

TEORIJA IN PRAKSA UREJANJA PROSTORA

IGRA USTVA RJALNOSTI

THE CREATI VITY GAME

ŠT. 7/2019

NO. 7/2019

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THEORY AND PRACTICE OF SPATIAL PLANNING

IGRA USTVARJALNOSTI

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I.

UVODNIK

EDITORIAL

Alma Zavodnik Lamovšek

DRAGE BRALKE, DRAGI BRALCI REVIJE



Iz teka se sedmo leto izhajanja revije Igra Ustvarjalnosti, zato je pred vami tudi njena sedma številka. Število sedem ima v zgodovini človeštva pomembno mesto na različnih področjih. Običajno predstavlja urejenost (matematičnih, naravnih, kozmičnih ...) elementov, v sebi pa nosi tudi veliko simbolike, mistike in pravljici. Za snovalce revije in pisce prispevkov pa zagotovo pomeni tudi čarobnost, povezano z raziskovanjem in odkrivanjem novih dejstev in spoznanj, ki jih na ta način dodajajo k svetovni zakladnici znanja.

Za ustvarjalce revije ima leto 2019 še poseben pomen, saj bo revija po dolgem času ponovno izšla tudi v tiskani obliki. Poleg tega sta bili obe fakulteti izdajateljici revije počaščeni s certifikatom AESOP (*Association of European Schools of Planning*) za izjemnost in odličnost izobraževanja na področju prostorskega in urbanističnega načrtovanja. Fakulteta za arhitekturo Univerze v Ljubljani je dobila priznanje za prvostopenjski študijski program Urbanizem, Fakulteta za gradbeništvo in geodezijo

Univerze v Ljubljani pa za drugostopenjski študijski program Prostorsko načrtovanje.

Tudi letošnja številka je, tako kot prejšnje, polna zanimivih in zelo raznolikih prispevkov, ki razkrivajo pestrost raziskovanja na področju prostora, saj se dotikajo tako planerskih, urbanističnih kot tudi arhitekturnih tem. Kažejo tudi na pomen interdisciplinarnega sodelovanja različnih strok, kot je nevroznanost, v raziskovanju prostora ter odpiranju novih, čeprav ne povsem nepoznanih tem (npr. delo na domu), ki odstirajo drugačen pogled na organizacijo dejavnosti v prostoru ter njihov vpliv na kakovost bivalnega okolja.

Ob koncu vsem želimo še uspešen zaključek leta 2019 in naj bo čarobno tudi prestopno leto 2020!

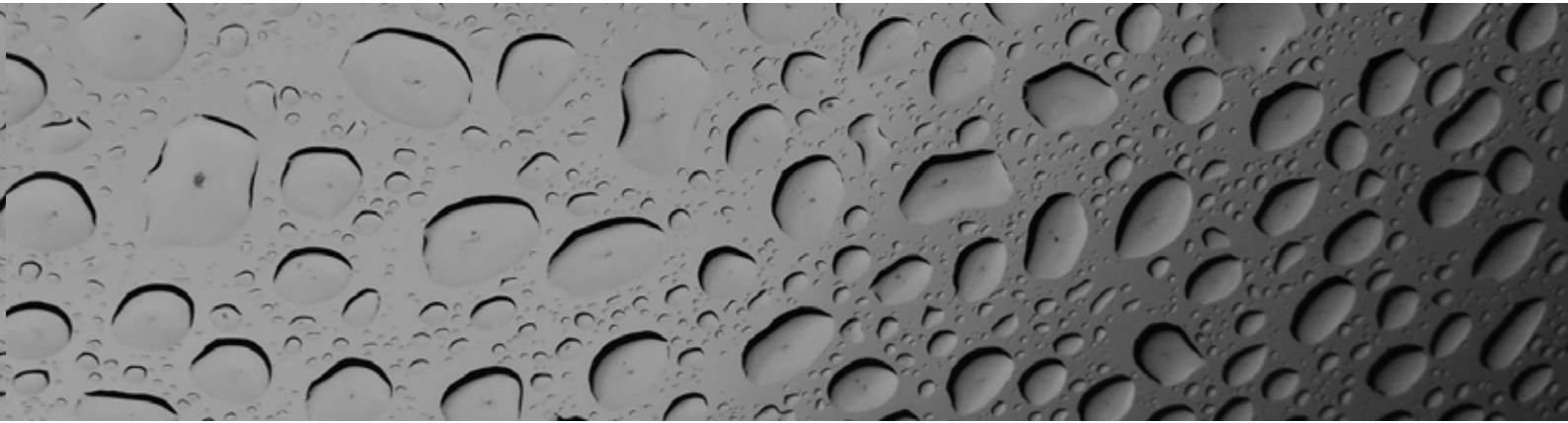
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DEAR READERS OF THE JOURNAL



It has been seven years since the journal Creativity Game was first released, and its seventh issue is now available. In human history, the number seven has held a significant place in various fields. It usually stands for organisation of (mathematical, natural, cosmic, etc.) elements, but it also carries a lot of symbolism, mysticism, and magic. For the journal's creators and authors this also relates to the magic of researching and discovering new facts and findings thus added to the world's treasury of knowledge.

2019 has a special significance for the journal's creators as, after quite some time, the journal is released in print format as well. Moreover, both publishing institutions were awarded the Association of European Schools of Planning's (AESOP) Certificate of Quality for their excellence in spatial planning and urbanism education. The Faculty of Architecture of the University of Ljubljana (UL FA) was awarded the certificate for the Bachelor (First-Cycle) Programme in Urbanism, while the Faculty

of Civil and Geodetic Engineering of the University of Ljubljana (UL FGG) was distinguished with the certificate for the Master (Second-Cycle) Programme in spatial planning.

This issue is again full of interesting and versatile papers, which uncover the diversity of research in the spatial domain as they touch upon spatial planning, urbanism, and architecture. They also demonstrate the significance of interdisciplinary collaboration of various professions, such as neuroscience, in studying space and in opening new, albeit not completely unknown, topics (i.e. home working), revealing insight into the organisation of the activities and their impact on the quality of the living environment.

Finally, we wish you a successful conclusion of the year 2019 and a magic leap year of 2020!

Assist. Prof. Dr **Alma Zavodnik Lamovšek**
Editor



Aleš Švigelj, Marko Lazić, Lanlan Wei

KITAJSKO-SLOVENSKI PAVILJON

“MED NEBOM IN ZEMLJO”

Kitajsko – Slovenska ekipa. Chinese - Slovenian team.
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Študentje urbanizma in arhitekture s Fakultete za arhitekturo Univerze v Ljubljani smo skupaj s študenti Univerze Tsinghua, Kitajska, sodelovali na mednarodni delavnici 2019 UIA-CBC International Colleges and Universities Competitive Construction Workshop in osvojili drugo nagrado. Naši mentorji so bili profesorji Wang Hui, Zhu Ning, Zhou Zhengxu in Guo Yong s Fakultete za arhitekturo Univerze Tsinghua in profesorica dr. Alenka Fikfak s Fakultete za arhitekturo Univerze v Ljubljani. Pod njihovim mentorstvom smo na Kitajskem študentje zasnovali in zgradili leseni paviljon z imenom »Lie Between«, ki služi kot zunanje odprto gledališče.

Glavni namen natečaja (izbor rešitev) in delavnice (gradnja objektov) je bil izpostavitve problematike podeželskega okolja vasi Guoyuan, ki trpi za posledicami monotonega industrijskega razvoja. Vas je obenem znana tudi po svojih stoletnih sadovnjakih belih hrušk, kar je ena od prednosti za nadaljnji razvoj. Vse vključene skupine so raziskovale potenciale tega podeželskega območja in jih opredelile z zasnovo 15 paviljonov znotraj hruškovih nasadov. Oblikovanje paviljonov je temeljilo na podeželskih elementih, prostorskih izkušnjah in tematikah, povezanih s sadovnjaki. Študentske ekipe so vzpostavile prostore in objekte za aktivnosti in druženje vaščanov in obiskovalcev. Z ureditvijo celotnega območja ter zasnovo paviljonov so skušali prispevati tudi k spremembi in izboljšanju življenjskega sloga na podeželju ter zagotoviti potenciale za njegovo aktivacijo in nadaljnji razvoj.

