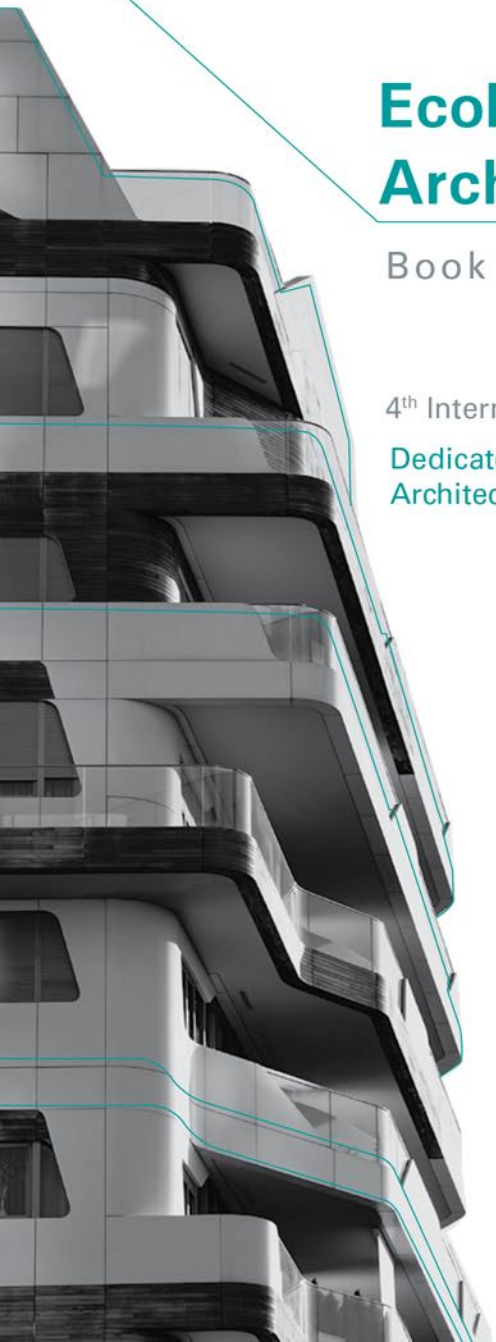
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Ecological Architecture'17

Book of Abstracts

4th International Scientific Conference

Dedicated to Sustainability in Architecture & Planning

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FACULTY OF CIVIL ENGINEERING AND ARCHITECTURE
DEPARTMENT OF ARCHITECTURE AND URBANISM

Ecological Architecture 2017

Book of abstracts

4th international scientific conference dedicated to sustainability in architecture and planning

23rd November, 2017 Kaunas, Lithuania

Kaunas 2017

INTERNATIONAL SCIENTIFIC CONFERENCE ECOLOGICAL ARCHITECTURE 2017

The aim of the scientific conference **Ecological Architecture 2017** is to discuss the application of ecological ideas and principles of sustainability to the fields of architectural design, construction and planning. We intend to share the Lithuanian experience in this field with foreign colleagues, to identify the aesthetic and technological peculiarities of ecological or sustainable architecture and construction, considering climatic conditions, sociocultural peculiarities and other features of the region, to discuss the concepts of sustainable, ecological and organic urban and landscape development.

Topics of the conference:
Application of the principles of sustainability in architecture, planning, and construction;
Theoretical approach to ideas and principles of sustainable design and planning;
Concepts and models of sustainable, ecological and organic urban and landscape development;
Aesthetic aspects of ecological architecture;
Social and psychological aspects of ecological architecture;
Technological aspects of ecological architecture and construction;
Digital design for sustainability;
Ecology and sustainability in landscape architecture;
Heritage preservation dimension in sustainable design and planning;
Sustainable building maintenance and management.

Organizers of the Conference:
Kaunas University of Technology
Faculty of Civil Engineering and Architecture
Department of Architecture and Urbanism

The book contains the abstracts of conference presentations.
The English language of the abstracts is not edited.

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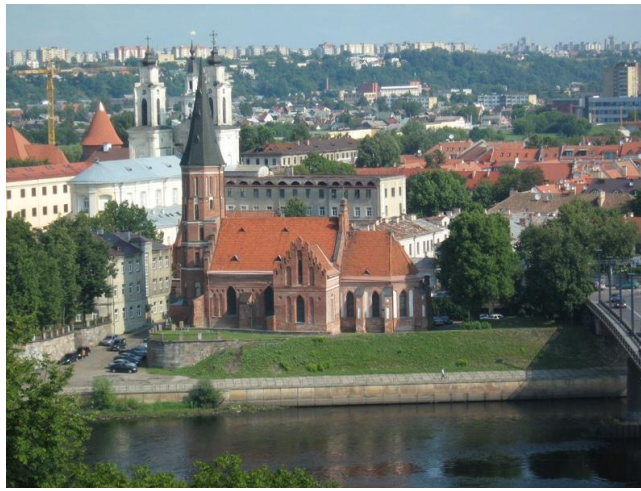
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The view of Kaunas Old Town from the cable car van. Photo by L. Jakubonytė (2015)

INTERNATIONAL SCIENTIFIC CONFERENCE
ECOLOGICAL ARCHITECTURE 2017

Faculty of Civl Engineering and Architecture
Kaunas University of Technology
Studentų str. 48, Kaunas, Lithuania

CONFERENCE PROGRAM

Registration 9.00 – 9.30 (Foyer, 3rd floor)

Opening of the conference 9.30 (310 aud.)

Plenary Session 9.40 – 12.30 (310 aud.)

Chairman – Prof. dr. Kęstutis Zaleckis

(20 min for presentation)

Invited speakers

1. Gintaras Balčytis (Kaunas University of Technology) *GENIUS LOCI*: A CREATIVE APPROACH TO ARCHITECTURE DESIGN
2. Martynas Marozas (MMAP, Kaunas University of Technology) TOOLS FOR URBAN PLANNING AND REGENERATION
3. Vaidas Petrulis (Kaunas University of Technology) EUROPEAN HERITAGE LABEL AS AN IMPULSE FOR THE CITY IDENTITY CONSTRUCTION: CASE OF KAUNAS
4. Vytautas Petrušonis (Vilnius Gediminas Technical University) ECOLOGICAL DETERMINATION OF PLACE: PARTICIPATION AND / OR *GENIUS LOCI*?
5. Kęstutis Zaleckis (Kaunas University of Technology) URBAN SPACE AS A CATALYST OF SOCIAL AND CULTURAL PROCESSES

Coffee Break (311 aud.) 12.30 – 13.00

Session: Sustainable architecture, planning and heritage preservation 12.30 – 14.00 (310 aud.)

