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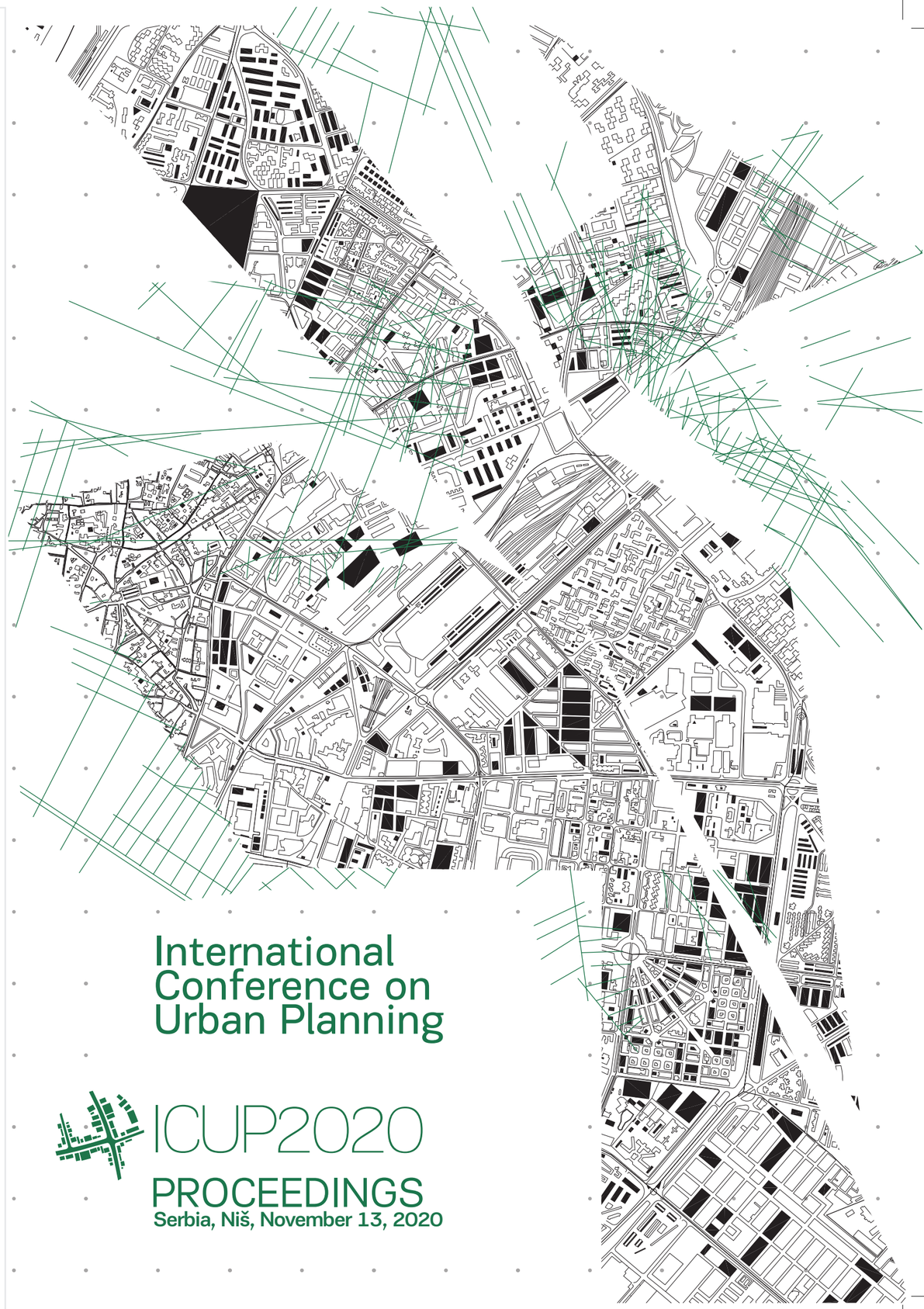

# International Conference on Urban Planning

ICUP2020

## PROCEEDINGS

Serbia, Niš, November 13, 2020

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**Serbia, Niš, November 13, 2020**

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**FOREWORD**

It is a great honour and privilege to present to you the Proceedings of the Third International Conference on Urban Planning - ICUP2020, which is taking place online in these uncertain times of coronavirus pandemic. This year's event is scheduled for November 12-13th, 2020 in Niš. The conference is organized for the third time by the Faculty of Civil Engineering and Architecture - University of Niš and Urban Planning Cluster, thus continuing the tradition of being a biennial manifestation of the University of Niš. We believe that the main conference goal is accomplished, since we have once again brought together scholars, researchers, students and professional from all over the world and from the fields of Urban Planning, Urban Design, Architecture, Civil Engineering and related fields.