Tekmovanje se je pričelo že marca leta 2019, v maju pa je

mednarodna komisija na podlagi 101 prispele idejne zasnove izbrala 15 finalistov, ki so dobili možnost uresničiti svojo vizijo. Med izbranimi je bil tudi projekt zasnove paviljona skupine Univerze Tsinghua in Univerze v Ljubljani z naslovom »Lie Between«. Gradnja izbranih paviljonov je potekala od 31. julija do 18. avgusta 2019 v vasi Guoyuan na Kitajskem. Ekipo Univerze v Ljubljani s Fakultete za arhitekturo je pri raziskovanju Kitajske podprlo podjetje Gorenje Group, ki ima v okviru strategije družbene odgovornosti že dolgo tradicijo sodelovanja z različnimi fakultetami, tako pri razvojno-raziskovalnih aktivnostih kot tudi na področju medkulturnega sodelovanja. Izjemno pomoč študentom je izkazalo tudi Veleposlaništvo Ljudske republike Kitajske v Ljubljani, ki je poskrbelo za nemoteno potovanje na Kitajsko.

Paviljon »Lie between« kot odprto gledališče gradi na konceptu povezave z duhovnostjo človeka in sledi ideji »ležati med nebom in zemljo«. S svojo podobo lebdi nad zemljo in ustvarja prikrito misel povezovanja prostora, ljudi in dogajanja. Ob obisku lokacije preidemo različne stopnje prihajanja k prostoru druženja in odhoda na prostor stika z neskončnostjo neba. Paviljon postane prostor druženja, igre, oddiha, umirjanja duha in tudi povezovanja ljudi.

Glavni, nosilni skelet paviljona sestoji iz kovinskih profilov, medtem ko smo pri vseh ostalih elementih uporabili lokalni les. Fasadni ovoj tvorijo vrvi, napete med konstrukcijo, s čimer smo ustvarili ambient gledališča in parafrazirali gledališke zatore. Ena glavnih posebnosti zasnove je razgibana streha, na

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Paviljon v nočnem sijaju. *Pavilion in the night glow.*
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CHINESE-SLOVENIAN CABIN "LIE BETWEEN"

Notranji oder namenjen igri, druženju, srečevanju ob čaju, uživanju ob družbi, srečanju z znanci ali pa spoznavanju novih ljudi. *The indoor stage for playing, socializing, tea meeting, enjoying socializing or meeting acquaintances and new people.*
© Tsinghua University, University of Ljubljana



We, the students of urbanism and architecture from the Faculty of Architecture of the University of Ljubljana (UL FA), teamed up with the students of the Tsinghua University, China, to take part in an international competition 2019 UIA-CBC International Colleges and Universities Competitive Construction Workshop, where we were awarded Second Prize. Our mentors were Wang Hui, Zhu Ning, Zhou Zhengxu and Guo Yong from the School of Architecture of Tsinghua University and Dr. Alenka Fikfak from the Faculty of Architecture of the University of Ljubljana. Under their supervision we designed and built a cabin titled "Lie Between", which serves as an open-air theatre.

The main purpose of the competition (selection of proposal) and workshop (construction of cabins) was to highlight the issue of the rural environment in Guoyuan Village, which has been confronted with the problem of monotonous industrial development. However, the village is renowned for its century-old white pear orchard, which creates an advantage for further development. The involved teams explored the potentials of this rural area through the design of 15 cabins inside the pear orchard. The cabins' design was based on rural elements, spatial experiences, and topics related to orchards. The student teams set up spaces and structures for activities and hanging out of villagers and visitors. Through landscaping and cabin design they tried to contribute to the change and improvement of the living quality in rural areas and allow for developing potentials for their activation and further development.

The design proposal submission deadline was in March 2019, and in May 2019, among the 101 entries submitted, the international jury selected 15 finalists, who were invited to make their vision come to life. One of the selected design proposals was that by the joint team of the Tsinghua University and the University of Ljubljana titled "Lie Between". The construction of the selected cabins took place between 31 July and 18 August 2019 in Guoyuan Village, China. UL FA team's visit to China was supported by Gorenje Group, which has, as part of its social responsibility strategy, a long-established tradition of collaboration with various faculties, both in development and research activities as well as in the field of intercultural collaboration. The Embassy of the People's Republic of China in Ljubljana offered exceptional help to the students and made sure that their trip to China was seamless.

The Lie Between cabin, as an open-air theatre, is based on the concept of connection with human spirituality, following the idea of "lying between heaven and earth". Its image is suspended above the Earth, creating a hidden thought of connecting places, people, and events. During our visit to the site we go through various stages of arriving at a place of meeting and departing to a place of contact with the infinity of the sky. The pavilion becomes a place of meeting, play, relaxation, and connections among people.

The main, load-bearing skeleton consists of metal profiles, while local wood was used for all other elements. The façade envelope is made of ropes looped around the structure, creating the ambi-



Prekrivanje "zlomljene" strehe s katere se ponujajo prelepi pogledi po pokrajini.
Overlapping of the 'broken' roof that offers beautiful views across the landscape.
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katero se lahko povzpne. Prekrita je z vejevjem, nabranim v okolici. S tem smo paviljon povezali s podeželskim okoljem. Prostor pod streho ponuja oder za uprizoritve, igro, druženje, srečanje ob čaju, uživanje ob družbi, srečanju znancev in spoznavanju novih ljudi, medtem ko streha služi kot tribuna, s katere se odpirajo pogledi po okolici. S tem celotni sadovnjak postane kulisa, streha »zvijuga« nad dogajanjem na zemlji in nas popelje v neskončnost razmišljanja na nebu.

Poleg paviljona smo uredili tudi okolico in tako zagotovili, da se v prostoru poleg grajenih razkrivajo tudi naravne prostorske kvalitete, ki bogatijo doživljanje in program paviljona. Pot po lokaciji smo speljali krožno in ustvarili številne male ambiente, ki temeljijo na načelu oblikovanja doživljanja posameznih sekvenc. Pristop k paviljonu se z vaške ceste prične preko zožene poti, ki vijugasto vodi mimo obstoječih hrušk preko arašidovega polja in se zaključi pri zunanji tribuni. S tem se samo doživljanje in pristop do paviljona dogajata sekvenčno, saj nam pot preko zožitev in različnih situacij tega odkriva postopoma. Zunanja tribuna, na katerih bodo obiskovalci spremljali predstave na pokritem odru paviljona, je sestavljena iz bambusa, pomembnega tradicionalnega materiala, in je vključena v okoliško krajino. Od tu nas pot vodi skozi pokriti del paviljona, od koder je možen pristop k odru ali pa k okvirju zunanjih iger, ki so jih študenti ročno izoblikovali in so namenjeni vsem obiskovalcem. Pot iz paviljona se nadaljuje do dostopa na streho, še eno tribuno, ki služi za povezovanje ljudi, a tudi posameznika – z okolico, nebom ali zemljo. Z dostopa na streho se pot preko obstoječih polj vijugasto vrne na glavno cesto, s čimer se doživetje in krog poti zaključita.

Zaključno ocenjevanje zgrajenega paviljona je zajemalo tri ključne elemente: vključenost paviljona v okolje, njegova funkcionalna zasnova ter izvedba detajlov. Po teh kriterijih je slovensko-kitajski paviljon zasedel drugo mesto, s čimer smo študenti pridobili srebrno mednarodno priznanje za sodelovanje in izvedbo paviljona.