Chairman – Dr. Evaldas Ramanauskas

(15 min for presentation)

1. Enkarni Gomez Genua, Alex Mitxelena (University of the Basque Country) FROM ECOLOGICAL TO BIOMIMETIC ARCHITECTURE
2. Jūratė Jurevičienė, Vytautas Petrušonis, Edita Riaubienė, Dalius Vrubliauskas (Vilnius Gediminas Technical University) SUSTAINABILITY OF THE HERITAGE PRESERVATION IN THE ACADEMIC EDUCATION OF THE ARCHITECTS IN LITHUANIA
3. Inga Gurauskienė, Jolanta Dvarionienė, Daina Kliaugaitė, Francesco Scorza (Kaunas University of Technology, University of Basilicata) STAKEHOLDERS INVOLVEMENT FOR INCREASE OF ENERGY EFFICIENCY IN BUILDINGS
4. Inga Urbonaitė, Gerda Antanaitytė (Klaipėda University) ADAPTING PARTICIPATORY DESIGN TOOLS IN DESIGN THROUGH RESEARCH (DTR) MODELS TO DEVELOP SUSTAINABLE PROJECTS IN SENSITIVE TERRITORIES. CASE ANALYSIS

Coffee Break (311 aud.) 14.00 – 14.30

5. Özlem Atalan, Elif Süyük Makaklı (Celal Bayar University) UNDERSTANDING OF KULA TRADITIONAL HOUSING DESIGN APPROACH IN SUSTAINABLE ARCHITECTURE
6. Elif Süyük Makaklı, Özlem Atalan (Celal Bayar University) TRADITIONAL TURKISH HOUSES IN THE SUSTAINABLE DESIGN CONTEXT
7. Antanas Stančius (Klaipėda University) SUSTAINABLE WATER TREATMENT AND DESIGN IN PUBLIC SPACES
8. Evaldas Ramanauskas, Gintė Jonkutė (Kaunas University of Technology) SUSTAINABLE DEVELOPMENT PECULIARITIES OF UKMERGE MUNICIPALITY CONSIDERING THE URBANISTIC, SOCIAL AND ENVIRONMENTAL ASPECTS

<u>Poster presentations</u> 15.30 – 16.00 (Foyer, 3rd floor)

Chairman – Assoc. Prof. dr. Indrė Gražulevičiūtė-Vileniškė

1. Kęstutis Zaleckis, Aušra Mlinkauskienė, Nijole Steponaitytė (Kaunas University of Technology) MODELLING OF VALUABLE FEATURES OF IMMOVABLE CULTURAL HERITAGE FOR SUSTAINABLE URBAN DEVELOPMENT
2. Hariharasubbu Balamoorthy, Rasa Apanavičienė (Kaunas University of Technology) CONSTRUCTION OF INNOVATIVE ENERGY HARVESTING EXPOSITION PARK IN KAUNAS SCIENCE ISLAND
3. Lina Šeduikytė, Indrė Gražulevičiūtė-Vileniškė, Orinta Liutikaitė (Kaunas University of Technology) REFUNCTIONING OF INTER-WAR MODERNISM BUILDINGS IN KAUNAS (LITHUANIA): THE ASPECT OF USERS' COMFORT
4. Raffaela De Martino, Rossella Franchino, Nicola Pisacane (Università degli Studi della Campania Luigi Vanvitelli) HISTORIC WATERMILLS DIGITAL SURVEY AND SUSTAINABLE RE-DESIGN IN CILENTO AND VALLO DI DIANO NATIONAL PARK (ITALY)
5. Nikolay Dyomin, Yulia Ivashko, Li Shuan (Kiev National University of Construction and Architecture) THE INFLUENCE OF NATURAL LANDSCAPE AND CHINESE TRADITIONS TO TRANSFORMATION OF ART-NOUVEAU AND NATIONAL ROMANTICISM ARCHITECTURE IN CHINA
6. Vaiva Vaitkevičiūtė, Kęstutis Zaleckis (Kaunas University of Technology) LEGIBILITY OF URBAN SPACES IN KAUNAS NEW TOWN
7. Kamilė Jakubauskaitė, Irina Matijošaitienė (Kaunas UNIVERSITY OF TECHNOLOGY) CRIME ANALYSIS IN PUBLIC SPACES OF VILIJAMPOLĖ



Kaunas Aleksotas cable car. Photo by L. Jakubonytė (2015)

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Kedainiai Old Town. Didžioji Str.
Photo by A. Gendrėnienė (2012)

From Ecological to Biomimetic Architectuire

Enkarni Gomez Genua, Alex Mitxelena

University of the Basque Country (UPV/EHU), School of Architecture, Oñati, 2 – 20018 Donostia, Spain

The economical development of industrialized countries is based on consumption of resources and worldwide pollution both unsustainable in the long and in the short term. But this model has entailed global warming, desertification of the planet, etc.

Being aware of this situation and the need of a rapid response (after the Second World War, or even before), environmental movements whose ideals were based on "environmental protection" arose. The question was to keep on growing, living, creating but damaging the environment the least possible. The terms “ecological” and “sustainable” emerged and theories and practices grew up with them.

The term ecological, however, does not necessarily mean sustainable. Sustainability doesn’t only mean not damaging the environment but the possibility of maintaining the productive model in the long term. In principle, sustainability includes ecology by increasing its meaning. That is, what is not sustainable is not ecological. Thus, we could say that ideas of ecology and sustainability are complementary if not synonymous.

Architecture, indeed, being responsible of much of the consumption of resources and pollutant emissions, cannot be left out of this paradigm. Architecture must also be ecological. This is one of the reasons why buildings are cataloged and certified for their degree of sustainability and energy efficiency. It is no longer ethical to turn away from the environment.

At the beginning of the 21st century, a new paradigm emerges: biomimicry. This idea tries to go beyond respect for the environment, imitating the techniques and resources that nature itself offers us as solutions to problems.

This paper presents the way from the paradigm of ecology to the one of biomimicry applied to architecture, and proposes

an architecture based on the principles of natural systems, according to a greater respect not only for the environment but also to favor a new balance between human beings and nature, and also among human beings themselves.

Keywords: architecture, biomimicry, ecology, natural systems

References

Benyus, J. 1997. Biomimicry. Innovation inspired by nature. New York, Harper Collins.

Pawlyn, M. 2011. Biomimicry in Architecture. London, Riba Publishing.

Riechmann, J. 2006. Biomímesis. Ensayo sobre imitación de la naturaleza. Ecosocialismo y autocontención. Madrid, Catarata.

Sustainability of the Heritage Preservation in the Academic Education of the Architects in Lithuania

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Vilnius Gediminas Technical University, Department of Architectural Fundamentals and Theory, Traku str. 1, Vilnius, LT- 01132 Lithuania

Research of urgent problems and new aspects of contemporary tendencies in architect education of the preservation of cultural heritage in Lithuania has been carried out by the team of Department for Fundamentals and Theory of Architecture, Vilnius Gediminas Technical University. Within the framework of the "Sustainable Rehabilitation of the Historic Towns in Europe" (SURE) -project funded by EU with the collaboration among the Polish, Italian, Spanish and Lithuanian counterparts, our team has been carrying out the research on the problems in emerging tendencies in the highest education on the preservation of the cultural heritage in Lithuania."