Having successfully discussed a broad spectrum of planning, design and development issues during the First and the Second ICUP conference, it is now time to focus on the resilience of cities, while trying to shape urban landscape by promoting nature, cultural heritage, technologies and social equity. Topics that ICUP2020 is focusing on this year include, but are not limited to: Nature-based solutions in urban areas, Mitigation strategies for climate change, Cultural heritage in building urban identity, New approaches and concepts in preserving built heritage, New technologies and materials in construction, Social aspects in urban planning and design, Planning, design and development challenges in creating resilient communities, and Links between regulations, urban planning and architectural design.

After the review process, 30 conference papers from various study areas and diverse places in the world are discussed at the ICUP2020 conference. Contributing papers deal with highly topical reselience issues and therfore provide a valuable insight into contemporary urban theory and practice. The presentation of our eminent key-note speaker contributes to an interesting and successful conference, while the scientific contribution from the members of our international Scientific Program Committee guarantees a high quality Book of Proceedings that will inspire future research. I would therefore like to thank all of them, as well as teachers and associates engaged in the technical preparation of these Proceedings.

Given the importance of the topics elaborated at the conference and numerous questions that are raised here, ICUP conference will continue to explore topical issues in urban development for the benefit of our cities. I am pleased to invite all authors from the academic and research community to participate in future ICUP conferences.

See you all at ICUP2022!

***Petar Mitkovic**, PhD, Full professor*
*Faculty of Civil Engineering and Architecture, University of Nis*
*Chairman of the Scientific Program Committee*

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# REVEALING NATURE THROUGH PLAY IN URBAN DESIGN EDUCATION

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***ABSTRACT***

*The challenge for urban design today is to help development of the healthy, vital, sustainable and resilient cities in which humans and nature flourish together. Consequently, urban design education needs to help future architects and urbanists to develop knowledge, skills and awareness to create more ecologically sensible urban settings. Assuming that effective design helps inform us of our place within the nature, Sim Van der Ryn and Stuart Cowan ask designers to "Make nature visible" in order to bring the designed environments back to life and to activate our potential for learning.*

*Based on the analysis of the students' works (design projects, artefacts and portfolios) from Ecological Urban Design Studio at University of Belgrade Faculty of Architecture, this study explores: How can design of the playground help students rethink the relation between man and nature, and create places where urban nature is revealed and enjoyed? We argue that "the play" as concept and "learning by doing" as methodology together have a potential to help students develop ecological awareness.*

**Keywords:** *nature; urban design education; ecological design; play; learning by doing*

## 1. INTROUCTION

In order to respond to contemporary environmental problems, there is an urgent need to start planning, designing and building more ecologically sensible urban settings as a prerequisite for more sustainable and resilient cities and urban life. In that context, the challenge for the discipline of urban design today is to help building and developing more healthy and vital cities in which humans and nature can flourish together.

In parallel to transformation of practice, urban design education needs to be transformed so that it simultaneously enable development of the professional but also the ecological/environmental knowledge, skills and awareness. There is a growing body of knowledge in this field (Altomonte, 2012; Mostafavi and Doherty 2010; Elin 2006 ) that explores possible ways of transforming urban design education towards sustainability.

This paper aims to contribute to this body o research by presenting and discussing the experiences and the results from the educational experiments conducted in the form of workshops as a part of Ecological Urban Design Studio at Master of Architecture program at the University of Belgrade faculty of Architecture. The work in studio builds upon theories and principles of ecological urbanism, and uses active learning methods in order to help students gain knowledge, skills and abilities for designing ecologically sound urban environments. The role of the workshop in this educational process is to focus on concrete design tasks, to test basic ideas and to reflect upon them as a part of the learning cycle in their project development. Based on the assumption that

"the play" as concept and "learning by doing" as methodology together have a potential to help develop ecological awareness, students were exploring potential of play (as concept, activity and design problem) to help them rethink the relation between man and nature, and to create places where urban nature is revealed and enjoyed.