Tekmovanje:

2019 UIA-CBC International Colleges and Universities Competitive Construction Workshop



Integracija paviljona znotraj obstoječega ruralnega okolja. *Integration of the pavilion inside the existing rural environment.*
© Tsinghua University, University of Ljubljana

Podpora s strani:

Gorenje Group

Veleposlaništvo Ljudske republike Kitajske

Povezave:

http://constructionworkshop.chinabuildingcentre.com/en_index.html

<https://www.youtube.com/watch?v=Sp0YmTNjY8>

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Mentorica: izr. prof. dr. Alenka Fikfak

Sodelavca Marko Lazič in Aleš Švigelj

Študenti urbanizma: Lanlan Wei, Jan Barič, Zala Bokal, Zala Koleča, Katarina Kuk, Jaka Veber in Arian Todorović

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Študenti arhitekture: Guo Yuqi, Ji Ruochen, Lei Yuxin, Cao Yuxuan, Mao Yu, Guo Hao, Hong Chuihan

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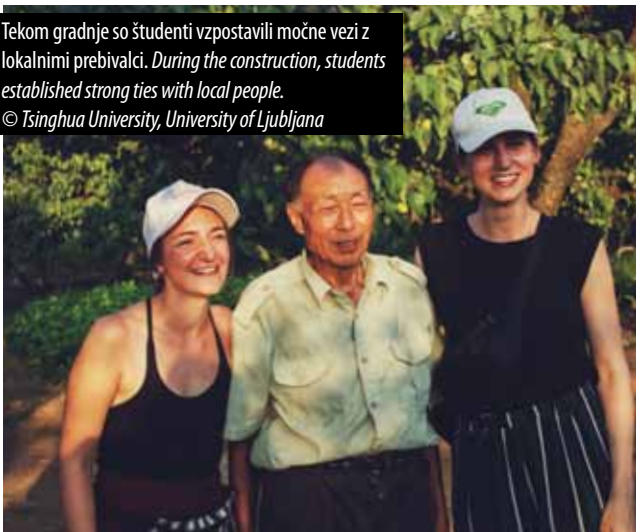
MASTER THESIS

V zaključnih delovnih dneh se je delovna
vnema tudi isknila. *In the last working days,
the work zeal also sparked.*
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Paviljon skupaj z zunanjo ureditvijo.
Pavilion with the landscape arrangement.
© Tsinghua University, University of Ljubljana

Tekom gradnje so študenti vzpostavili močne vezi z
lokalnimi prebivalci. *During the construction, students
established strong ties with local people.*
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ence of a theatre and paraphrasing theatre curtains. One of the main design specifics is the curved roof, onto which you can climb. It is covered by branches gathered nearby. This provided a link between the cabin and the rural surroundings. The space below the roof offers a stage for performances, playing, hanging out, getting together for tea, enjoying the company of others, meeting acquaintances and new people, while the roof also doubles as a stand offering the views of the surroundings. The entire orchard becomes a prop, the roof "undulates" above the events on Earth and leads us to the infinity of thinking in the sky.

The surroundings of the pavilion were also landscaped to bring out both built and natural spatial qualities, which add to the cabin's experience and programme. The path along the site was circular and many small ambiances were created, based on the design principle of experiencing the individual sequences. The approach to the pavilion from the village road begins with a narrow road zigzagging past the pear trees across a peanut field and ending up at the external stand. This makes the experience and approach to the cabin sequential, as the path gradually reveals the cabin through the various narrowings and situations. The external stand, wherefrom the visitors will see shows on the covered stage of the pavilion, is made of bamboo, an important traditional material, and is well integrated into the surrounding landscape. Thereon the path leads us through the covered part of the pavilion, allowing us to approach the stage or the outdoor games, which the students made by hand and are intended for all visitors. The path continues to the access to the roof, yet another stand, which serves to connect people but also individuals – with the surroundings, the sky, and the earth. From the roof the path zigzags across the fields back to the main road, where our experience and the path come to an end.

The final assessment of the pavilion consisted of three key elements: integration of the cabin into the environment, its functional design, and the making of details. According to these criteria, the Slovenian-Chinese cabin was awarded second place, i.e. silver international prize for collaboration in the design and construction of the cabin.

Competition:

2019 UIA-CBC International Colleges and Universities Competitive Construction Workshop

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II.

ČLANKI

ARTICLES

Huriye Armağan Doğan: UPORABA TEHNOLOGIJE SLEDENJA POGLEDA V RAZISKAVAH KULTURNE DEDIŠČINE IN PRAKSI

IMPLEMENTATION OF EYE TRACKING TECHNOLOGY ON CULTURAL HERITAGE RESEARCH AND PRACTICE

DOI: <https://dx.doi.org/10.15292/IU-CG.2019.07.016-021> ■ UDK: 719 ■ SUBMITTED: August 2018 / REVISED: September 2018 / PUBLISHED: November 2018

1.02 Pregledni znanstveni članek / Review Article

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UVODNIK
EDITORIAL
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ARTICLE

IZVLEČEK

Sledenje pogleda (angl. eye tracking) je raziskovalno orodje, ki temelji ne merjenju premikanja oči in podaja informacije o zaznavanju in vizualnem procesiranju nekega predmeta. Zato analiza procesov pozornosti opazovalca ponuja uvid v razumevanje povezave med kognitivnim procesom in premikanjem oči ter informacijo o tem, ali premikanje oči lahko razkrije človekovo zaznavanje. Tehnologija sledenja pogleda postaja v zadnjih letih vse bolj dostopna, uporablja se lahko tudi pri raziskavah kulturne dediščine. Beleženje in merjenje premikanja oči dajeja dovolj podatkov o območjih, ki najbolj pritegnejo vizualno pozornost opazovalcev, in strokovnjakom omogočata vzpostavitev strategij za prilagodljivo ponovno uporabo objektov dediščine. Članek se osredotoča na uporabo tehnologije sledenja pogleda za boljši vpogled v človekovo dožemanje in zaznavanje kulturne dediščine.

KLJUČNE BESEDE

kulturna dediščina, sledenje pogleda, raziskave, vizualna pozornost

ABSTRACT

Eye tracking is a research tool that is based on measuring the eye movements which provides information about the cognition and visual processing of the subject. Therefore, analysing observer's attentional processes can be both instructive for understanding the correlation between the cognitive process and eye movement, and furthermore whether the eye movements can reveal and disclose the perception of people. The technology of eye tracking is more accessible in recent years, and it is possible to implement this technology in cultural heritage studies. Recording and measuring the movements of the eye can give sufficient information about the areas which are catching the visual attention of the observers the most and that can help the specialists on the establishment of adaptive reuse strategies of the heritage buildings. In that regard, this paper is focusing on the usage of eye-tracking technology for understanding the perception of people regarding cultural heritage.

KEY-WORDS

cultural heritage, eye tracking, research, visual attention

1. INTRODUCTION

The Encyclopaedia of Neuroscience defines the term visual attention as a set of cognitive operations that intervene in the selection of the relevant and irrelevant information from cluttered visual scenes (McMains, 2009). Without a cognitive distinction, people would not be able to reach the data set they require or aimed at since they would receive and process a large amount of data on a daily basis. According to Kastner et. al (1999), when people direct their attention to a certain object, or a particular location at a visual scene, their responses regarding the stimulus strengthen, and the distractions around the direct attention are fading in regard of importance. Therefore, visual attention helps people to collect valuable information in the process of perception and cognition.

In behavioural science research, visual attention is being measured by three non-intrusive methods such as electrocardiography (ECG) sensors, electroencephalography (EEG) sensors, or eye trackers. While the ECG and EEG can give information about the electrical activity of the body, eye tracking would give information on the movements of the eye. Recording the movement of the eye is an important research tool since it can provide insights and information about where the observer is looking at and what is the duration of the examination. Furthermore, it can also store the data about the path where the observer's eyes are following in this process. In this regard, eye tracking can generate valuable information about the observer, which makes this technology to be mostly implemented in user experience research regarding human-computer interaction, and marketing in the present days.

However, eye tracking technology can also be implemented in the field of cultural heritage. The decision process of people regarding identification an artefact as cultural heritage is an intriguing and at the same time an ambiguous subject. The indicators which are affecting this process or helping people to make their decisions are not clear. In that regard, tracking the movements of the eye can give sufficient information about the areas which are catching the visual attention of the observers the most. Ascertaining the points of visual attention and identifying these areas can help the specialists on the establishment of adaptive reuse strategies of the heritage buildings. Therefore, this paper is an attempt on the usage of eye-tracking technology for understanding the perception of people regarding cultural heritage.

The paper begins with the definition and explanation of the history of eye tracking technology. The first chapter gives brief information about the development of eye tracking and the different applications in history. In the second chapter, the concept of perception and how it can be implemented towards cultural heritage by the usage of eye tracking technology is explained. The following chapter in this paper gives information about an applied experiment on cultural heritage buildings and analyses the results. In the last chapter of the paper, the application opportunities of this technique are discussed.

2. HISTORY OF EYE TRACKING

The first experiments which were aiming to observe the movements of the eye were applied by French ophthalmologist Javal in the late 1800s, who focused on the saccades and the fixations during text reading. As Drewes (2010) states, Javal applied a mechanical connection between the eyes and the ears by a rubber band, which makes sounds during eye movements. However,

Ahrens, Delabarre, and Huey were the first researchers who tried to record the eye movements. According to Bergstrom and Schall (2014), the devices which were used in eye tracking in the late 1800s were not that pleasant and furthermore, they were not practical. One of the first eye-tracking experiments involved attaching levers to the lenses on the eyes which would transfer the movements to a surface covered by soot. Hereof, the experiment enabled to record the information about the place that the observer is looking at during the eye movements. However, the technique involved physical contact with the eye while recording the movements. Therefore, it was not comfortable for the observer.