„The research results revealed the range of the important issues regarding to the level/grade of the sustainability of the academic education of architects in this field of protection of the cultural heritage. The analysis of education programs in Lithuania universities and expert survey let us to disclose that in the field of cultural heritage protection we still lack ecological knowledge.

Provided inquiry and collected results of the answers to the questionnaires on the education programs by the country universities and selected practicing professionals reflected the uncohesive approach to the importance of the overall heritage values of our historic towns. Also we see the obstacles in attitudes of academic and professionals i.e. inadequate reflection of urban heritage in urban planning processes, shortcomings in integrating of local communities into preservation processes and of course academic education of

architects. Means of sustainability and ecology have to be much stronger integrated and anchored in to the urban planning and development processes. One of the ways to achieve that is the alteration of the heritage protection educational system.

Contemporary understanding of ecological urban environment reflects essential role of cultural values. Recent international strategic documents reveal variety of ways of historic areas contribution to bettering urban life.

Lack of ecological approach in urban heritage planning, tension between contents of academic programmes and official aims of strategic documents ratified by the state, difference in expectations of theoreticians and practicing urban planners were revealed.

The following aspects can be interpreted as a draft results of completed analysis. It also reflected a few devastating effects of recent processes of urban planning in Lithuania: neglect of cultural landscape value in urban planning of cities, concern of identity loss and negative impact of globalisation, lack of proper maintenance and use of historic buildings.

The primarily targets to be hit by the alteration of the situation would be the reduction of the lack of ecological approach in urban heritage planning, diminished tension between contents of academic programs and official aims of strategic documents ratified by State and lowered difference in expectations among the theoreticians and practicing urban planners.

Keywords: architect education, expert survey, sustainability, urban heritage preservation

Acknowledgment

The research was carried out within the framework of the project funded by EU (Erasmus+) "Sustainable Rehabilitation of the Historic Towns in Europe" (SURE). We greatly appreciate the Lithuanian experts, who participated in the survey and provided the competent response to the questionnaire. Special thanks for the project manager Dalia Traškinaitė.

Modeling of Valuable Features of Immovable Cultural Heritage for Sustainable Urban Development

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Immovable cultural heritage creates a background for sustainable cultural development of cities. As a cultural artefact it appears in two-fold situation in the above mentioned context. Firstly, the continuity of the valuable features as carriers of cultural content should be preserved. Secondly, the possibility of the evolution (functional, spatial or social) of the object should be assured. At the moment the valuable features of the immovable cultural heritage are described in a static, quantitative ways with focus on phenotype, e.g. spatial volume, place, details of architectural style, number and places of windows, etc. Such type of description without any argumentations is practically closing any possibilities for further evolution of the protected objects. It is especially true if we speak about urban valuable structures.
The authors of the article present a proposal for dynamic, genotype oriented modelling of the possible evolution of the former military town of Kaunas Fortress as an example of immovable urban cultural heritage. The model is based on the evaluation of changes in the cognition of urban structure with presentation of complex numerical values.
The results of the presentation demonstrate the limitations and subjectivity of the present system of description of valuable features of the objects of immovable cultural heritage and presents the possible way for the improvement of the situation.

Keywords: sustainable cultural urban development, immovable cultural heritage, valuable features

Stakeholders Involvement for Increase of Energy Efficiency in Buildings

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Many of Europe's local/regional actors struggle with developing targeted, implementation-oriented policies addressing low carbon challenges. This holds particularly for energy wasting buildings irrespective of their ownership or use. As European building infrastructure is responsible for 40% of the overall energy consumption in the EU, it is a highly relevant and also visible point of interaction to reduce energy consumption and the associated environmental pressure. The challenge however is, to involve and engage stakeholders (energy consumers, infrastructure owners, local authorities, business and etc.) within the building renovation process. The problem is relevant to many EU countries, regardless of culture, geographical location or the economic state of any given region.

The paper describes the results gained in the framework of INTERREG EUROPE project "Novel roles of regional and local authorities in supporting energy consumers' behaviour change towards a low carbon economy" (LOCARBO). The overall objective of LOCARBO is improving policy instruments targeting demand-driven initiatives to increase energy efficiency related to the built environment. This is to be achieved by finding innovative ways for regional/local authorities to support energy consumers' behaviour change. LOCARBO is unique in focusing its activities on bottom-up initiatives and mainly because of the approach to handle 3 thematic pillars in a fully integrated way. These pillars are: services and products delivered by local authorities, innovative cooperation models between the stakeholders, and

smart technological solutions for the increase of energy efficiency

To achieve maximum effect and market penetration of policy instruments created, wide spectrum of stakeholders should be engaged. By building upon the lead partner's extensive knowledge and partner network, an optimal pool of stakeholders shall be composed of all main stakeholder groups, such as government organizations/decision making bodies, NGO-s, civil and non-profit partners as well as public sector partners/municipalities. Also institutional partners must be taken into consideration as a special group of key stakeholders. The goal at this step is to involve all key members of the SH group, who can have an impact on the project implementation, and can steer project results as a positive use case to further target segments in the region, and Europe as well.

In this study the engagement strategy has been designed and tested in various case studies in different European countries to comply with widely-acknowledged international methodology [1; 2] including the following steps:

- Identify and assess essential stakeholders
- Use power mapping to measure their power, interest and cost of access in the project
- Establish involvement of all stakeholder groups, by delivering value to them through formal and informal communication channels. e.g.
- Monitor stakeholders and communication dynamics and develop further approaches if necessary

The stakeholders' involvement strategy should act as the baseline of all interactions with relevant decision-making bodies and actors of different target groups. By analysing professional experience regarding stakeholders' involvement from different European countries, this study provides the insights of how the stakeholder's involvement strategy could contribute to increase energy efficiency in buildings.

Keywords: energy efficiency, policy, buildings, stakeholders' involvement

Acknowledgment

This research had been developed in the framework of the Project "Novel roles of regional and local authorities in

supporting energy consumers' behaviour change towards a low carbon economy – LOCARBO" led by the Province of Potenza (Italy) and funded by the EU's European Regional Development fund through the INTERREG EUROPE, 2014–2020.

References

Dvarioniene J., Gurauskiene I.,. Gecevicius G, Trummer D.R., Selada C., Marques I., *et al.* 2015. Stakeholders involvement for energy conscious communities: The Energy Labs experience in 10 European communities. Renewable Energy, 75, pp. 512-518

Jeffrey, N. 2009. Stakeholder Engagement: A Road Map to Meaningful Engagement: 2 in the Doughty Centre 'How to do Corporate Responsibility'Series. Cranfield School of Management, Doughty Centre, 1-44.