## 2. ECOLOGICAL URBANISM AND DESIGN

At the beginning of the 21st century, due to global recognition of environmental crisis, and the role that cities play in it, "ecology" became a buzzword for urban development and "re-imaging" the cities. But, how we conceptualise ecology in relation to urban, shapes the way it is integrated in urban planning and design theory and practice, which consequently, shape our urban environment. This is important because urban theorists recognize that "one size fits for all" approach sometimes bring uniformity and unitarism to planning and design. They also indicate the problem of seeing "ecology" as a solution that leads to uniformity and lack of acceptance in local context (Zivkovic et al., 2012)

Therefore, it becomes important to understand how to integrate ecology and urban design to enable creative and contextual approach to achieve complex urban qualities in plural societies. The ecological urbanism as concept and project draws from ecology to inspire urbanism that is more socially inclusive and sensitive to the environment and at the same time less ideologically driven than green or sustainable urbanism. It seeks for new ethics and aesthetics of the urban (Mostafavi and Doherty, 2010).

In parallel, theory of ecological design (Van der Ryn and Cowan, 1996:17) suggests that the problem of unsustainable urban condition is caused by lack of integration between two interpenetrating worlds in which we live in: the living world and "world of roads and cities, farms and artifacts, that people have been designing for themselves". For them, thinking ecologically about design is "a way of strengthening the weave that links nature and culture" (18). Ecological design is in that sense effective adaptation and integration with nature's processes and is based on five principles:

- *Solutions grow from place*, meaning that ecological design begins with the intimate knowledge of a particular place;
- *Ecological accounting informs design*, suggesting the importance to trace the environmental impacts of existing or proposed design,
- *Design with nature*, meaning that by working with living processes, we respect the needs of all secies while meeting our own;
- *Everyone is a designer*, implying that it is important to listen to every voice in design process and overcome the division between participants (users) and designers (professionals).
- *Make nature visible* in order to bring the designed environments back to life and to activate our potential for learning;

The questions that remains is *how to educate* future professionals to develop ecological awareness and integrate ecological knowledge with urban design professional skills in order to be able to produce urban settings in which nature and culture can flourish together in many different ways. We assume that the concept of play and learning by doing as educational approach have potential to help achieve this goal – and specifically focus on its implementation in "making nature visible".

## 3. PLAY AS A TOOL IN URBAN DESIGN EDUCATION: LEARNING BY DOING

### 3.1. Play as concept and tool in education

In the philosophy and sociology of everyday life, *play* occupies an important place as an integrative aspect of life and a specific field of possibilities (Živković, 2015). Play is one of the basic phenomena of human existence that permeates and reflects all other domains of life. Understanding play as a "celebration of existence", everyday life draws strength, serenity, joy and understanding from it (Fink and Elaković, 2006: 53).

The PLAY can also be understood as a metaphor and expression of human freedom and choice. To the question "Do we play because we have free time or do we have free time because we play?" Fink answers that only a play has "free time", more precisely, we have free time "if and while we play" (Fink and Elaković, 2006: 53). Although *play is a natural way of life for children*, in the world of adults the function of play depends on how free people can really be to realize their abilities in real life. "That is why the fight against alienation also

becomes a fight to play again. We need to win back the play, which is not a role-playing game, it is not an illusion that replaces life, but an organized part of the won freedom "(Heller, 1978: 355).

Besides that, gathering and connecting the character of play makes it a social amalgam. Playing a game activates and connects participants and observers on the basis of choice. Traditional games and parties imply active participation of those present , and have the function of establishing and consolidating common values. In that way, they contribute to maintaining a high degree of community sociability (Božović, 2007: 108).

Linking play theories with architecture and urban design is recent phenomena. The exhibition "The Good Life: New Public Spaces For Recreation", organised in New York by Van Allen Institute, explored how architects, designers, landscape architects, and artists are reinventing urban public spaces and stressed that "in our increasingly dense cities, recreational and play spaces are vital to achieving healthy and sustainable cities and are at the core of new urban planning and design initiatives" (Ryan, 2006:10).

