

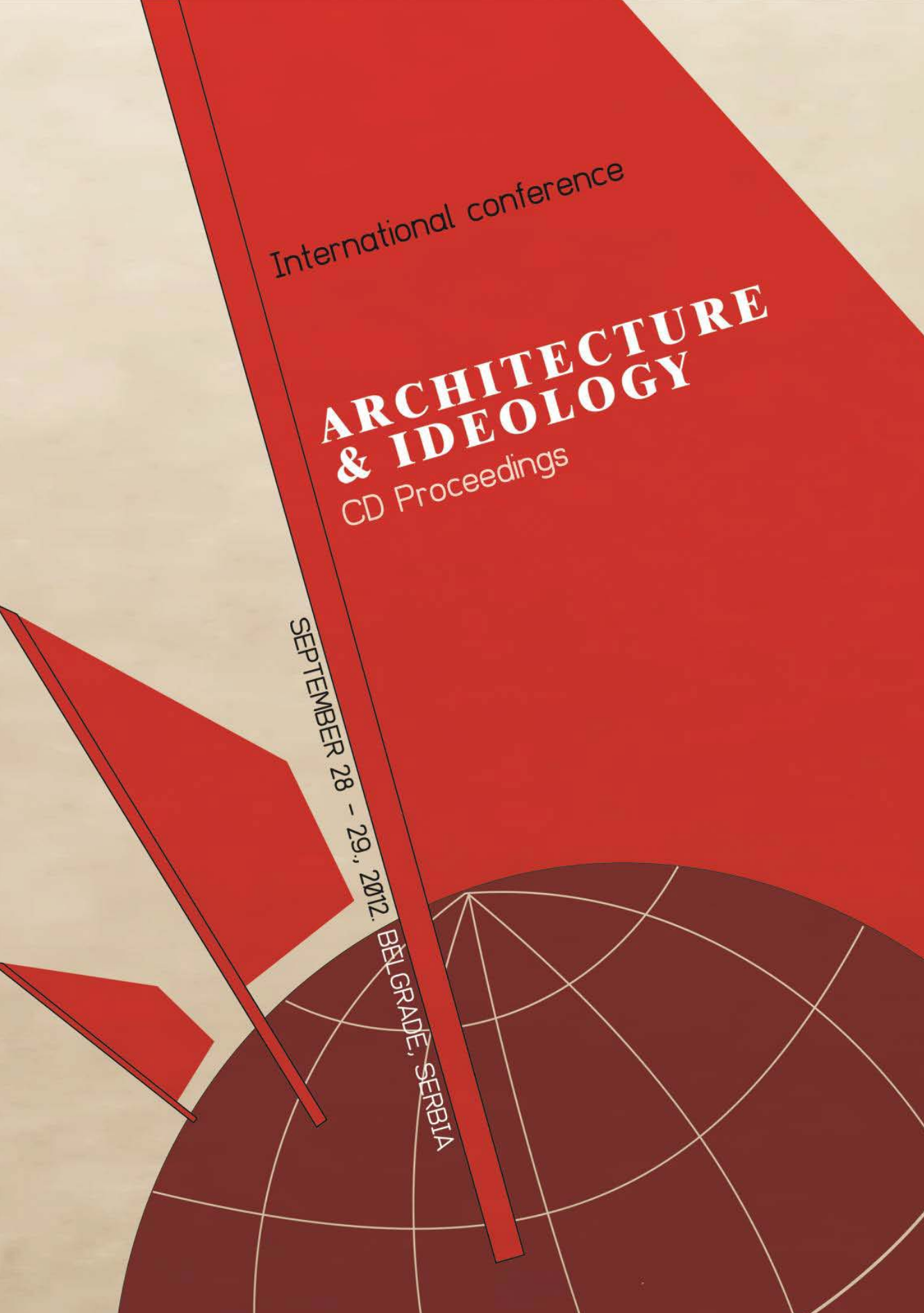
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ECOLOGY IN PUBLIC OPEN SPACE PLANNING AND DESIGN SCIENCE, PHILOSOPHY OR IDEOLOGY?

