualizations, GIS was defined from a 2d concept with the third dimension described as an attribute to a specific location. [10]

4.2 GIS

GIS is a tool that connects databases to maps. In planning and designing urban open spaces this is essential. It is technology, a tool, a method that can help design process - but basic principles of landscape architecture and urban design remain the same. Designers still follow design process and design solutions need not to be significantly different. But new tools may modify design process and design solutions in a good way. This is based on the fact that GIS makes the opportunity

- to deal with numerous and complex data in functionally and spatially structured way, so conclusions and proposals might be more valid and complex
- to test several alternatives , so the solutions will probably be better
- to quantify design proposals, so client satisfaction might increase
- for better interdisciplinary communication during overall design process

Three-dimensional views easily communicate spatial proposals to citizens, review boards, clients and other professionals. What a GIS as a tool cannot do is to replace expertise, good judgment, and ethical standards of the professionals using these tools.[8]

GIS programs have become user-friendly and they evolve in relation to needs of urban design and landscape architecture design process and therefore became a part of urban planning and design as well as architects and landscape architects education. Though it is a helpful tool in data gathering, analysis and presentation in this paper we shall focus on other aspect of use of new technologies in open space design educational process that deals with variety of presenting visual and non visual urban open space qualities.

4.3. VR and multimedia

Virtual reality and multimedia are most often connected with ideas presentations and concentrated around the creation of virtual environments and real-time visualizations that enables generation of alternatives or final design proposals. But visually expressing urban open space quality is not relevant just because of its role as a communicant in a presentation of idea what urban space should be. On the contrary,

just *process* of investigating its appropriate expression can present medium, transcendent of exploring for not-in-this-moment rationally explained qualities which we recognize in space. In that way, expression of different ways of visual presentation of urban space qualities, represent a segment of a process of conceptualization and genesis of urban space meanings. [11]

Because of this function, with exception of importance which it gets in context of creating a real urban space, exploration of different ways of visual marking of urban qualities, can have especial significance in an education process of students of landscape architecture, urbanism and architecture.

Development of more affordable digital imaging devices and user friendly software influenced academics education process in design professions too. Various multimedia devices and sources are used in all phases of design process in order to a) identify, collect, conceptualize and express existing multivolume qualities of urban open space and b) visually express its proposed complexity and meaning.

In an educational process mass use of new technologies turned out to be specifically useful to:

- simulate state and change of urban open space use or appearance, caused by time or events (figure 3)
- visually express visual and non visual space qualities (figure 4)
- connecting values and data with visual expression of design proposals (figure 5)
- enhance variability of alternative uses or design proposals (figure 6)
- etc.

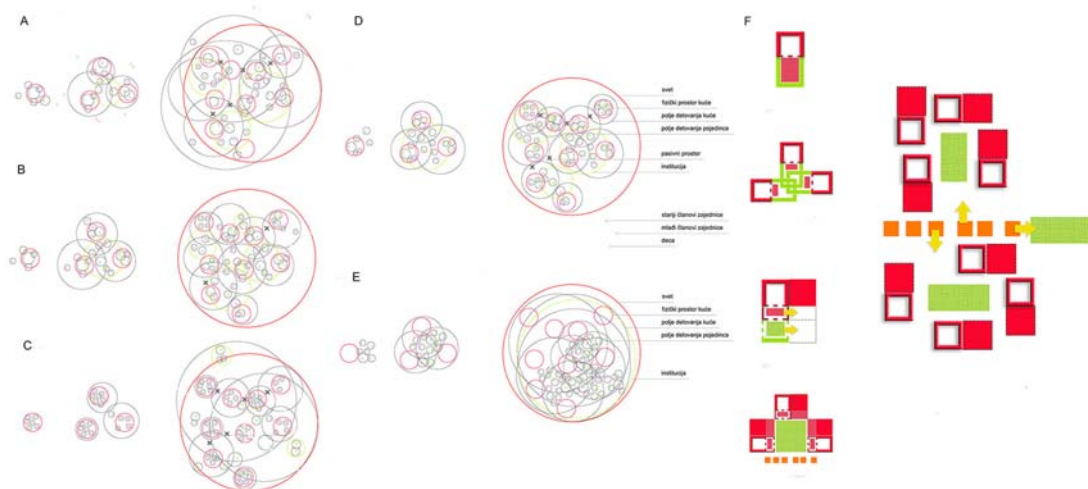


Figure 3 - Spatio-behavioral study of use of open spaces in gipsy settlement. a) morning , b) afternoon, c) night, d) dinner-time, e) celebrations, Diploma work, Faculty of Architecture, Belgrade, by Milena Delević