As Holmqvist et al (2011). state, even though the usage of eye trackers can be traced back to the late 19th century, the principle of photographing the reflection of an external light source from the fovea has been introduced at the beginning of the 20th century by the research of different scientists with different methods. One of the methods which were applied the most in eye tracking is recording the fixations of the observers. People tend to move their eyes in the field of vision when they are gazing around, however, when they divert their attention towards a specific spot, their eye would focus on this region which would establish the fixation. The spot or the region which catches the attention can be identified as the area which the observer found the most interesting or that the observer tries to gain more information about. Therefore, if it would be possible to track the eye movements of an observer in the process of gazing and focusing, it might also be possible to identify the process which people's attention are shaped. As Duchowski (2003) states, recording what the observer found exciting or what drew the attention of the observer might provide a clue to how that person perceived the scene that he/she is viewing. Furthermore, according to Helmholtz (2005), visual attention is a crucial part of the visual perception of people. In that regard identifying the fixations of the eye movements can help to have more information about the attention and perception of the people.

The elements which are affecting the attention of the subject or the observer can be measured by two main movements of the eye. These movements are fixations and saccades. Fixation is a short and relative pause of the eye when a person consciously processes information from the point that it is observing. As Tatler (2014) states, especially when people are viewing complex scenes, fixations are allocated preferentially to specific locations, while other locations receive little or no scrutiny by foveal vision. Moreover, fixations can also demonstrate that the observer is engaged in that location. When the period of the fixation is more extended, the observer would observe and process more information. Therefore, fixations would be longer on the areas which are valued more on the information scale. On the other hand, a saccade is a quick movement of the eye between fixations. In this period of the eye movement, information is also processed; however, most of the time, this sequence is unconscious. Consequently, both fixations and saccades are essential elements for measuring the eye movements, and furthermore for analysing and understanding the information gathering methods of people either consciously or unconsciously, which have an impact on the perception of people.

One of the founders and furthermore the pioneers of the modern eye movement research is Alfred Yarbus. In his book called *Eye Movements and Vision*, which was published in Russian in 1965 and translated into English in 1967, Yarbus influenced most of the recent approaches on the study of eye movements and vision. According to Tatler et. al (2010), the last chapter of Yarbus's book, which was called "Eye movements during per-

ception of complex objects”, is the most important addition to the field of studies related to eye tracking. His research involved measurements of eye scanning paths of observers on a picture painted by Ilya Repin. When the scan paths of the observers are analysed, the eye scans differ regarding the question that Yarbus asked the participants. According to Yarbus (1967), when people are examining complex objects, the eye fixates mainly on certain elements of these objects. Therefore, the eye rests much longer on some of these elements than on others, while some elements may receive little or no attention when people are looking at objects which contain different elements. Moreover, according to Williams et. al (1997), when the analysis regarding the movement of the eye observed in the parallel and serial search conditions, it supports that eye movements are correlated with the attentional processes of underlying performance on such tasks. Therefore, the eye movements are highly related to visual attention and also with the questions which are asked to the participants. As it has been stated by Findley and Gilchrist (2012), the objects which are salient might differ from moment to moment, and from individual to individual, therefore the eye scan would be able to reflect the interests, expectations and biases of each individual. In that regard, analysing the eye-movements and recording those movements can help to identify the elements which are attracting the attention of the subject or the observer, and furthermore, it can contain useful information on the perception of people and the elements which are affecting or influencing the perception.

3. PERCEPTION OF CULTURAL HERITAGE AND EYE TRACKING TECHNOLOGY

According to the survey which was implemented in the United Kingdom by the Department of Culture, Media and Sport in 2014, cultural heritage and the historical landscapes contribute with the mental health and the happiness of the people. As it has been stated at key findings of the report people who have been in an environment which contains heritage or people who had visited a heritage site in the last 12 months before the survey took place are significantly happier than those who had not visited, even when other factors are controlled. Psychological benefits derived from the interaction between the individual and the environment can give the possibility to understand the effect of the environment and specifically historical landscapes on people.

Over the last fifty years, the studies about the environment and the impact of it on people's perception and psychology gained a greater value by the researches in environmental psychology and behavioural geography. The studies, which are analysing the evaluation of the landscape, established in the outlines of the disciplines which are related to the design by the analysis of the scenic beauty in environments that have an impact on the design approaches. However, according to Gold and Goodey (1983), the models of society which have been widely used while analysing the landscapes in geographical studies developed the first impulse for the behavioural research. The appraisal of the landscape by the behavioural perspective added another constraint for the research field by including the emphasis on individuals as someone who shaped and responded to the limitations of the physical and social environment by highlighting the emotional and aesthetic considerations on the perception and behaviour. As a result, the interest in the perceived notions by the non-experts and society started to be researched under the preference studies.

As Holohan (1986) states, preference studies and the curiosity towards the environmental psychology gained momentum

by the development and consolidation of a specialised field in psychology which is dealing with the analysis of the interaction between individuals and their environment. The shift which has been gained by analysing the human-environment interaction established four main paradigms in the field of landscape and environment research. According to Zube et. al (1982), the main paradigms based on this interaction in landscape perception are the expert paradigm, psychophysical paradigm, cognitive paradigm and experiential paradigm. While the expert paradigm, which is called formal aesthetics by Daniel, includes assessment of landscape quality by skilled and trained observers which are the experts, the psychophysical paradigm involves evaluation through testing public or selected populations. Therefore, this second paradigm combines and measures the perception of society. However, as Daniel (1990) states, the main concern in psychophysical measurement methods is the relation between the indicator responses and hypothesised underlying psychological processes, such as perceived scenic beauty. On the other hand, the cognitive paradigm involves research on the meanings that people are associating with the environment by their past experiences and their prior knowledge. Therefore, cognitive paradigm and the theories established by this approach are connected with the biological and habitat theories, where preferences for specific types of environments were explained by their contribution to human survival and continuity of human life. The experiential paradigm is also based on the experience of human-landscape interaction, however, in this paradigm, the process is believed to be on-going, and that human and landscape can both shape each other. All these different paradigms are essential for understanding the interaction between individuals and their environment, and furthermore, they can help in describing the preferences and perception of the people for landscapes and environment.

In this regard, in relation to research connected to cultural heritage and its perception, the cognitive approach can be implemented, because it is directly related to the judgement of the people and their preferences. The visual attention people have is not only related to the ability of the eye regarding seeing, but it can be described as the sum of both overt and covert data collection of the eye and its processing. Therefore, measuring or identifying visual attention can be practical and informative regarding understanding the perception of people when they are evaluating cultural heritage. Accordingly, implementing the eye-tracking technology can be convenient and advantageous for the identification of the indicators, and furthermore, eye tracking as the research tool can provide the additional data which can help to limit the area for conceiving the decision processes of people regarding the selection of cultural heritage. Identification of the indicators can obtain data on the perception of society which should not be omitted in the consideration and decision-making process of adaptive re-use.

4. EXPERIMENT

4.1 Method and apparatus:

As it has been stated at the article 'Yarbus, eye movements and vision' by Tatler et. al (2010), according to the research of Yarbus, when people observe a complex scene for an extended period of time, it is likely that people would follow a repeated cycle of examination. Furthermore, the analysis demonstrates that during these cycles the eye stops and inspects the most important elements of the picture determined by the nature of the object and the problem the observer is facing at the moment of perception. Therefore, the recordings which have

been composed in this experiment for tracking the eye and measuring the fixations and saccades have been ceased when the cycles appear to repeat frequently on the indicators. On the other hand, the Scanpath Theory, which established by Noton and Stark (1971) suggests that the scanning paths pursued by the eye during extended viewing are the most important part of people's perception and evaluation of objects. In that regard, repeated cycles on the fixations have also been marked as the more important fixations of the observer during the analysis of the recordings.