Abstract |

Today, at the beginning of the 21st century, ecology is not "only" a science or a rationale for "green" philosophies and political actions. Due to global recognition of environmental crisis, and the role that cities play in it, ecologically sound urban development became institutionalized. "Ecology" becomes a buzzword for urban development and "re-imagining" the cities in competition for new inhabitants and investments. It starts to be interpreted as a new planning and design ideology.

Being a place where urban and natural systems meet and interact, public open spaces are important both as a reflection of environmental problems and as a part of their solution. Besides their ecological importance, public open spaces have various roles in urban life and are constituents of urban identity. As well, as a social scene, they are places of special importance for the social and cultural interaction and integration. This multifaceted nature of public space keeps open the debate on the quality of public space, and the role that ecology should play in their planning and design.

This paper aims to contribute to the debate by using case study methodology to explore the ways in which ecology conceptually relates to public open space planning and design and by critically evaluating material consequences of this relations. We argue that the way the meaning and content of ecology is conceptualized, shapes the way it is integrated in planning and design theory, which consequently, shape our urban environment. Since ecology as a science evolves over time, it is important to keep its relation to planning and design open for new interpretations. Therefore, ecology should not be integrated to public space planning and design as a "solution" but as a way of approaching public space quality problems. Interpreted in that way, integration of ecology to planning and design theory opens up the space for creative practice.

Key words |

public open space, ecology, science, philosophy, ideology

1. INTRODUCTION

The range, scale, and intensity of contemporary environmental problems, place ecological issues at the heart of various global, national and local agendas for development. Over the last several decades "ecology" has gradually become a universal target for appropriation by both governments and civil society initiatives, opposed political positions, different socioeconomic classes, various religious and philosophical worldviews. "It has become in essence a kind of "final" discourse, the trump to which we can always retreat, a depoliticised value on which we all always already "agree" [1] Ecological issues become institutionalized and are expected to form the basis for urban planning and design.

Perceived as the place where nature, city, and its inhabitants come together, urban open spaces gain special attention in urban development and environmental policies. Their important role in these policies is based on their sensitivity to environmental changes as well as on their potential to contribute to overall environmental quality. They are perceived as both reflection of environmental problems and as a part of their solution.

From this perspective, the role of public open spaces in ecologically sensitive urban development becomes complex and important issue, since these spaces are simultaneously elements of urban open space system and a part of public sphere. Besides their ecological importance, public open spaces have different social functions and are constituents of urban identity. They serve as the arenas for social interaction and places for cultural exchange. Vitality, activity and awareness shape the publicness of space [2] and spatial rights of: access, freedom of action, claim, change and ownership [3] contribute to this purpose, too. Public spaces can be shared or contested; abandoned or used; on permanent or temporary basis. These places are also "containers of collective memory and desire... and places for geographic and social imagination to extend new relationships and sets of possibility." [4]

This multifaceted nature of public space keeps open the debate about their quality and the role that ecology should play in their planning and design. Adopting a complex and relational view of public space qualities in plural society, imply a need for creative approach to planning and design issues that corresponds to unique urban situations.

In this context our main research question becomes - how to integrate ecology in public open space planning and design, so to enable creative approach to achieve complex public space qualities in plural societies? As science, philosophy or ideology? This is important because many urban theorists recognize that "one size fits for all" approach brings uniformity and unitarism to planning and design. [5] They indicate the problem of seeing "ecology" as a solution, that leads to uniformity and lack of acceptance in local context [6] And there is also a strong criticism of ecology as an ideology or scientific panacea. [7] [8]

In order to give an answer to research question, this paper focus on the meaning of ecology in urbanism. The choice of this kind of focus is supported by the ongoing debate on meaning of ecology in the field of political ecology. [9] This debate revealed multiple and sometimes contradictory meanings of the term ecology and its relations to science, philosophy and ideology. [10] [11] Approaching the issue of meaning in the field of urbanism, we argue that the way the meaning and content of ecology is conceptualized, shapes the way it is integrated in planning and design theory, which consequently, shape our urban environment. More

specifically, we argue that the meaning of ecology historically evolves and has complex relations to contemporary urban design theory and practice.