Leo S. Di, Salvia M.2017. Local strategies and action plans towards resource efficiency in South East Europe**.** Renewable & Sustainable Energy Reviews, 68, pp. 286-305

European Heritage Label as an Impulse for the City Identity Construction: Case of Kaunas

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During the period from 1919 to 1939 Kaunas served as the provisional capital of the newly restored independent Republic of Lithuania. In Brussels on *15 April* 2015 interwar period architecture of Kaunas has been *awarded* the *European Heritage Label*. The title indicates uniqueness of provisional capital not only in Lithuanian but also in the European context. The significance of this recognition first of all related to the possibilities of communication, active efforts on heritage interpretation and opportunity to draw attention of international public to Kaunas as an important place for common European identity. The evaluation shows that the architectural heritage of Kaunas has become an important form of heritage diplomacy contributing to the creation of a European narrative.

One of the main focuses of the presentation will be put on the impulse of this recognition to develop a new narrative of the city as a place inspired by modern movement. Two recent years witness a lot of changes from this perspective. Architectural legacy of interwar period was among the important arguments to get the status of a UNESCO Creative cities Network. In 2017 Kaunas Modernist architecture has been added to UNESCO tentative list of World Heritage Sites. And finally, Kaunas was announced as European capital of culture in 2022. Heritage of modern movement played an important role in the bid book. “Modernism for the Future” is one of the six platforms of future capital of Culture. There is no doubt that currently Kaunas develops a clear narrative related to heritage of Modern Movement. European heritage label was the first international recognition and therefore clearly marks the change in paradigm.

When developing a narrative of the city inspired by the modern movement another important issue rises in this context – the process of values definition. Case of Kaunas is interesting because of particularly evident relation between tangible and intangible aspects of value. Political meaning of European Heritage Label firs of all refers to intangible idea of modernization of Europe. However in Kaunas 42 buildings were selected as a material references to disclose this political and cultural message. It clearly that such a formal selection inspires active discussions on rethinking issues of value and authenticity of historic urban layer. The presentation will give the highlights of this process and will open a discussion on the role of sustainability in value definition process. Author will argue that heritage is not static monuments. It is an ecosystem. The universe of buildings, historical knowledge and people living here now with their expectations for the future.

Keywords: European Heritage Label, modern movement, heritage, value, identity

Understanding of Kula Traditional Housing Design Approach in Sustainable Architecture

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In the historical process cities with their dynamic and complex nature have been constantly changing since the day they were founded. As the cities develop and grow, the settlement areas close to the big cities are greatly affected by this development pressure and lose their original character. Especially the settlements with original traditional architectural features should not lose these values. As traditional architecture has been formed in the historical process with harmonious relations people have established with nature they have many design criteria that are sustainable.
In the selected study area Kula district of Manisa province this type of traditional residential architecture is predominant. Houses were typically designed in 18th-century open plan style, and sustainability is reflected in the architecture of the building. The architecture of traditional houses are examined in the context of sustainability. As a result of the study, it will be argued that the sustainable green design concept in the traditional house leads the contemporary housing architecture.

Traditional Turkish Houses in the Sustainable Design Context

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[2] *Celal Bayar University, Manisa, Turkey*

In a world with growing concerns about global energy use, energy efficient and sustainable building design becomes a necessity. Throughout history vernacular architecture represents the ideal synthesis of people's ability to modify the environment to their own advantage with minimum impact. Traditional houses were built of natural materials are of great cultural importance. In this study 4 different regions of Turkey is selected with peculiar examples of vernacular architecture. (The selected regions are; 1-*İstanbul-Çatalca* district, 2-*Trabzon- Akçaabat* district, 3- *Mersin- Tarsus* district, 4- İzmir-Çeşme district.) The unique vernacular architecture with different climate and topography reflects and supports each region's own identity. All selected regions have registered traditional houses. The study aims to understand the elements that shape this architecture in the sustainable design context. The architecture of the buildings and how they developed through time with special characteristics of the buildings and their relations with the setllement is also evaluated.

Keywords: Sustainable design, architecture, traditional Turkish houses

Water as Sustainable Landscape Architectural Mean in Public Spaces

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This article attempts to present an overview of the connection between water, seen as a landscape architectural medium, and its use as a sustainable, ecological and social mean. The primary purpose is to identify the social, ecological and aesthetic roles and concepts of water for the development of human community and its surrounding pertaining to urban design and landscape architecture. The main research methods are textual interpretation, historical reflection and analysis of cartographic and photographic materials, field observations. Technological development of society and Modernist architecture gave rise to two different approaches in urban development of water features. On the one hand, water is seen as only a functional element. There is a tendency to avoid it and rivers as well as other water pools do not receive a proper attention in urban plans. On the other hand, we have the opposite tendency which aims to incorporate water into human living environment and integrates it into the public space not only as the functional element but also as a significant ecological, aesthetic and psychological factor. Water as a sustainable mean has a lot of different approaches already and so far, there is established quite good examples to discuss and analyze. For the conclusion it is clear, that nevertheless, the water crisis and danger of fluid and drought that the world is experiencing still doesn't bring water issue on scale it should be, so the discourse must be developed more openly and widely for having potential of future changes.

Keywords: landscape, water, adaptability, sustainability

References

Clay, G., 1979, Water and the landscape, Halliday Lithograph

Cumberlidge, C., Musgrave, L. 2007, Design and landscape for people – new approaches to renewal, Thames & Hudson

Dreiseitl, H., Grau, D., 2009, Recent waterscapes – planning, building and designing with water, Birkhauser Verlag AG

Dunnet, N., Clayden, A., 2007, Rain Gardens: managing water sustainably in the garden and designed landscape, Timber Press, ISBN 978-0-88192-826-6

Harnik, P., 2010, Urban Green: Innovative Parks for Resurgent Cities, Island Press, ISBN-13:978-1-59726-684-0; ISBN-10: 1-579726-684-1

Hester, R., T., 2006, Design for Ecological Democracy, Massachusetts Institute of Technology, ISBN-13: 0-262-0851-5; ISBN-10: 0-262-08351-5

Jorgensen, A., Keenan, R., 2012, Urban Wildscapes, Routledge, ISBN: 978-0-415-58105-9

Moore, C., W., 1994, Water + Architecture, The MIT Press, ISBN 0-262-13373-3

Pazwash, H., 2011, Urban Storm Water Management, CRC press, ISBN 978-1-4398-1035-4

Sassi, P., 2006, Strategies for Sustainable Architecture, Taylor & Francis, ISBN10: 0-415-34142-6

Schafer, R., (editor in chief), 2010 (70), TOPOS The international review of landscape architecture and urban design: sustainability, Kastner & Callwey Medien GmbH, ISBN: 978-3-7667-1856-3

Stuart E., Pennypacker E. (2015) Artful rainwater design, creative ways to manage stormwater, Washington: Island Press.