Although play based learning is well developed concept in children's education, it is not explored enough at academic level. The seminal work in architecture and urban design field is "Play as a Design Tool" by Lian Lefaivre and Henk Doll (2007) builds upon work of Aldo Van Eyck on playground, research places of play in modern cities, and propose PIP model as a tool for urban design. In Serbian context, the important contribution to the topic has been made by Ana Nikezić who explored the relation between landsapes, play and architecture in architectural design studio (Nikezić, 2012). Our work seeks to contribute to this line of the research in the field of urban design education.

### 3.2. Urban design education goals and formats

Expected learning outcomes of urban design education are the development of student's awareness, knowledge, skill and abilities in relation to urban space. Teaching urban design is grounded in Bloom's educational objectives, according to which any given learning task favours one of three psychological domains: a) cognitive, that revolves around knowledge, comprehension, and critical thinking; b) psychomotor, that involves manipulative or physical skills; and c) affective, that describes the way people react emotionally, and relates to development of values, appreciation, empathy, and attitudes that result from the learning process (Milovanović - Rodić et al. 2013).

Urban design education is generally performed through four main educational formats: seminar, studio, elective courses and workshops. Although learning about cities and urban design theories (through transmission teaching model) mostly happens in seminars, basic unit in most bachelor and master urban design academic programs is urban design studio. Education in studio aims to link theory and practice, and is focused on developing specific, awareness, skills and abilities in urban design. Besides seminars and studios, smaller, elective courses and workshops are widely used as an opportunity to apply problem-based learning approaches that teaches not only the facts but also the relevant thinking strategies (Altomonte 2012).

### 3.3. Workshop as a context for "Learning by doing" urban design

Workshops are spatially localised and material events that can be organised in many forms and produce many positive outcomes. They can be conceptualised as places for cooperative learning but also a technique that supports dialog through which different perspectives on issue under investigation emerge and confront. They are settings and events that enable sharing experiences and exchange of knowledge through which new ideas and solutions may emerge. Besides that, they create situations for team-work and cooperation through which new relations may be constructed (Živković et al. 2018b).

As a learning format, workshops are based on the concept of "Learning by doing", meaning learning from experiences resulting directly from one's own actions. The concept is based on the idea that actions do not only follow thinking – they induce thinking. The thinking generated from action is relative to the action, and this forms the essence of experiential learning. It is contrasted with learning from listening lectures, reading instructions or watching others perform, but it does not replace traditional methods of learning. Instead, experiential learning tasks should be designed to improve students's understanding of problem, by giving them the freedom to explore and find the learning path that is most suitable for them (Reese, 2011).

The concept of "learning by doing" is usually associated to John Dewey's theory of experience in which he advocated that education should be based upon the quality of learning experience. Based on Dewey's work, David Kolb builds Experiential Learning Theory (ELB) and suggests that a person would learn the best through discovery and experience. He provides holistic model of learning process – Experiential learning cycle that

consists of four stages: 1) Concrete experience - Learning cycle begins with doing something in which the individual or team are assigned a task. 2) Reflective observation - stepping back from the task and reviewing what has been done and experienced, 3) Abstract conceptualization - as a process of making sense of what has happened that involves interpreting the events and understanding the relationships between them, and 4) Active experimentation in which learner considers how he/she is going to put what they have learnt into practice (Kolb, 1984). This approach has been used as a theoretical background for education in ecological urban design studio and workshop that will be presented and discussed in the next section.

## 4. PEDAGOGICAL EXPERIMENTS IN URBAN DESIGN STUDIO: REVEALING NATURE THROUGH PLAY

### 4.1. WORKSHOP: Make Nature visible!

The workshop is a part of Ecological Urban Design Studio that is organised through 3 inter-related modules: project, seminar and workshop. Studio encompasses theoretical and practical lessons and tasks for group and individual work. Ecological Urban Design Studio is designed to enable students to acquire complex and deep awareness, knowledge, skills and abilities in order to design place based ecological urban design project. Project, seminar and workshop are organised as a complex system of abstract (theoretical) and experiential learning cycles (Kolb, 1984), that combine research and design phases and weave together to help students produce design project at different spatial scales, and gain wider knowledge, skills and awareness on urban design and environmental issues (Živković and Lalović, 2018).