The first part of this paper explores the basis for integrating ecology in urban planning and design theory in historical context, in order to reveal the relations between ecology as a science, character of ecological approach in urban planning and design theory, and consequences it has for public open space qualities. In the second part we focus on meanings of ecology in contemporary urban design theory and practice, in relation to public open spaces. Finally, we bring together findings of both parts of the research in order to discuss the basis for integrating ecology in public open space planning and design.

2. EVER-CHANGING RELATION BETWEEN ECOLOGY AND URBANISM

In this part we explore the ways in which knowledge and understanding of ecology and ecological problems conceptually relates to planning and design theory and by critically evaluating material consequences of this relations on the quality of public open spaces. For that purpose relations between: a) context of urban development , b) development of ecology as a science and c) the way ecology and city development relate, are explored in three periods of urban development. [12]

2.1. Ecological issues as a reaction to industrial city: demand for more space, sun and greenery

2.1.1. Context

Many of the environmental problems that we face today, such as pollution and degradation of environment, existed from ancient times. But they were biodegradable. The level and intensity of environmental pollution and degradation caused by industrialization and technology development in 19th and 20th century increased and became systematic and permanent.

2.1.2. Ecology as a science

Ecology is a scientific discipline that emerged in 1868. in the work of Ernst Haeckel. At that time it was a branch of zoology. Therefore the subject of ecology were animals and plants and their relation to organic and non-organic environment, at individual (auto-ecology) and community (sin-ecology) level. In parallel with growing problem of environmental pollution, the focus of ecology become the environment in which different living species (plants and animals) interact. [13] This approach to the relation between organisms and their environment was translated to relations between humans and so human ecology emerged as a branch of urban sociology.

2.1.3. Character of ecological approach to urban planning and design

Since the knowledge in the ecology of urban environment was at its infancy, the ecological approach to urban planning and design was based on the visible phenomena. The city was experienced as ecologically degraded environment, in which living conditions were at low

level. The main problems were identified, such as: over population and high density, hygiene and unequal access to the resources.

Visible problems asked for visible solutions: more space, sun and greenery - for all. Models of urban structures reflect this attitude. Meaning of ecology were identified with urban hygiene, and ecological measures to urban improvement were formulated following this approach. Since high ecological consciousness coincided with high social consciousness of main theoretical approaches - space, sun and greenery - for all, become an imperative for urban development. The more-the better.

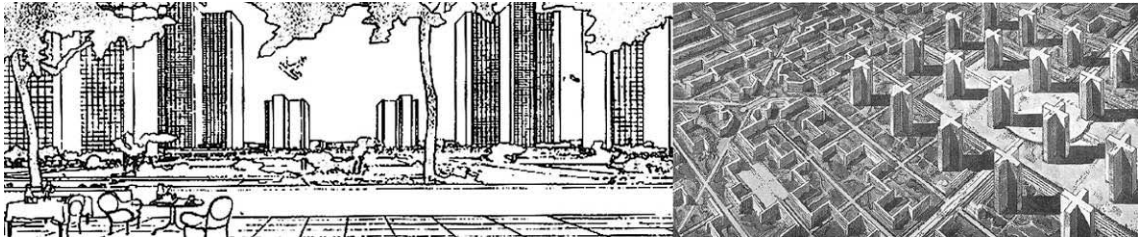


Fig. 1 - Contemporary city for 3000000 inhabitants: enough sun, space and greenery

An example of this approach is Le Corbusier's Contemporary city for 3000000 inhabitants (Fig. 1) In this concept functional segregation is followed by spatial segregation: vast open spaces become green recreational spaces that surrounded housing units and that were separated from traffic. Ecological qualities of public open spaces were emphasized as well as the quantity of space, but in reality social and cultural values of public space were missed. Unfortunately this concept gained ideological dimensions and brought uniformity of public spaces to many new towns of modernism.