In this experiment, wearable eye trackers were used as the research tool. The eye movements of the right eye were recorded with a monocular eye tracker which has a high-speed world camera that contains the sensor with frame rates of 1920x1080 @30fps, 1280x720 @60fps, 640x480 @120fps and diagonal FOV lenses which are 60 and 100 degrees with a latency of 5.7 ms. The Eye camera which is used in this experiment contains the sensor with a frame rate of 200x200 @200fps, 400x400 @120fps with the latency of 4.5 ms. Therefore, the experiment contains two cameras. The eye camera is aimed at the eye pupil, while the world camera is recording the area that the subject is observing. With the help of the two cameras, the eye movements and gaze points were recorded while the subject was observing a set of photographs with 11 different buildings. In the experiment, two different sets of photographs were used.

The photographs which were demonstrated in the experiment contain various façade images which were taken by the author by Nikon D3400 camera with 24.2 Megapixels effective pixels, 23.5mm x 15.6mm sensor size, and 6000 x 4000 maximum resolution. The buildings were chosen from the structures that were listed on the UNESCO nomination file of Kaunas which were selected by the experts, and from contemporary buildings in Kaunas. The photographs were projected by a projector with the native resolution of 1024 x 768 and a maximum resolution of 1600 x 1200 to a screen with the size of 160cm x 200cm. The usage of eye trackers provided the possibility to analyse the fixation points and the indicators where the participants are examining while they are evaluating an artefact as cultural heritage. In that regard, the experiment also provided valuable information regarding the difference by the choices of experts and non-experts as well.

After the experiments were performed, the reason for the decisions and what were the characteristics of the façades which were affecting the participant's decision process were also asked verbally to the participants.

4.2 Participation and procedures:

In the design of the experiment, a qualitative approach and a non-probability sampling method have been applied. The reason for adopting a non-probability sampling method was related to the ability to apply purposive sampling which matches with the goal of the experiment. The goal of the experiment was not on achieving objectivity or generalisation, but it is on identifying indicators which can be implemented in a model. Therefore, the experiment was a pilot study.

As part of the purposive sampling, criterion case sampling method has been adopted in the research. According to the first experiment of the author (Doğan, H.A. 2019), prior knowledge has an essential role in the appraisal of the artefacts. Furthermore, cultural memory and the meanings people attach to the environment and the buildings have an impact on the perception and interpretation. Therefore, this experiment adopts this

knowledge as the origin. Consequently, if older generation, which has the prior knowledge and cultural memory, cannot perceive the artefacts which are demonstrated to them as cultural heritage, it is implausible of the younger generation to evaluate these artefacts as cultural heritage. On the other hand, it is possible that the older people would perceive some of the buildings which are demonstrated to them as cultural heritage due to cultural memory and prior knowledge without the need of the indicators. In that regard, selecting the participants from younger generations can give the ability to determine more physical indicators in their evaluation process.

In the selection procedure of the participants, a convenience sampling approach has been adopted by a sequential sampling method. Therefore, the experiment finalized when the indicators got repetitive, and the estimated means in the sample reached saturation in a pre-specified range of confidence interval.

According to this method, the participants were selected from bachelor and master students of Faculty of Architecture and Faculty of Social Sciences, Arts and Humanities of the Kaunas University of Technology. The participants were informed about the experiment and asked for their participation. As a result, 39 students with age ranging between 18 and 30 years old participated. However, there were 2 invalid recordings, therefore, in the experiment, the data of 37 students were used. The invalid recordings were caused by the makeup of the female students or by the darker eye colour of the students which did not allow the eye tracker to record accurately. The distribution was fairly equal between females (n = 18) and males (n = 19).

The course of performing the experiment preceded with the calibration of the eye tracking glasses for each participant. Both manual marker calibration and natural feature calibration methods were adopted in the experiment depending on the conditions. Furthermore, in both methods, a 9-point monocular calibration operated for central fixation accuracy and for a full calibration. The calibration process also served as a cue for the participant for acclimating the procedure and the experiment.

After checking for a central fixation, the experimenter manually triggered the start of each trial. The experiment lasted approximately 12 seconds for each building and 2 minutes in total. The data of eye tracking has been recorded by the wearable eye-tracker and a laptop computer. The participants located approximately 4 meters away from the photograph of the building where the whole façade can be visible for the participant.

4.3 Data analysis:

The overall quality of the data which was recorded by the eye tracker was calculated as the average deviation between the calibrated point of regard (POR) and 9 validation points. The average horizontal and vertical deviation was 0.62 and 0.75° respectively. The number of missing samples due to blinks are approximately 13%. The eye movement data from each participant were extracted, and eye movement events such as fixations, saccades and blinks were detected by the software called Pupil Capture. The analysis of the data which have been recorded by the wearable eye trackers performed on the computer with the help of the software called Pupil Player. Both of the software which is mentioned is the default software of the eye tracking glasses. However, during the analysis, the need for examining the recordings frame by frame emerged due to the recordings containing the whole test, and the photographs needed to be analysed one by one. In that regard, the free software called QGIS used for the analysis.

The Pupil Player software allows to replay the recordings and furthermore, gives the possibility to track the counts of the fixations and saccades of the gaze. Furthermore, the software can provide the data of the start, end and the duration of the fixations, the coordinates of the gaze position in x and y as surface-gaze distribution, confidence and dispersion. According to the data which has been extracted by the Pupil Player, the data has been represented by two main methods. The first method is transferring the fixation counts to a static image. The transfer process has been achieved by manually analysing the video in every frame. The second method is establishing heatmaps. However, the movement of the head, which is constantly changing the position of the observer's coordinates in the recording process, establishes complications in the creation of the heatmaps. Therefore, the heat maps were attempted to be created by the help of markers which identify the area of interest. The markers which have been applied in the experiment were A4 sized and previously defined marker patterns by the Pupil Labs. In the course of the experiment, the markers are attached to the four corners of the screen where the photographs are projected to.

4.4 Results of the analysis:

The experiment suggests that there are various indicators which affect the participant's decision process. One of the indicators which are acknowledged by the experiment is the interventions that were added to the constructions subsequently. According to the results of the analysis of the data, participants had the tendency to fixate on the parts of the buildings which were added postliminary, or which demonstrated the contemporary living norms. 80% of the participants who have specifically focused on these interventions evaluated the artefacts as not being cultural heritage. However, if there are ornaments on the surface, the impact of the interventions is lower, and in most cases, ornaments are strong stimuli for participants. 91% of the participants who were fixated on the ornaments evaluated the buildings as cultural heritage. In that regard, ornaments can be considered as active indicators, while interventions can be recognised in a more passive manner. (Figure 1.)

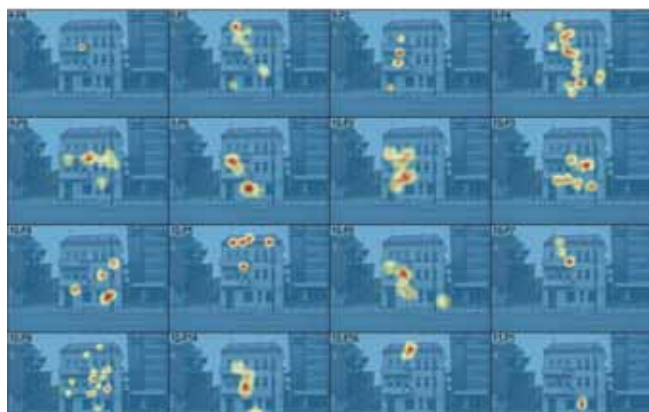
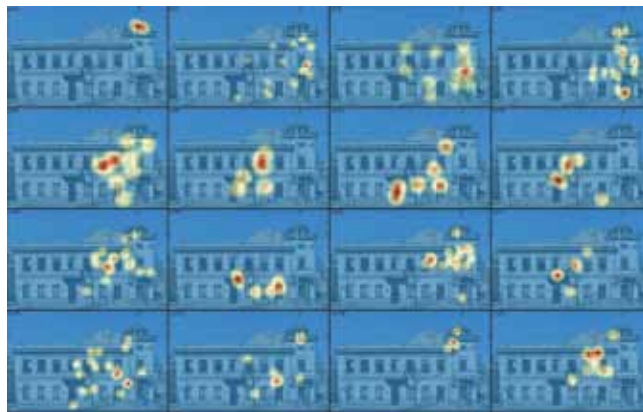


Figure 1: An example sheet of the eye tracking experiment which demonstrates the fixations on the intervention.