In that sense, general educational role of the workshop is to help students acquiring additional knowledge and skills through individual practical experience, about practical procedures that influence the quality of the project; developing creativity and ability to quickly and efficiently make design decisions and reflect upon results. In addition, specific goal of Ecological Urban Design Studio Workshop is to encourage students to focus on man – nature relations in order to develop better ecological awareness.

Based on the assumption that “the play” as concept and “learning by doing” as methodology together have potential to help students develop ecological awareness, over the last three years students assignment was to conceptualize, design and construct a model of the playground that in different ways establishes relations with nature. Students were supposed to propose, test and document a mini-spatial intervention that reveals and re-examines the relationship between man and nature in urban space on specific location. The task has been conducted through 4 phases: preparation, realisation, reflection and presentation.

Preparation phase includes definition of context, concept and models-segments of PLAY in relation to nature.

- Definition of CONTEXT – presentation initial elements that lead the concept of playground of each student. They identify and define focal problem and recognised spatial potential( built and natural) that influence the idea of the playing in relation to nature in their project.
- Definition of CONCEPT - a textual / visual explanation of the researched and the individual understanding and use of the idea of PLAYING in relation to NATURE that leads design of the MODELS – SEGMENTS of PLAY(ground) and SYSTEM OF PLAY.
- Design and construction of MODELS – SEGMENTS of PLAYground: Each student makes a minimum of 4 models 10 + 10cm in size 1: 100, as spatial- functional segments in which a certain form of play is envisaged. Each segment is related with at least 1 natural form with which the play is associated (trees, shaped relief, sand, grass, water ....). There may also be 10x20 segments if necessary + additional mobile elements trees, paths, people, green strokes, hills, walls, canopies ... that can be used as “binders” in forming a wider assembly.

Realization phase - A " SYSTEM OF PLAY" is formed in class by combining all available segments from a group of students. Each student experiments with segments within a defined timeframe and forms his own play system Each individual variant of PLAY SYSTEM is documented (photos, films ...) Fig.1.

Reflection phase - In the Reflection phase students reflect upon what did they learn from the workshop. They provide a graphic and textual overview of the workshop and make a link to their design projects.

Presentation phase – Final presentation of the workshop is realised through formation of A4 portfolios that contains all previous phases. It contains explanation of workshop topic, context, the idea of individual playground segments, the basics and photographs of the individual segments and the realized game systems - assemblies from the workshop, as well as the student's commentary and reflection on new findings after the workshops.

(a) (b)

**Figure** 1: (a) Workshop , source: Marija Cvetković (b) Models - Segments of play , source: Katarina Stojić

### 4.2. Results

The results of the students' works from the workshop conducted in 2018. are presented in Table 1 and Table 2. [1] They are related to the location of Ecological urban design studio - Block 70 a in New Belgrade, characterised by modernist buildings, vast and underused green spaces and presence of the Sava river. The information presented in tables is based on the content analysis of individual students design projects, artefacts and portfolios, and structured in a way to enable analysis and comparison of how nature has been revealed in each students learning path and design project.

### 4.3. Discussion

The results of the students work, as well as their reflections presented in portfolios, show that during each of workshop phases students were initiated to think and establish connection with nature in different ways:

- In relation to *context,* as the basis and inspiration for playground concept, students recognised different elements of existing urban nature as important to relate to: trees (S1, S3, S4, S7, S8), fields (S2), river (S1, S4), ponds (S1), hills (S2, S8, S7), skyline (S9). Besides that, they referred also to childhood as context where stronger connection between man and nature existed, recognising that it is natural to children to feel as part of nature (S4, S5, S8, S9, S10).
- Variety of playground *concepts* has been developed, and they also reflect variety of ways in which nature can be revealed and interpreted. For some students elements of nature were interpreted as potential for play (S10, S1 S2, S3, S4). For others, starting point for the concept was the idea to motivate users to be more free, active and natural in their movement and behaviour (S2, S8, S9) and to develop their natural potentials (S6) by encouraging logical thinking through free play in nature. Some approaches to playground design were more abstract in interpreting forms (S5) and relations from nature (S7) or treating nature as setting for playful art installations (S3).
- Design and modelling *segments of play* showcased variety of possibilities to reveal nature and connect it with play. Different natural elements were used (trees, ponds, hills,..) for producing playful situations and for simulation of curiosity and fun (maze). Also, some traditional play settings (swings, slides, climbers) were re-designed by use of natural elements and materials in order to produce new playing experiences and stronger connection with nature.
- Developing *play system*, by using 10x10 models – segments of play, during workshop realization phase resulted in variety of playground forms: disperse, compact, linear, area, as well as in their combinations. What is interesting is that these forms correspond to main structural elements of natural landscape (patches, corridors, matrix) as defined in landscape ecology (Forman, 1995). In this way students managed to connect "logic of play" with "logic of life" and how it is supported and reflected in landscape.

[1] Besides the authors and menthors of the workshop (Živković J., Cvetković M., Korica R.), the co-mentor of the 2018 workshop was Ivana Korica, the research assistant who demonstrated a great enthusiasm to help students complete the workshop tasks.

**Table 1:** Students projects form the" Make Nature visible!" workshop 1-5

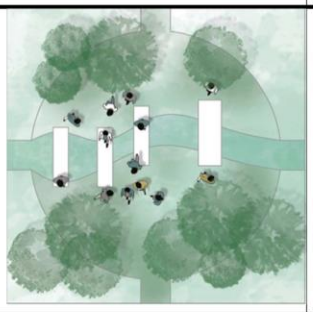
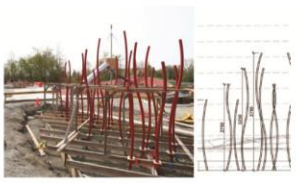
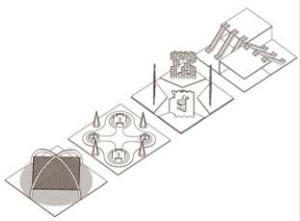
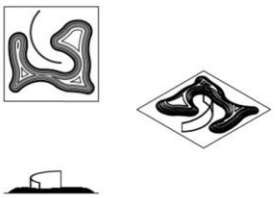
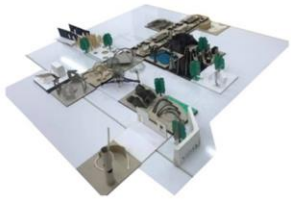
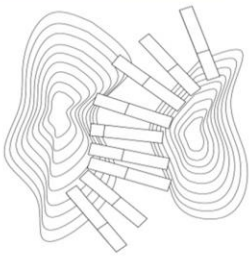
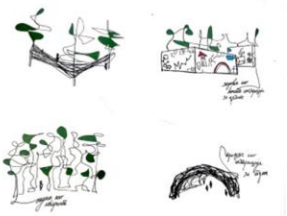
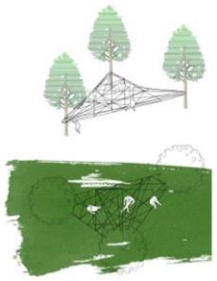
| | CONTEXT | SEGMENTS OF PLAY | SYSTEM OF PLAY |
|---|---|---|---|
| **Student 1**<br>**Ana Simić**<br>**CONCEPT**<br>*"Overcoming an obstacle means: try, fall, try again, succeed; just like first steps, like a child's play, like a game all of us. Play in nature and with nature is divided into four topics: Bridges, Ponds, Theatre, Labyrinth"* |  |  |  |
| **Student 2**<br>**Anja Trivić**<br>**CONCEPT**<br>*"The concept of the playground is based on different movements of children and modes of behaviour that may be useful to them in nature: Climbing, Hiding,Dragging between, Skipping"* |  |  |  |
| **Student 3**<br>**Katarina Stojić**<br>**CONCEPT**<br>*The Idea of the playground as art installation, but also as link to childhood. Forms of play developed through: Indian tribe, Bridge, Mirror, Labyrinth* |  |  |  |
| **Student 4**<br>**Marija Milijašević**<br>**CONCEPT**<br>*"As a child, I always spent time outside, in nature. I loved running, climbing trees….we all dreamed of a cottage on the tree" There are so many games to be played with, around, on the trees and with ground"* |  |  |  |
| **Student 5**<br>**Marko Jovanović**<br>**CONCEPT**<br>*"Nature itself is very inspiring and diverse. The beauty of Nature is that it keeps everything in balance, harmony. Even "anomalies", have their reasons …We are part of nature and aware of it in many different ways from early childhood. "* |  |  |  |