2.2. Ecological issues as a reaction to energy and environmental crisis: city as ecosystem

2.2.2. Context

In seventies, new ecological issues were introduced, based on the recognition that natural resources are limited. On one hand it was a period of energy crisis, that was perceived as one of the causes of economy crisis. On the other hand, human role in degradation of the environment was recognized as well as his influence on non-renewable resources. As a reaction to environmental and energy crisis a new integral and holistic approach to nature and environmental protection was introduced on international level (Stockholm, 1971) based on development of ecology as a science and a growth of knowledge about interconnectedness of components and processes in nature.

2.2.3. Ecology as a science

At the that time, ecology was still perceived as a branch of biology, but the new scientific concept emerged. The concept of ecosystem was formulated as a basic unit of scientific research. This concept emphasize the relations between all organisms and between organisms and their organic and non-organic environment, as they exist in a *system* of life. All

ecosystems on Earth form the unified system - biosphere in which the most critical areas are those where different ecosystems overlap and interact. Consciousness of depletion of natural resources and the role that technological and economical development play in environmental pollution, was complemented by recognition of human negative influence on life cycles and natural balance.

2.2.4. Character of ecological approach to urban planning and design

By analogy to ecological relations in science of ecology - the city is perceived as an ecosystem too., which means that focus is on identifying the complexity and interrelatedness between processes and phenomena. From that period two main theoretical concepts correspond to environmental problems, while seeing city as an ecosystem: "Design with nature" and "Integral design". Mc Harghs concept privilege the natural environment over the human environment. In " Design with Nature", he used a set of drawings to argue that planning should begin from a consideration of natural environment characteristics (earth, water, air, vegetation, wildlife).It was criticized for its ideological interpretation. "If man is part of nature, as just another animal, then the theories have no meaning, If man is a separate force, accused of damaging nature in his own interest, then these theories are opposed to human life and can hardly be expected to help in creating a home for man"(Fig.2a) [14] The concept of "Integral design"(P.Calthorpe, Sym Van der Ryn) connects knowledge on natural systems with design of human environment. It was fruitful at the level of single house and technical solutions, but failed at the urban level (Fig.2 b)



Fig. 2 - a) "Design with nature" , b) Energy-efficient urban design

2.3. Ecological issues as integral part of development: socio-cultural dimensions of ecological thinking

2.3.1. Context

The last decade of the 20th century is characterized by development and the globalization of concept of sustainable development (Rio 1992). This concept relates and connect environmental issues with socio-economic development and asks for alignment of ecological, social, economical and cultural goals.

2.3.2. Ecology as a science

In this period ecology was recognized as synthetic discipline with multidisciplinary nature. As opposed to previous focus of the ecology on the equilibrium of ecosystem, a non-equilibrium

ecology was developed. It introduced threshold-based conceptual models and put a focus on adaptability and resilience. Thresholds were defined as boundaries in time and space that separate alternative stable states organized around unique attractors or equilibrium points.

2.3.3. *Character of ecological approach to urban planning and design*

Recognition of the environmental impact of cities and the issues of sustainability, moved the focus to the influence of the cities to its local and global surroundings. City was perceived in relation to natural processes at all levels and new concepts of ecological design were developed. Various theoretical models, that integrate socio-cultural dimensions with ecological thinking were developed. One of the most influential is Transit oriented development (TOD), developed by Peter Calthorpe. Unlike his eco-predecessors, Calthorpe uses ecological thinking and approach as a basis for this concept, and not only ecological solutions to problems. The concept is based on ecological principles of diversity, interconnectedness, scale dependency and decentralization that influence functioning, shaping and existence of urban quarters, cities and regions. [15] In this concept diversity of interconnected public spaces exist, founded on the respect for ecological values and sensitivity as well as on the human needs. (Fig.3)