Tandy. C., 1975, Landscape of Industry, Leonard Hill Books, ISBN 0 249 44139 X

Thompson, J., W., Sorvig, K., 2008, Sustainable Landscape Construction, ISLAND PRESS, ISBN 978-1-59726-143-2

Uffelen, V. C., 2011, Waterscapes – contemporary landscaping, Braun publishing AG, ISBN 978-3-03768-074-2

Zimmermann, A., 2009, Constructing Landscape: Materials, Technique, Birkhauser, ISBN 978-3-7643-8600-9

Sustainable Development Peculiarities of Ukmerge Municipality Considering the Urbanistic, Social and Environmental aspects

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Considering the deteriorative negative demographic situation of Lithuania and significant differences between particular localities, the regional development of the country becomes more and more relevant. Current situation, including the growth of unemployment and the tendency of population obsolescence (LDS, 2017) explains the necessity to analyse and assess the processes that occur in Lithuanian cities and rural areas in details (Jasaitis, 2016; Kriaučiūnas et al., 2014), whereas unfavourable social processes (Čiegis et al., 2007; Ginevičius, Podvezko, 2009) enforce to re-evaluate investment environment of the country, municipalities and private parties as well as to assess their potential to influence both territorial formation and economic regulation procedures (Rubikas, Valauskaitė, 2015).

This paper raises the topic of regional development of Lithuania analysing the pattern of Ukmerge municipality and proposing the comparison in the context of the county and country. The presented research seeks to assess the current state of urbanistic, social and environmental conditions of region and its transformation tendencies as well as to determine its development and demands.

The assessment of urbanistic conditions includes the analysis of territorial planning documents and evaluation of possibilities for territory usage. The environmental settings research constitutes of the analysis of engineering infrastructure objects, waste management infrastructure, green structure and the impact of industrial enterprises. While exploration of social conditions includes the assessment of

inhabitants' opinion regarding the territory usage and environmental problems.

The main research methods involve multiple criteria analysis, sociological survey, urbanistic analysis and evaluation of law documents related with territorial planning and environment protection. The paper is concluded with principled suggestions for the management of urbanistic processes that could help to seek purposeful formation of country's regional policy.

Keywords: regional development, social environment, sustainable development, territorial planning

References

Čiegis R., Pareigis R., Skunčikienė S. 2007. Development Possibilities of Regions in Lithuania: Economic and Social Aspects, Social Research / Socialiniai tyrimai, 2(10), 22–32.

Ginevičius R., Podvezko V. 2009. Evaluating the changes in economic and social development of Lithuanian counties by multiple criteria methods, Baltic Journal on Sustainability, 15(3), 418–436.

Jasaitis J. 2016. Darni regionų plėtra: kaip ją įgyvendinti Lietuvoje [Sustainable development of the regions: how to implement it in Lithuania], Mokslo Lietuva, 15 (570).

Kriaučiūnas E., Krupickaitė D., Pociūtė-Sereikienė G., Ubarevičienė R. 2014. Regional peculiarities of rural settlements function change in Lithuania, Geografijos metraštis, 47, 70–87.

Lietuvos statistikos departamentas [The Lithuanian department *of* statistics, LDS]. 2017. Rodiklių duomenų bazė [data basis of indices], <https://osp.stat.gov.lt>.

Rubikas I., Valauskaitė L. 2015. Regioninės plėtros priemonių valdymo optimizavimas [Management optimization of regional development tools], JPP „Kurk Lietuvai". May, 2015.

Adapting Participatory Design Tools in Design Through Research (DTR) Models to Develop Sustainable Projects in Sensitive Territories. Case Analysis

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Urban development, or architectural design in fragile (sensitive) territories is always complicated, especially when one considers national, regional, reserve parks, or other territories that have a lot of sociocultural meaning to society, and local communities.
Interaction of anthropogenic and natural processes forms distinctive and unique character of a place, which is identified as *genius loci* and valued as one of the main aspects of sustainable architecture. On the other hand, urban designers and architects quite often face a challenge to comprehend the identity of a place, by uncovering apparent layers of cultural landscape and articulating their value in actual contemporary architectural forms. Every urban development, or architectural design in sensitive territories meets a challenge of prioritization, and the need to find balance between natural landscape, local resources, and sociocultural factors is essential. Following strict rules and planning regulations is not always the answer as it sometimes becomes a formal procedure for bureaucrats to ban innovative solutions. Such solutions would not only improve ecological quality of the territory, but would also be relevant to local communities and cover their needs. Instead, quite often the quality of aesthetic design solutions suffers, because a more common approach of imitation is chosen over interpretation of established architectural forms. One of the main reasons for such

complicated development in sensitive territories is a lack of proper models of the design process.

Traditionally, architects and designers carry all responsibility for the design process, as they deliver final design solutions to approving institutions. The latter are officially responsible for balancing the needs of different stakeholders. However, in reality, lack of their involvement in the development process, complex understanding of territory, and interdisciplinary collaboration is evident. Facilitation of such projects is quite a new phenomenon; especially in Lithuanian context, where quite often it becomes a challenge due to lack of human resources and certain competences.

Another important problem is the implementation of design solutions and continuity of the project. Sustainable and qualitative result is inherent in communicating, informing and educating related communities and stakeholders. Only those parties, who are capable of recognizing the identity, meanings and coded values of a certain sensitive territory, are capable of later taking care of it and feeling connected.

There are three main operating sides that shape the environment: professionals (architects), institutions (municipality, national parks, nature protection, cultural heritage department etc.) and community.

Each of the interested parts have its own approach to environmental development, therefore dedicating decision making to one of the parts, disregarding interests and knowledge of the rest of interested groups affect quality of the whole project.

The article analyzes three *design through research* project cases developed by authors, which share common goal - to improve the quality of the environment using innovative and contemporary solutions, deal with landscape sustainability and local identity issues by involving community into design process.

Three projects were implemented in sensitive Lithuanian territories: creative workshop and architectural competition aimed to create small scale architectural objects reflecting spirit of the place *genius loci* in Curonian Spit, UNESCO World Heritage Site; Feasibility study development for Karklė village situated at the Seaside Regional Park; Landscape formation and environmental condition improvement project for Sablauskiai Pond access situated at Akmene district.

Presented samples reveal three different design through research and participatory design models. In each case site planning projects are initiated by different groups, therefore motives for the project implementation differ. That determines the sample of public inclusion, scope of fulfilled research, design solutions and capabilities for sustainability of the project. Comparative analysis of these cases summarize strengths and weaknesses of each model and form recommendations for similar territorial development in the future.

Keywords: sustainable design process, participatory design, sensitive territories, community engagement, urban design, cultural identity

References

Cauchi-Santoro, R. 2016. Mapping community identity: Safeguarding the memories of a city's downtown core. City, Culture and Society, 7(2016), 43-54.

Cojanua, D. 2014. Homo Localis. Interpreting Cultural Identity as Spirit of Place. Procedia – Social and Behavioral Sciences, 149 (2014), 212-216.

Ismaila, W.A.W., Saidb, I. 2015. Integrating the Community in Urban Design and Planning of Public Spaces: A review in Malaysian cities. Procedia - Social and Behavioral Sciences 168 (2015) 357-364.

Proli, S. 2011. Improving an urban sustainability environment through community participation: the case of Emilia-Romagna region. Procedia Engineering, 21 (2011), 1118-1123.