Another indicator which was determined by the eye-tracking experiment is the expressive architectural elements such as pediments, towers, portholes or bandings on the plaster. According to the analysis, participants assessed 87% of the buildings as being cultural heritage when they had their gaze fixated on these elements (Figure 2). However, when their gaze was fixated on the surface of the buildings which are covered by plain plaster 83% of the participants determined the buildings as not

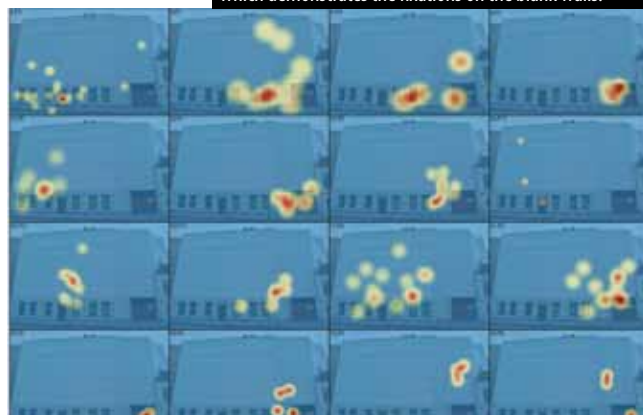
cultural heritage. In that regard, as it has been also demonstrated by the former research of Dogan (2019), material can also be considered as an indicator.

Figure 2: An example sheet of the eye tracking experiment which demonstrates the fixations on the expressive architectural elements.



The analysis of the heatmaps demonstrates that, when there is a different element on the façade of the building such as an ornament, banding on the plaster, pediment, curved lines or a tower, the fixation of the participants move towards these areas which are giving unique characteristics to the surface. Furthermore, differently shaped windows such as porthole windows or corner windows, or architrave on the entrance door also attract the attention of the observer. However, when the façades contain blank surfaces, most of the gaze does not scan these areas (Figure 3).

Figure 3: An example sheet of the eye tracking experiment which demonstrates the fixations on the blank walls.



5. CONCLUSION

When adaptive re-use is considered, most of the time, its social aspect is disregarded, and the socio-cultural benefits which can be obtained by the adaptive re-use are omitted. However, it might not be due to giving less priority to this aspect, but because social benefits and the impacts are harder to measure. In that regard, there is a new approach needed in adaptive re-use strategies which can measure the impact on the society and also the perception of the people regarding cultural heritage.

The experiment which was presented in this research is based on measuring the eye movements of the participants for identifying and analysing the indicators which might have an impact on their evaluation of cultural heritage by the usage of an eye tracker as a research tool. In this research, recording and measuring the movements of the eye managed to give information about the areas which are catching the visual attention of the observers the most when they are observing the façade of

a building. A better understanding of the indicators which are affecting people's perception when they are evaluating cultural heritage can allow specialists to proceed from a more informed perspective regarding adaptive re-use of immovable cultural heritage and comprehend the perception of the society towards it. Furthermore, this approach can also be implemented in practice, especially on the façade lighting of the heritage buildings, so that the parts which are going to be emphasised by the help of light can match with the areas where people are focusing the most. This technology can help the specialists on the establishment of adaptive reuse strategies of the heritage buildings in a broader context, and it can be an important research approach for the future in the cultural heritage field.

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Boštjan Cotic, Boštjan Kerbler: ANALIZA TEMATIK RAZVREDNOTENIH OBMOČIJ V SLOVENSKI PROSTORSKI ZAKONODAJI OD LETA 2002 DO 2017

THE ANALYSIS OF BROWNFIELDS RELATED TOPICS IN SLOVENIAN SPATIAL PLANNING LEGISLATION FROM 2002 TO 2017

DOI: <https://dx.doi.org/10.15292/IU-CG.2019.07.022-027> ■ UDK: 711.585 ■ SUBMITTED: August 2019 / REVISED: September 2019 / PUBLISHED: October 2019

1.02 Pregledni znanstveni članek / Review Article

IZVLEČEK

Slovenija se je kot industrializirana država soočila s problemom razvrednotenih območij šele po osamosvojitvi leta 1991. S ponovno uvedbo tržnega gospodarstva je več gospodarskih področij postalo nekonkurenčnih, tako v evropskem kot tudi v svetovnem merilu. Zaradi premajhne ozaveščenosti o problematiki razvrednotenih območij je trajalo vse do leta 1998, da smo v Sloveniji dobili jasno definicijo razvrednotenih območij (takrat poimenovanih Degradirana urbana območja). Prostorska zakonodaja je na tem področju še bolj zaostajala za stroko, saj je šele ZPNačrt v letu 2007 postavil uradno definicijo pojma degradiran prostor. Namen tega članka je analizirati razvoj terminologije v slovenski prostorski zakonodaji, vezano na razvrednotena območja, še zlasti v zvezi z definicijo pojma razvrednotenega območja in definicijo procesa regeneracije razvrednotenih območij. Vsi trije zakoni s področja prostorskega načrtovanja (ZUre-1, ZPNačrt in ZUreP-2), ki so bili sprejeti v samostojni Sloveniji, so bili analizirani na podlagi istih ključnih besed vezanih na tematiko razvrednotenih območij. Vsi trije zakoni so v več poglavjih vključevali tematiko razvrednotenih območij. Terminologija s področja razvrednotenih območij se je spreminjala z vsakim novim zakonom, čeprav ponekod vsebinsko ni bilo večjih sprememb. V definiciji procesa regeneracije je nenehno pojavlja terminološko razlikovanje za območja v urbanih (prenova) ter območja izven urbanih območij (sanacija). Zdi se, da je ena terminologija prišla s področja urbanističnega načrtovanja, druga pa iz okoljskega oziroma krajinskega področja. Potreben je bolj standardiziran pristop v terminologiji in splošen premik k razumevanju razvrednotenih območij kot prostorskemu pojavu, ki ne glede na lokacijo potrebujejo celostni pristop k regeneraciji.

KLJUČNE BESEDE

razvrednotena območja, prenova, sanacija, zakonodaja, terminologija

ABSTRACT

Slovenia as an industrialized country faced the problem of brownfields only after independence in 1991 when market economy principles were re-introduced, and several industrial sectors became uncompetitive in a European and global scale. Lack of the awareness of the problem made it possible that no clear definition of the brownfields has been developed until 1998. The spatial planning legislation was lagging even more with a first formal definition of a brownfield made only in 2007. The aim of the paper is to analyze the development in brownfield related terminology in Slovenian spatial planning legislation, especially related to the definition of the brownfield site and brownfield regeneration process. All three spatial planning acts (ZUreP-1, ZPNačrt and ZUreP-2), adopted in independent Slovenia were analyzed based on the same brownfield related keywords. All three laws included the topics related to brownfields in several section of the respective document. The terminology changed with each new law and the formal definitions as well. There is a pattern in terminological differentiation of the definition of the regeneration process, one for urban brownfields and other for non-urban. It seems that one terminology came from the urban planning field and the other one from the environmental and landscape field. There is a need for a more standardized approach in terminology and an overall shift towards understanding brownfields as a spatial phenomenon that regardless of its location needs a holistic approach in regeneration.

KEY-WORDS

brownfields, regeneration, rehabilitation, legislation, terminology

UVODNIK
EDITORIAL
ČLANEK
ARTICLE

RAZPRAVA
DISCUSSION
RECENZIJA
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PROJEKT
PROJECT
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1. INTRODUCTION

Western countries faced the problem of brownfields in 1970s with the closure of large industrial sites followed by the recession in USA and Western Europe. Slovenia as an industrialized country faced the problem of brownfields only after independence in 1991 when market economy principles were re-introduced, and several industrial sectors became uncompetitive in a European and global scale. Consequently, several factories were closed, and large industrial complexes became vacant or underused (Cabernet, 2006). This was accompanied by the processes of deindustrialization, internationalization of production and capital mobility and relocation of labour-intensive production to third countries, especially China (Koželj et al, 1998; Lampič, 2017). In 1990s also the processes of military downsizing and vacation of transport industries contributed to creation of additional type of brownfield sites (Cabernet 2006; Cotič, 2018). This process was particularly intense not only in Slovenia, but also in others Central and Eastern European countries (Ferber (Ed.), 2006; Garb, Y., Jackson, J., 2011). However, there are only few examples of heavily polluted brownfield sites in Slovenia, which are usually the result of the abandoned heavy or chemical industry. (De Sousa, 2017). In Slovenia, no mayor analysis of the Brownfields problem existed until 1998. This resulted in many new greenfield developments, such as large shopping centers that were built on a best farm land (Cotič, 2018). Lack of the awareness of the problem even among professionals made it possible that no clear definition of the brownfields has been developed.