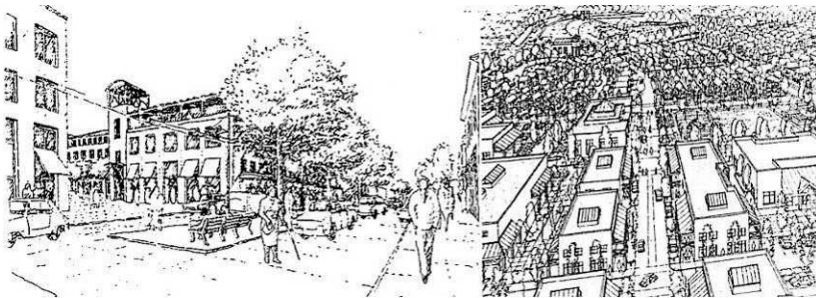


Fig. 3 - Transit oriented development (TOD)

2.4. Discussion

Analysis showed that the understanding of ecology relates to planning and design theory, in specific historical and developmental context. This relations are not fixed. They change due to growth of knowledge about ecology as a science, to overall context of urban development and to knowledge about relations between natural and socio-economic systems.

Evaluation of public open spaces that were produced under specific ecological approach to urban planning and design in different periods, reveals problems in integrating ecology in planning and design theory in oversimplified way, either as technological solutions or as ideology of design. Both approaches underestimates evolving nature of ecology as a science and its changing relation to urbanism. Therefore, if ecology is to be integrated to open space planning and design it should be done on the basis that keeps this relation open and flexible for challenges of the future.

3. MULTIPLE MEANINGS OF ECOLOGY IN CONTEMPORARY URBANISM

This part of the paper focus on meanings of ecology in contemporary urban design theory and practice, in relation to public open spaces. Three different meanings of ecology were identified and explored that simultaneously exist in contemporary urbanism: a) ecology as a problem of urban development, b) ecology as a metaphor in urban space, c) ecology as an approach to urban planning and design.

3.1. Ecology as a reaction to problems of urban development

Based on previous experiences and problems induced by relying only on technical solutions to environmental problems, contemporary urban planning and design search for new approaches. One of the concepts that was recently developed and integrated on different spatial levels is a concept of active landscape. Concept is based on natural characteristics of space and it uses specific capabilities of some species to enhance the quality of the environment: react to flooding, increase biodiversity, purify water and soil, clean air, etc. It saves energy by focusing on use of what already exists in nature, and requires knowledge and continual exploration on how ecology can help in solving urban environmental problems. The examples of use of this concept are various: renaturalization of riverbanks, constructed wetlands (Fig. 4), etc.

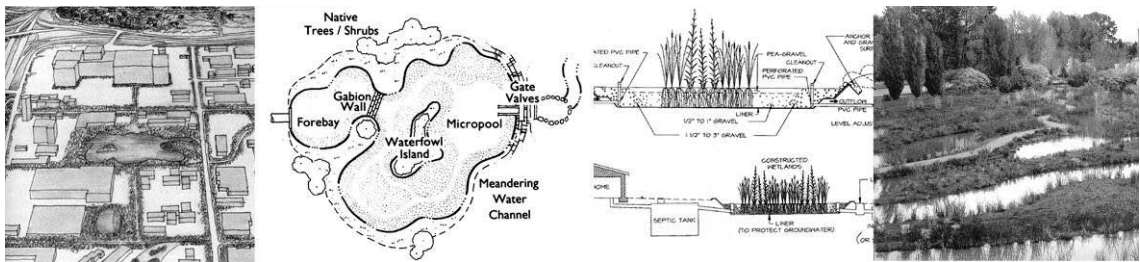


Fig. 4 - Constructed wetlands as active landscapes

3.2. Ecology as a metaphor in urban space

Eco-revelatory is the basis for ecological design since de-natured environments ignore our need and our potential for learning. "Making natural cycles and processes visible brings the designed environment back to life. Effective design helps inform us of our place within nature".[16] Realization of this approach can be found in many contemporary design solutions: from introducing nature in unexpected forms, in various artificial space to making natural processes (daily, seasonally) visible. Combining this principle with principle of vulnerability, as a principle of integral urbanism, can be recognized in an example of water piazza in Rotterdam. (Fig.5a)