Rasoolimanesh, S.M., Jaafar, M., Ahmad, A.G., Barghi, R. Community participation in World heritage site conservation and tourism development. 2017. Tourism management, 58 (2017), 142-153.

Shuib, K. B., Hashim, H., Nasir, N.A.M. 2015. Community participation strategies in planning for urban parks. Procedia - Social and Behavioral Sciences, 168 (2015), 311- 320.

Stewart, W.P., Liebert, D., Larkin, K.W. 2004. Community identities as visions for landscape change. Landscape and Urban Planning, 69 (2004), 315-334.

Urbonaitė, I. 2011. Miesto teritorinių bendruomenių įtaka rekreacinių teritorijų formavimui [Urban territorial communities and their influence forming urban recreational territories], Mokslas – Lietuvos ateitis. K. Šešelgio skaitymai – 2011 [Science – Future of Lithuania. K. Šešelgis Readings – 2011], 3(3): 30-37.

Construction of Innovative Energy Harvesting Exposition Park in Kaunas Science Island

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The paper involves utilizing the land area in the Science Island of Kaunas where a Science Museum is proposed to be constructed. The Project takes into account the surrounding areas of the museum in the Science Island for installation of micro energy harvesting structures. These structures are proposed as a part of the exterior Science Island project. This project proposes various Energy harvesting elements such as Photovoltaic dome, PV Floors, Piezoelectric Rain Farm, Luminescent concrete roads, Wind Energy Trees and their three different alternative layouts of those structures through Landscape architecture around the Science Island area. This paper covers the energy calculation of those micro-structures and the cost estimation analysis carried out. The energy calculations show significant role in powering up the park area in the proposed Science Island. The paper does not cover the main Building (with its interiors included) of the proposed Science Island's Science museum. The paper concludes that implementing the construction of these energy harvesting elements through means of Landscape Architecture not only enhances the aesthetic appearance of the Science Island Park but also will provide alternative energy resources for electrical elements inside the park.

Keywords: Landscape Architecture, luminescent concrete roads, photovoltaics, piezoelectric rain farm, wind energy trees

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References

NewWind 2017, NewWind press kit 2017, retrieved from http://www.newwind.fr/en/press-room/

Refunctioning of Inter-War Modernism Buildings in Kaunas (Lithuania): the Aspect of Users' Comfort

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Apart from its priceless cultural value, Europe's architectural heritage gives to her peoples the consciousness of their common history and common future. Its preservation is, therefore, a matter of vital importance (The Declaration…, 1975). A primary objective for managing heritage is to communicate its significance and need for its conservation to its host community and to visitors (International..., 1999). The story of the inter-war era architecture of modernism of the second largest Lithuanian city Kaunas is very eloquent in this regard. Not so long ago this architectural heritage was appreciated only in the limited circle of professionals and enthusiasts; now it is known and increasing advertised both in the local, national and international contexts. Kaunas inter-war modernism architecture was recently awarded the European Heritage Label; its inclusion into UNESCO World Heritage List is anticipated as well. However, the preservation and communication of heritage values are inseparable from the continuous use of heritage buildings for the changing needs of the evolving society. In this context it is necessary to acknowledge that some outstanding public buildings of inter-war modernism located in the center of Kaunas awarded the honor to be marked with the table with the European Heritage logo are just partially used and stand almost abandoned. Thus this study is aimed at analyzing the possibilities of contemporary use and re-use (refunctioning) of Kaunas inter-war modernism buildings from the users' comfort point of view.

For this study we have selected the building of The House of Commerce, Industry and Crafts designed in 1937 - 1939 by the famous architect of this period V. Landsbergis-Zemkalnis that was continuously used and re-used for the administrative, office, and library purposes through its entire existence. In the frame of this research the analysis of literature and the field study including the photographical survey and the measurements of thermal conditions (during warm and cold seasons) were carried out. For the measurements of temperature and relative humidity HOBO sensors were used. Sensors were attached to the stand at 0.1 m, 0.6 m, 1.1 m and 1.7 m height, to check temperature differences above the floor for standing person, for seated person and for the ankle level.

The research on site has shown the favorable conditions for the users according to the contemporary standards; however, the deterioration of some buildings structures threaten its heritage values and the use possibilities in the future. It can be concluded that the prestige generated by the heritage values and social significance of Kaunas inter-war modernism architecture together with the appropriate thermal conditions for the users encourage sustainable renovation and re-functioning of these buildings for the needs of contemporary society.

Keywords: heritage building, cultural heritage, refunctioning, sustainability, inter-war modernism, Kaunas, Lithuania

References

Bellia L., Alfano F.R.D., Giordano J., Ianniello E., Riccio G., 2015. Energy requalification of a historical building: A case study. Energy and Buildings, 95, 184-189.

Philokyprou M. 2014. Adaptation of new university uses in old buildings: the case of rehabilitation of listed buildings in Limassol Cyprus for university purposes. International Journal of Architecture Heritage, 8, 758-782.

Kančienė, J., Minkevičius, J. 1993. *Architektas Vytautas Landsbergis-Žemkalnis.* Vilnius.

Laurinaitis P. T. Reflections of modernism in the temporary capital of Lithuania. 2017. http://www.autc.lt/en/route/6 (14 04 2017)

Todorovic M.S., Ecim-Duric O., Nikolic S., Ristic S., Polic-Radovanovic S. 2015. Historic building's holistic and sustainable deep energy refurbishment via BPS, energy efficiency and renewable energy - A case study. Buildings, 95, 130-137.

Historic Watermills Digital Survey and Sustainable Re-design in Cilento and Vallo di Diano National Park (Italy)

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The present work is part of a multidisciplinary research carried out within the Benecon Competence Center Demonstration Project and related to Cilento and Vallo di Diano National Park area, one of the UNESCO World Heritage Sites and included in the Biosphere Reserve network.
Cilento and Vallo di Diano landscape is an organic unit generated by the complex combination of physical and natural phenomena, firmly tied each other by mutually reciprocal relationships. The research for a dialogue between man and this heterogeneous set of elements, processes and interrelations has characterized the antrophized and natural heritage that has formed the landscape of these places characterized by great water wealth, dense slopes and lush Mediterranean vegetation.
The Geographical Information System platform of the territory of Cilento and Vallo di Diano National Park synthesizes the integrated work of knowledge of the area and of all its forms of production either cultural or material, including through the actions of the peoples who have inhabited these sites.
The GIS of Cilento and Vallo di Diano National Park has been developed to create a georeferred and dynamic database that would gather and integrate the cognitive activities carried out on the area through an innovative equipment. The GIS has been dynamically structured in thematic layers always implementable that at different scale contain the results and the elaborations of survey and data acquisition. Information, cataloged according to the 'data warehouse'