The importance of the problem of Brownfields eventually became too important to neglect it, so the Ministry of Environment and Spatial planning of the Republic of Slovenia, office for physical planning and Ministry of Science and Technology of the Republic of Slovenia tendered a research project in 1996 to tackle this problem. The result of the project was a 1998 handbook *Degradirana urbana območja* (Koželj et al 1998) which became the most important document for several years in the topic of the Brownfields regeneration in Slovenia. The book also firmly set a standard term for Brownfields in Slovenian language as a Degraded urban area (*degradirana urbana območja*, DUO).

The first complete new spatial planning legislation in independent Slovenia, the Spatial planning law (ZUreP-1) was adopted only in 2002. The legislation integrated several new approaches in spatial planning and was quite advanced at that time. The problem of brownfields was also tackled; however, a clear definition was missing. The ZUreP-1 seemed to use the terminology of the handbook from 1998, so the legislator probably decided, that the definition from the handbook will be considered as a standard.

The Spatial planning act from 2007 introduced some changes in terminology, but 20 year after first definition the Spatial planning act from 2017 introduced a new term for brownfields as a devalued area (*razvrednotena območja*). However, English expression "Brownfield" as a term was never used in Slovenian language as in some other non-English spoken countries like in Czechia for example (Ilik, J. and Bergatt Jackson, J., 2006), but was instead always used a term in Slovenian language.

The aim of this paper therefor is to analyze the development of the brownfield's definition and brownfields related terminology in spatial planning legislation in Slovenia after 1991 and give recommendations for potential improvements in the formal terminology.

2. METHODOLOGY

To evaluate the development of formal brownfield related terminology and formal definition of the brownfield, the research was focused on the Slovenian spatial planning legislation with regards to Brownfields. We analyzed all spatial planning laws, adopted after the independence of Slovenia:

- Zakon o urejanju prostora (ZUreP-1) Official gazette, no. 110/02 in English: Spatial Management Act 2002
- Zakon o prostorskem načrtovanju (ZPNačrt) Official gazette, no. 33/07 in English: Spatial Planning Act 2007
- Zakon o urejanju prostora (ZUreP-2) Official gazette, no.61/17, in English: Spatial Planning Act 2017

The official translation of the ZUreP-1 was Spatial management act (web1), however, the ZUreP-2, the law with the exact same title, passed in 2017 was translated as a Spatial Planning act. Also, ZPNačrt, passed in 2007 was officially translated as Spatial Planning act. In this paper, all three spatial planning laws are translated as Spatial Planning Act combined with the year when the law was passed. (e.g. 2002, 2007 and 2017) or defined by the official acronym in Slovenian legislation; ZUreP-1 (2002), ZPNačrt (2007) and ZUreP-2 (2017).

To ensure that the research was up to date, the methodology used the following process (Oliviera, 2015): downloading the latest version of all three spatial planning laws as PDF files from their original sources; using the command "find" in the Acrobat reader program; and scanning page after page to extract the section, paragraph, and sentence in which the terms are noted. The source for all analyzed documents was the webpage of the Slovenian official gazette.

Since Slovenian language uses six cases for nouns (nominative, genitive, dative, accusative, locative, instrumental) and three grammatical numbers (singular, dual and plural) who change suffix of nouns into up to 18 variation (Gomboc, M., 2018), only the fixed part of the noun was selected for the search. For example, instead of the whole word "prenova" (renewal) only the fixed part of the word was used for the search. The word was shortened to the extend, if the term was used as a verb or adjective, the search would also find them.

Based on the preliminary analysis of all three Spatial planning acts, the following keywords were selected for the detailed search; Degrad* (for degradation), Razvrednot* (for devalued) Opušč* (for abandoned), Prenov* (for regeneration, renewal) and Sanacij* (for rehabilitation) in that specific order.

3. RESULTS AND DISCUSSION

3.1. The Spatial Planning Act of 2002 (ZUreP-1)

the analysis of the Spatial Planning Act 2002 showed that the main term used for brownfields is a Degraded area (*degradirano območje*). There was no explicit definition of the brownfield site in the first section of the law, but instead the definition of the regeneration (*prenova*), a process which is in this act closely connected to brownfields.

The term degradation is explicitly mentioned in article 5 (Settlements distribution), in the section 2, where the law prioritizes the development of new settlements inside existing underused build-up areas and through brownfields regeneration and rehabilitation (*sanacija*). Article 57 defines the content of the

Municipal Spatial development strategy and identifies planning of rehabilitation of (urban) brownfield sites as an important part of the strategy. Article 60 defines a landscape design concept (krajinska zasnova) which should be according to this article also prepared for brownfield sites outside urbanized areas.

The methodological approach included also the analysis of the terms devalued and abandoned and their grammatical derivatives, however those two terms were not mentioned in the Spatial planning law of 2002.

As mentioned in the first paragraph, the term regeneration (prenova) is mentioned in the article 2, where all mayor definitions are listed. The term is defined in section 23 as "a set of planning and other measures for the economic, social and cultural regeneration of degraded settlements and other areas". Based on the definition, it is clear, that the term is used in relation to Brownfields and is equal to the term regeneration in English language and not only as a renovation, as it would be a direct translation from Slovenian to English. Brownfields regeneration is mentioned in article 5 (Settlements distribution), where new settlements should be developed inside existing underused build-up areas and through brownfields regeneration (prenova) and rehabilitation (sanacija). It is interesting how the law uses both terms regeneration and rehabilitation. It seems, that the term regeneration (prenova) relates to the "spatial planning" components of the brownfields regeneration, while the term rehabilitation (sanacija) relates with the remediation of polluted areas.

Article 12 (jurisdiction of the municipality in the field of spatial planning) also mentions the term "prenova", however in this case it might mean both, the regeneration of brownfield sites, but also renovation of buildings, since the law uses the word brownfield in relation to the word real-estate.

In article 57 (the content of the Municipal spatial development strategy) the section 3 defines, that the document should include basic concept for the rehabilitation of the brownfield sites. It is interesting, that in this article, the legislature used the term rehabilitation, which in this case seems that the term regeneration would be more appropriate, especially related to other topics in this section. (e.g. settlement structure).

Article 58 defines the urban design concept and Section 2 determines, that Urban design concept (urbanistična zasnova) should also define areas in need of regeneration and present basic concepts of regeneration.

Article 72 describes the purpose of the Municipal detailed spatial plan and defines, that this type of document must be prepared for the arrangement of the areas intended for rehabilitation and regeneration.

Article 91 is connected to the article 133 and article 134 where in all articles, the term "prenova" is used in a relation to the renovation of poorly maintained buildings and not with brownfield sites.

The Analysis of the term rehabilitation (sanacija) showed the use of the term in five articles of the Spatial planning law of 2002. The term is mentioned in article 5 (Settlements distribution), where it is used directly connected with the brownfield sites, together with the term regeneration as mentioned in previous paragraphs. The term in article 6 is not used in relation to brownfields. The article 57 uses the term rehabilitation in direct relation with brownfields, however it is not very clear if the meaning is related to just environmental issues or more holistic regeneration viewpoint. Article 72 (the purpose of the Municipal detailed spatial plan) uses both terms, rehabilitation and

regeneration and again the distinction between the two terms is not very clear in relation to brownfields.

3.2. The Spatial Planning Act of 2007 (ZPNačrt)

The Spatial planning act of 2007 (ZPNačrt) introduces a new term in Slovenian language for a brownfield site – a degraded space (degradiran prostor) which substitutes the old term from the ZUreP-1, the degraded area. This time, the law provided the exact definition of the term in the article 2, where all mayor definitions are explained. The brownfield is defined as "a part of a settlement or an area outside a settlement, in which the technical, spatial, living, economic, social, cultural and ecological conditions are reduced to a useless state where regeneration is necessary for the recovery of the area. Or it is an area outside the settlement where (improper) human activity or the omission of the latter caused the degradation of it and its rehabilitation is urgent. This is the first official definition of the brownfield site in Spatial planning legislation in Slovenia.

The term degraded or it's variations are also found in article 3 (the goals of spatial planning), where law prescribes that spatial interventions and spatial arrangements should be designed in such a way as to enable renovation of the existing one, which has priority over the construction of the new ones and with the rehabilitation of brownfields (e.g. degraded space).