Fig. 5 - a) Water piazza Rotterdam , b) Landscape urbanism approach

3.3. Ecology as an approach to urban planning and design

Various contemporary approaches to urbanism establish their foundations in relation to nature and ecology. One of the most famous one is concept of landscape urbanism

"Landscape Urbanism describes a disciplinary realignment currently underway in which landscape replace architecture as the basic building block of contemporary urbanism. For many, across the range of disciplines, landscape has become both the lens through which the contemporary city is represented and the medium through which it is constructed" [17] Famous example of using ecology and its emphasis on multiple relations as a design philosophy is a project for Fresh Kills in New York. (Fig. 5b)

3.4. Discussion

At least three different approaches to ecology exist in contemporary urban design, that follow the evolution of the ecology as discipline: ecology as a reaction to problems of urban development, as a metaphor in urban space and as an approach to urban planning and design. This reveals that the meaning of ecology is not universal nor fixed.

Ecology as a science recognize this multiplicity of meanings and nature as well. It still reacts to environmental problems and recognize both equilibrium and non-equilibrium dynamics "The current consensus, regarding equilibrium-nonewuilbrium dynamics, indicates that ecologist have moved past the "either-or" debate and have begun to explore conditions under which both sets of dynamics may arise" [18]

Multiplicity of its meanings enables different and complex relations with urban planning and design theory, that can result in variety and context specific solutions. Only if this is recognized, can ecology form the basis for creative practice.

4. CONCLUSION

Due to the global recognition of environmental crisis, and the role that cities play in it, ecologically sound urban development became institutionalized. "Ecology" became a

buzzword for urban development and "re-imagining" the cities in competition for new inhabitants and investments. In ecologically sound urban development policies open spaces have an important place, based on their sensitivity to environmental changes as well as to their potential to contribute to overall environmental quality.

Nevertheless, the debate on what constitutes, who evaluates and how to achieve complex public open space qualities, keeps the relation between ecology and public space planning and design open. Having the complex and relational nature of public spaces in mind, this research aimed to explore and discuss the basis of integrating ecology in public open space planning and design, so to enable creative approach to achieve complex public space qualities in plural societies. Since previous research indicated the issue of interpretation of ecology as the prerequisite for action, in this paper we decided to focus on relation between meaning of ecology and theory in urbanism, in order to respond to research question.

The first part of the paper examined the basis for integrating ecological issue into urban planning and design theory in three characteristic periods of urban development. Therefore the relations between a) context of urban development, b) development of ecology as a science and c) the way ecology and city development relate were revealed and their dynamic and complex nature was recognized.

In the second part we identified and explored three different meanings of ecology that simultaneously exist in contemporary urbanism: a) ecology as a problem of urban development, b) ecology as a metaphor in urban space, c) ecology as an approach to urban planning and design. This multiplicity of meanings is important for it enables formation of different relations between ecology to public open space planning and design, thus enhancing variety of ecologically-sensitive solutions that stands at the basis of creativity.

Research results imply that since ecology as a science evolves over time, it is important to keep its relation to planning and design open for new interpretations. This is supported by the recognition of multiply forms of existence of ecological issues in contemporary urbanism. Therefore, ecology should not be integrated to public space planning and design as a "solution", whether scientific or ideological, but rather as a way of thinking and approaching public space quality problems. Interpreted in that way, as a philosophical basis, integration of ecology to planning and design theory opens up space for creative practice.

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