methodology, has been structured to make easy the access by the user and to support decision-making.
The layers, integrating the information with the aforementioned data, are organized, also in reference to the various scales and main time variations. In particular, the census of the territorial resources of the territory concerned the more than two hundred watermills surveyed within the perimeter of the National Park and subsequently surveyed through 3D digital laser sensors, cataloged on the basis of cadastral data and then inserted into the GIS platform on a georeferred map as a starting point for further documentation actions. The aforementioned analysis has been developed before a subsequent step of the research on technological and environmental issues. On some watermills have been developed a surveys to check the relationship between the water system, soil quality and its uses with to define a reference framework for the use of appropriate environmental technology for water cycle optimization systems.
This study concerned the 'Auso' Valley water system, in the territory of Ottati, a municipality located in the north-eastern part of Cilento and Vallo di Diano National Park and has been structured in three phases.
An initial phase of analysis took into account the hydraulic characteristics of the 'Auso' Valley, with particular reference to the nature of the water stream, the vegetation, geological and lithological conditions of the site, the hydrological and ecological environment. The second phase of the work concerned the check on the presence of hydraulic conditions suitable for the reactivation of the historic mills as examples of the hydro-mechanical technology used in the past. The last phase finally allowed an analysis on the quality characteristics of the waters of the 'Auso' Torrent. It has been possible to hypothesize the creation of a "filter system" with river phytodepuration techniques in order to safeguard the water course from induced pollution.

Keywords: Cilento and Vallo di Diano National Park, Digital survey, Environmental design, Geographical Information System, Sustainable Technology

References

De Martino R., Franchino R., 2009 La gestione del sistema delle acque del Vallone Auso. In: Gambardella C. (edited by)

"Atlante del Cilento". Napoli, Edizioni Scientifiche Italiane, 175-180

De Martino R., Franchino R., 2012. Il sistema delle reti: uno strumento di controllo del paesaggio antropizzato. In: Agribusiness Paesaggio & Ambiente - Vol. XV - n. 1, Marzo 2012, 53-70

Gambardella C., Carlomagno L., Pisacane N. 2010. Un modello di cybercartography per il Parco Nazionale del Cilento e Vallo di Diano. In: Proceedings of "Graphic Expression applied building International Conference. New lines of research in Building Engineering. APEGA 2010". Alocoy, Editorial Marfil S.A., 521-530

Pisacane N. 2009. Rappresentare la qualità. In: Gambardella C. (edited by) "Atlante del Cilento". Napoli, Edizioni Scientifiche Italiane, 539-548

The Influence of Natural Landscape and Chinese Traditions to Transformationof Art-Nouveau and National Romanticism Architecture in China

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The actuality of this theme connects with problems of function, protection and restoration of the Art Nouveau heritage in Chinese towns, which consists of more than 200 objects. It is necessary to mention the scientific works of Liu Daping and Van Yang, A. Ivanova, T. Johston, B. Lane Miller, S. Levoshko, M. Marinelli, L. Sadovski, Wang Chaolu and Yuan Binjiu and many others, who marked the dominant role of Chinese natural and cultural conditions to forming of versions Art Nouveau and North National Romanticism in China. In their scientific researches the describe in whole the architectural objects and more less the problems of existing of theses objects in natural environment.

That is why it is necessary to mark the main role of Buddhism and Taoism for forming the ancient Chinese landscape traditions, because later these Chinese original traditions led to the change of the European Art Nouveau architecture in Chinese settlements.

The aim of this research was to analyze the process of transformation the Art Nouveau and North National Romanticism in China and the role of natural landscape in this process. The main method of investigation was the method of the systematic-structural analyze. The main role of natural landscape and Chinese traditions for the exression of the Art Nouveau objects in China were determined using this method.

The main changes between the European Art Nouveau and the Chinese version of Art Nouveau were connected with the differences in natural landscape. The European objects were situated in the regular town-planning system without trees and

parks. The main feature of traditional Chinese architecture formed in the course of centuries was the organic connection between nature and building with the domination of natural landscape. That is why the town-planning situation in the Chinese centres of Art Nouveau and National Romanticism architecture differ so strongly from the European town-planning situation. The Chinese objects in the most cases are situated in parks and in architectural complex dominate the natural landcsape with picturesque hills, exotic trees and flowers and lakes with golden fishes.

The specific features of nature in different parts of China determined the expression of Art Nouveau objects (the Art Nouveau objects and objects of North National Romanticism in German settlement Qingdao with subtropical climate differ strongly from similar objects at Russian settlements Harbin, Shenyang and Dalyan in Nortern-East part of China). Actually the changing landscape was the main reason for the transformation the European architectural style for the Chinese conditions.

The scientific novelty of research:

- the role of nature conditions and natural landscape in the process of transformation the Art Nouveau architecture in Chinese settlments, the Art Nouveau objects in China surrounded by the picturesque gardens with exotic plants were analyzed and discussed;
- it was determined using the methodology of system-structural analyze that the Art Nouveau objects in China differ strongly from the European examples of Art Nouveau and North National romanticism not only in forms but more in natural environment. There is the original situation of the existing the brutal gray objects of North National Romanticism with granite blocks among the colors of the Chinese landscape, that is why it determines the protection not only the Art Nouveau buildings but the natural arrangements too;
- the existing of Art Nouveau objects in China along the natural landscape led to the transformation these territories into the protective national parks and touristic zones.

Keywords: Art Nouveau architecture, China, natural landscape, transformation

References

Иванова А.П. Архитектура китайских сеттльментов: к проблеме культурных стратегий дальневосточной колонизации. [Ivanova A.P. The architecture of Chinese settlements: for problems of the cultural strategy of the Far East colonization. The herald of the Pacific ocean University]. Вестник Тихоокеанского государственного университета. 2013. №3 (30): 129-138.

Ивашко Ю., Ли Шуань. Модерн Западной Европы, Украины и Китая: пути трансформации и имплементации. [Ivashko Yu., Li Shuan. The Art-nouveau style in Western Europe, Ukraine and China: the ways of transformation and implementation] Киев: Феникс; 2015.

Левошко С.С. Историко-культурное исследование Харбина. Архитектура Восточной Сибири. Русские города на Дальнем Востоке. [Levoshko S. The historical cultural heritage in Harbin. The East Siberian architecture. Russian towns t the Far East] Хабаровск, 2002. Вып. 1.: 167-192.

Орленко Н.И., Ивашко Ю.В., Ли Шуань. Реинкарнация северного национального романтизма: исследование и опыт реставрации объектов. [Orlenko N., Ivashko Yu., Li Shun. The reincarnation of the North National Romanticism: studying and experience of restoration of objects] Киев: Феникс; 2016.

Johston T., Erh D. Far from Home. Western Architecture in China's Northern Treaty Ports. Hongkong, 1996. 429 p.

Lane Miller B. National Romanticism and Modern Architecture in Germany and Scandinavian Countries. Cambridge University Press; 2000.

Liu Daping. Art Nouveau Architecture in Harbin. 刘大平, 王岩. :哈尔滨新艺术建筑. Harbin, Hitpress 哈尔滨工业大学出版社, 2016.