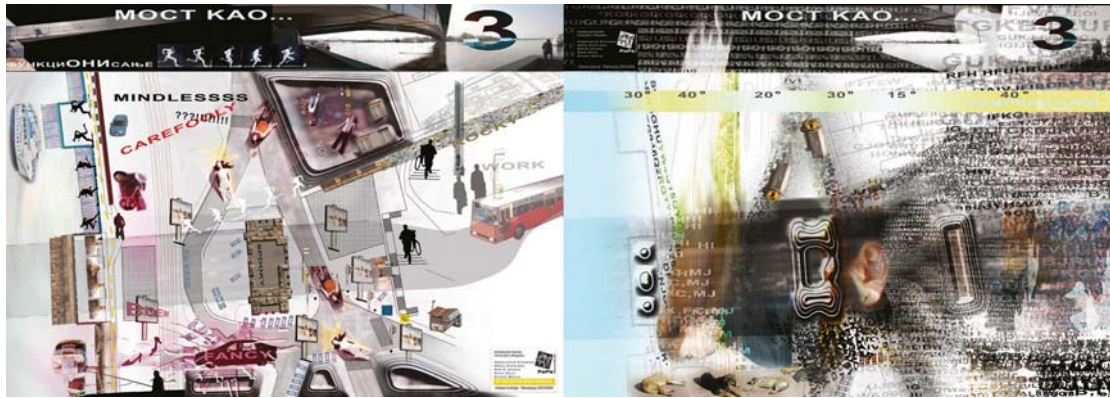


Figure 4 - Marking visual, functional and sensual space qualities, digital imaging, students work, Faculty of Architecture-Urban recreation and PaPs project, Belgrade, by Stanić S., Anđelković K., Ašiku S, Simić M., Ristić J.



Figure 5 - Multiuse of open space, connecting values and data with visual expression of design proposals, 3dmodeling and digital imaging, Faculty of Architecture - Urban recreation and PaPs project, Belgrade, by Jovanović M., Mihić N., Nešković B., Novović A.



Figure 6 - Variability of alternative uses and open space design proposals, 3dmodeling and digital imaging, Faculty of Architecture - Public Art and Public Space -PaPs project, Belgrade, by Veljković S., Mičić U., Milanović S., Stegić I.

5. Conclusion

In this paper we first showed that a growth of human knowledge and experience about urban environment depends on technological constraints and also change both the urban open space quality concept through time and its visual presentation as well.

In order to answer the question of how do we define urban open space quality concept today and use new technologies to help us improve perceiving, mapping, analyzing and expressing complexity of present and future development of urban open spaces, two levels of new media and technologies use was examined.

First relation was based on the statement that "*the complexity of urban space is perceived as its value*" and that new technologies should help us deal with both various and complex inputs as well as outputs in urban open space design. Complexity is strongly connected with overlapping and integrating different space values (ecological, aesthetical, functional, social) and therefore development of various computer technologies brought us new possibilities to segment particular levels/networks of values, to connect them with data basis and to present them through "layers" sedimentation. That is not used only in a survey phase but also in synthetical phases of the design process and it is strongly connected with a decision support systems such as GIS.

Second relation was based on *instability and variety of urban quality concept environment*. In relation to this development of technology as a part of overall civilization development can be seen as a tool to deal with this complex and changing design environment. This is particularly important in a changed planning and design environment in which public participation and interdisciplinary approaches take an important part. Both VR (virtual reality, digital image manipulation...), 3d modeling and other concepts of idea visual and multimedia presentation and decision supporting systems (such as GIS) have significant role in enabling and enhancing communication in open space planning and design process.

Finally we examined the use of new computer technologies in relation to design process and the influence they made to education in the field of open space design. Two main uses of computer technologies were presented: GIS and VR+multimedia. It is pointed out that since designers still follow design process design solutions need not to be significantly different - but new tools may modify design process and design solutions in a good way. This is based on the fact that GIS makes the opportunity: to deal with numerous and complex data in functionally and spatially structured way - so conclusions and proposals might be more valid and complex, to test several alternatives - so the solutions will probably be better, to quantify design proposals - so client satisfaction might increase, and finally for better interdisciplinary communication during overall design process as well.

Though virtual reality and multimedia are most often connected with ideas presentations and concentrated around the creation of virtual environments and real-time visualizations that enables generation of alternatives or final design proposals - their use is also important in enabling a *process* of investigating appropriate expression and presentation of existing and future meanings and both visual and non visual values and qualities. In educational process it turned out to be very useful to simulate state and change of urban open space use or appearance, caused by time or events, to visually express visual and non visual space qualities, to connect values and data with visual expression of design proposals as well as to enhance variability of alternative uses or design proposals.

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- Fig. 1c – City of coexisting programs-diagram city, Yokohama, OMA, ref. OMA, KOLHAAS R., MAU B., S,M,L,XL, Taschen-2.ed., Koln, 1997
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