**Table 2**: Students projects form the" Make Nature visible!" workshop 2-10

| | CONTEXT | SEGMENTS OF PLAY | SYSTEM OF PLAY |
|---|---|---|---|
| **Student 6**<br>**Sara Aćimov**<br>**CONCEPT**<br>*Starting from the book "Last child in the woods" that promotes free play in nature, the project aims to encourage logical thinking through play and explores tactical use of different natural materials (grass, wood, sand, water…)"* |  |  |  |
| **Student 7**<br>**Marko Jovičić**<br>**CONCEPT**<br>*The idea is to combine and harmonise vertical and horizontal elements of nature, through modelling the ground, and constructing barriers in order to support variety of recreational activities* |  |  |  |
| **Student 8**<br>**Nevena Vujić**<br>**CONCEPT**<br>*"The idea of the playground is based on active play that develops motor skills and physical dexterity. Play in nature should activate all senses and stimulate them to move in different ways. "* |  |  |  |
| **Student 9**<br>**Petar Đorđević**<br>**CONCEPT**<br>*"Today, children spend time in front of the computer, communicate and move poorly… Therefore, they should be returned to the air, wind, rain, forest, stone…. To free move and free play"* |  |  |  |
| **Student 10**<br>**Tijana Lovrić**<br>**CONCEPT**<br>*"The idea for playground is based on the perception of forests as maze to play "*<br>*Trees, trunks, branches and canopies can be transformed into tunnels, labyrinths and net structures…* |  |  |  |

Students' research, projects and reflections indicate that during the workshop conceptualisation and delivery, they became aware of nature and its role in designing playground in many different ways and through different paths. In general it is possible to identify four main relationships between the Nature and play as reflected in students' portfolios.

- Play *in* nature – in this conceptualisation nature is used as *setting* for play activities, and this combination produces new memorable experiences.
- Play *with* nature – this approach is related to nature perceived as *playful* by it self and with *naturalisation* of tools and devices for play
- Play *through* nature – in this approach nature is used as a lens and starting point for choice of play activities. Nature inspires and leads play as form or as activity associated with natural behaviour.
- Play *as* nature – this conceptualisation focus on the feeling that we feel as being part of nature when we play.

Also, what is worth acknowledging is that these forms of relationships between play and nature are most often present in combination in students' portfolios and design process. This means that process of revealing a nature and integrating it into design is not linear and simple and that "many roads" may lead to development of more ecologically conscious (future) architects and urban designers.

## 5. CONCLUSIONS

Contemporary environmental problems make it necessary to educate future architectural and planning professionals towards ecological urbanism. This challenges paradigm in urban design education to include not only professional, but also environmental/ecological knowledge, skills and awareness as educational objectives. In order to contribute to the growing body o knowledge on linking environmental and academic education towards sustainability, our research explored possibilities of using play as a tool for revealing nature as a way of integrating one of the basic ecological design principles into urban design education.

Based on Ecological urban design workshops projects, models and portfolios, we sought to understand how design of the playground can help students rethink the relation between man and nature. We analysed how nature has been revealed in different phases of the playground design process and discovered that in all design phases students managed to establish variety of relations with nature, and that nature had different roles in their projects. Their projects reflected integrative role of play in linking man and nature – but they came to that point following very different learning paths, and interpretations and use of nature. Besides that, our research point toward four main relationships between play and nature (play *in* nature, *with* nature, *through* nature and *as* nature)

From our findings we can conclude that *play* (as a concept, design task and playful workshop activity) can effectively be used as tool for educating students toward ecological urbanism by making them rethink man-nature relationships and helping them to produce places in which man and nature can flourish together. Although this research has been conducted in educational setting it would be fruitful to pursue further research on this topic in the professional setting, in order to explore the potential of play to reveal the nature in urban design in order to help building more sustainable cities.

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