Sadowski Lukasz. Architektura europejska w Chinach od połowy XIX wieku do 1937 roku. *Sztuka Dalekiego Wschodu. Studia*. Warszawa, 2008. S.145-154.

Wang Chaolu. Fifty old constructions in Qingdao. 2010.

Yuan Binjiu. German architecture in Oingdao. China Architecture and Building Press, 2009.

Legibility of Urban Spaces in Kaunas New Town

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Kaunas New Town is one of the most important and urbanisticaly sensitive areas in Kaunas. This area is the biggest part of city center and is located only one step away from Laisvės avenue – the best known public space in Kaunas. The biggest problem of the plot seems to be that just after leaving the pedestrian avenue the sense of city center dissapears and is replaced by abandoned and non legible areas. The purpose of this research is to investigate the block in Kaunas New Town according to trinomial concept of legibillity and to suggest the strategy of how differently these public spaces could be used, which spaces could stay private and how it could change the existing perception of this place into the feeling of the city center. The trinomial legibility concept is based on the main things which people are doing to understand their surroundings: they are looking around, moving and having different activities. These three things define the new description of legibility, based on the main people needs in legible environment: visibility, movement and activity. These needs can be verified by space syntax analysis and the results of this part of research are compared with sociological surveys and site analysis. Research is separated into three parts: legibility perception of people who live there, those, who have only visited Kaunas, and those, who have not been there. The purpose of these parts is to understand which places people find as public, abandoned and which places they would suggest to revitalize. All the results are being represented as maps (fig. 1). Space syntax analysis is supplemented by the social distance – 80 meters. According to Jan Gehl, this is the distance in which people can still recognize faces of other people (Gehl, 2010).

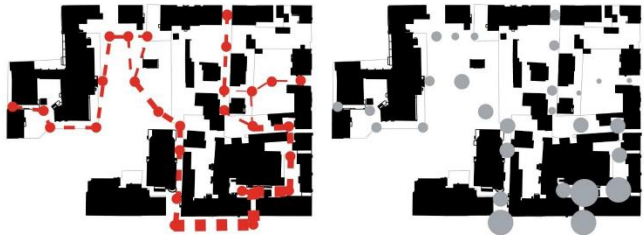


Fig.1. Mostly used routes and nodes in the block

Results of the research are shown in the map as the most abandoned places in the block and spaces, which are used as semi private and could be privatized. Moreover, the main routes highlighted where most people would choose to go inside of the block and the main nodes marked the potential for new public spaces. Some of the main routes might be used as urban connections and revitalize the block. This research is going to be used as a base for the future block revitalization project.

Keywords: Kaunas, New Town, legibility, readability, space syntax, intelligibility

References

Benjamin, W. (2004) Urban Theory and the Urban Experience

Gehl, J. (2010) Cities for People.

Shokouhi, M. (2003). Legible cities: The role of visual clues and pathway configuration in legibility of cities. 4th International Space Syntax Symposium London 2003. Prieiga internetu: http://www.spacesyntax.net/symposia-archive/SSS4/fullpapers/71Shokouhipaper.pdf

Zaleckis, K. (2003) Role of the urban green structure in creation of preferred urban environment. COST C 11 Green structures and urban planning 249-255.

Zaleckis, K., Matijošaitienė, I. (2012) HIDDEN URBAN REVOLUTION IN KAUNAS DOWNTOWN AREA: 1935-1988-2011. Proceedings: Eighth International Space Syntax Symposium. Edited by M. Greene, J. Reyes and A. Castro. Santiago de Chile: PUC.

Crime Analysis in Public Spaces of Vilijampolė

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Safety is one of the main criteria that influence attractiveness and people flow of the city – it is some sort of quality measure which shows possible popularity between tourists and locals. It is a general knowledge in Lithuania that safety could be guaranteed if there are enough cameras or patrolling policemen. Although, nowadays a lot of different methods are getting implemented (for example, CPTED) to make sure that neighborhood is under protection.

There is information that can be retrieved by everyone, that highlights the most unsafe places of Lithuania. Most of them are high-rise residential neighborhoods (Kalniečiai, Dainava, Šilainiai, Vilijampolė, etc.). However, the most insecure one is Vilijampolė. The aim of the of this research is to find out which urban factors do the most significant influence on the safety. In order to learn that, the steps for analysis were established. First of all, all the streets where divided into segments (till the street turns or there is a crossing), the by using a lot of mapping for analysis (functions, heights, entrances of the buildings, lightning of the block, greenery, ratio of building height and street width, closeness of the street) and calculations, based on questionnaire (for example, windows and doors of the buildings, etc.) the data map was made.

Secondly, all the data has been converted into numerical values in order to analyze it with statistical analysis tool (IBM SPSS). By using logistic regression, the most important urban factors were revealed. Moreover, to achieve better accuracy of the research, crucial urban factors were analyzed by using K-NN algorithm and implemented into decision making machine in order to divide segments into safe and unsafe. All the data has been visualized and converted into final map of safe and unsafe segments.

To sum up, with K-NN method and the crucial data of the neighborhood, the accuracy of the decision-making machine was 86%, which means that 43 out of 50 segments were prognosed correctly. The most important conclusion of this research was that the most significant influence on the safety is made by correctly chosen combination of factors.

Keywords: crime analysis, public space, safety, urbanism

References

CEN (2002). Committee for European Standardisation. Prevention of Crime – Urban Planning and Design, Part 3: Dwellings, p. 5. CEN/TC325.

COST Action TU1203: Crime Prevention through Urban Design & Planning (2014). MILAN: Crime Prevention through Urban Design. Academic research and training.

Crowe, T.D, Zahm, D. L. (1994). Crime Prevention through Environmental Design. NAH Land Development, Fall, pp. 22-27.

Francis, J., Giles-Corti, B., Wood, L., & Knuiman, M. (2012). Creating sense of community: The role of public space. Journal of Environmental Psychology, 32(4), 401–409. https://doi.org/10.1016/j.jenvp.2012.07.002.

Gehl, J. (2010). Cities for People. Island Press, Washington, DC.

Hillier, B. Urban Des Int (2004) 9: 31. Can streets be made safe? doi:10.1057/palgrave.udi.9000079.

Matijošaitienė, I. (2015). Combination of CPTED and space syntax for the analysis of crime. Safer Communities, Vol. 15 Iss 1 pp. 49 – 62 http://dx.doi.org/10.1108/SC-05-2015-0013.

Oldenburg, R. (1996-1997). Our Vanishing "Third Places". Planning commision journal. No, 25, Winter 1996-1997. Prieiga per internetą: http://plannersweb.com/wpcontent/uploads/1997/01/184.pdf (žiūrėta 2016-10-30).

Stummel, C. L. (2016). Building Smart Cities. CPI Group (UK) Ltd, Croydon, Great Britain.

Whyte, W. H. (1982). The Social Life of Small Urban Spaces. Journal of Contemporary Ethnography.



Žeimiai Manor residence. A fragment of the palace building.
Photo by P. Usevičius (2016)

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