Article 6 (the spatial development principles for settlements) defines that the Spatial development is prioritized within existing settlement, on vacant, underused or brownfield sites.

Article 85 introduces the new nationwide Spatial information system. Among other databased, article 5 predicts also a database of brownfields, on which a special legal regime is established based on special regulations. The only special regulation in 2007 related to brownfields, when the Spatial planning Act was adopted, was related to pollution or contamination based on the Environmental protection Act (ZVO-1, 2004). Article 86 is closely related to the article 85 and directs municipalities and ministries to use the state-of-the-art data from the Spatial information system as an obligatory background analysis in the preparation of all types of spatial planning document, which includes also the list of polluted or contaminated brownfields.

The methodological approach included the analysis of the term devalued and its grammatical derivatives, however this term was not mentioned in the Spatial planning law of 2007.

Spatial Planning act 2007 introduces a new term abandoned. Article 44 (spatial arrangements and interventions planning outside the settlement area) defines that some interventions are possible also outside the settlement area and in paragraph 6 mentions the case for the use of natural resources and rehabilitation of abandoned exploitation areas, which are one type of brownfields.

The ZPNačrt upgraded the term (in article 2) for brownfields regeneration from term renovation (direct translation) used in ZUreP-1 to complete or comprehensive renovation (direct translation). The process is defined as a "collection of various activities that improve the functional, technical, spatial-design, living, economic, social, cultural and ecological conditions in a particular area by means of appropriate spatial planning, which help to ensure the preservation of built structures and revitalize urban and other areas". "The regeneration (complete renovation) carried out in the cultural heritage sites is performed by maintaining the distinctive characteristics of the area and the cultural values of the protected area.

Article 2 also defined the term brownfield (as described in previous earlier paragraph) and the definition involves the meaning of regeneration as a process. However, in this definition, they didn't use the term comprehensive renovation, but renovation for revival (direct translation) instead, even the meaning in the context is regeneration.

Article 3 (goals of spatial planning), section 2 defines, that the spatial development should be planned in a way, where renovation of existing structures has priority over building new ones. This article strongly refers to brownfields' regeneration. Article 6 (the principle of settlements spatial development) have a similar meaning and promotes the use of brownfields (through regeneration) and underused sited for spatial development.

The use of term renovation in article 9 is mostly related to the preservation of cultural heritage, nevertheless many brownfields have a potential of industrial cultural heritage, so this article can be considered as linked to brownfields regeneration as well.

Article 39 (the contents of the Municipal spatial plan) defines in paragraph 2, section 2 that strategic part of the Municipal spatial plan must set guidelines for settlement development and for comprehensive renovation - regeneration (of brownfields), while article 41 (urban plans) outlines, that urban plan must define regeneration areas (inside urbanized areas) with solutions and comprehensive renovation measures. Article 45 is not related to brownfields

The article 56 (contents of the municipal detailed spatial plan) defines in section 3 that if the municipal detailed spatial plan is intended for the comprehensive renovation (regeneration) of the area, its mandatory component is a conservation plan prepared in accordance with the regulations on the protection of cultural heritage. The article uses the term comprehensive renovation (regeneration) in a way, that it might be understood that this process is related only to renewal of historical parts of towns and cities. Still, also historic settlements can be considered brownfields with social, functional or other type of degradation.

The term rehabilitation is mentioned in article 2 in the definition of the term degraded space (brownfield). The term is used in a relation to an area outside the settlement where (improper) human activity or the omission of the latter caused the degradation of it and its rehabilitation is urgent. Paragraph 20 of article 2 explains the negative phenomenon of dispersed urbanization and the need for its rehabilitation so the term is not directly connected to brownfields.

Article 3, which defines the goals of the spatial planning, mentions brownfields in paragraph 2, section 6 as a principal, that spatial planning should enable rehabilitation of brownfield sites.

Articles 15, 27 and 39 also uses the term rehabilitation, but not connected to brownfields.

As mentioned in the section analyzing the term abandoned, Article 44 (spatial arrangements and interventions planning outside the settlement area) defines that some interventions are possible also outside the settlement area and in paragraph 6 mentions the case for the use of natural resources and rehabilitation of abandoned exploitation areas.

3.3. The Spatial Planning Act of 2017 (ZUreP-2)

The 2017 Spatial planning Act introduced a new Slovenian term for brownfields – a devalued area. Based on the inquiry at the Ministry of environment and spatial planning, the main reason

for this mayor terminology change is the fact, that the Environmental protection Act (ZVO-1, 2004) uses the term degradation strictly related to environmental pollution or contamination and the legislature for Spatial planning Act had to find a different term. The exclusion of the term was so thorough that the term was not even used as a generic adjective, so the general search didn't find any match related to the term degradation.

Article 3 (definition of terms) set a new definition for a brownfield site (devalued area) as an "area which, due to its inappropriate or abandoned use, has reduced the economic, social, environmental or visual value or value according to the criteria for the protection of cultural heritage and is in need of regeneration. Devalued area (brownfield) may show different types and levels of devaluation, based on functional, environmental, social and cultural heritage criteria.

Article 20 (rational use of space) defines that rational use is primarily achieved through the regeneration and land use change of existing brownfields and settlement areas.

Article 21 (settlements and landscapes identity) in paragraph 1, outlines that the spatial planning of settlements must protect their image, scale and landscape framework, plan brownfields rehabilitation and create new architectural and landscape identity in harmony with the existing qualities. Paragraph 3 also outlines the importance of Brownfields, however this time in relation to the term rehabilitation. Due to the fact, that the whole section of Paragraph 3 is mostly associated to landscape issues and was probably prepared in co-operation with landscape architects and might indicate, that the landscape architects define a process of brownfields regeneration with a term rehabilitation. In previous sections and even previous Spatial Planning Acts, the use of term rehabilitation was also associated to Brownfields but was mostly understood for a definition of regeneration of non-urban brownfield sites (in landscape), while in this section, it might be understood for all types of brownfields.

Article 24 defines settlements development principles and promotes inner urban (densification) development of settlements on brownfields and low-density areas.

Article 26 further explains inner urban developments, and again directs to the reuse of brownfields, but instead uses term devalued land and not devalued area as standardized in the introductory part of the law.

Article 62 defines obligatory background analysis, like urban and landscape design concepts, while Article 63 further explains the Urban design concept and Article 64 Landscape design concept. Article 62 defines, that there is a need for a landscape design concept for rehabilitation of Brownfield land. This diction again points as to understanding that the term brownfield in combination with the process related term rehabilitation implicate relation to (polluted) brownfield sites outside urbanized areas. It is interesting, that in Article 64, which explains Landscape design concept in detail, brownfields are not mentioned. On the other side, article 63, which explains Urban design concept in detail defines Brownfields regeneration as the obligatory content of the document.

The adjective Abandoned is used in the article 3 (definitions) when explaining the term brownfield. In article 29 it is used to define a green or open public space, that was used for a new development and not related to brownfields.

In article 32 (planning spatial arrangements in other regulatory areas) which mentions rehabilitation of abandoned exploitation

areas (probably meant quarries and other opencast mines). Article 242 uses term abandoned for inactive construction pit or construction site, which can be considered as a type of brownfield as well.

Article 3 (definition of terms) in paragraph 1 defines the purpose of the so-called balance-sheet of available build-up areas. The obligatory analysis doesn't involve only the summary of available build-up areas but must also take into consideration areas for potential densification and regeneration.

Paragraph 28 explains the term brownfields regeneration. Direct translation would be "renovation of the area", however the definition follows the common definition of brownfields regeneration as a "collection of various activities for the regeneration of a devalued area (brownfields), which, through spatial planning and land policy instruments and other measures, ensure the preservation of quality built structures and the improvement of functional, technical, spatial-design, living, economic, social, cultural and environmental conditions.

Article 20 (rational use of space) defines that rational use is primarily achieved through the regeneration and land use change of existing brownfields and settlement areas. Article 24 and 26 were explained in the definition of the term Brownfield and are also related to the regeneration.

Article 27 (settlements expansion) defines, that only if inner development and brownfields potentials are already exploited (regenerated), existing settlements can be expanded into greenfield areas, while article 61 only defines the tendering procedures and mentions regeneration processes.

Article 63 defines the purpose and the content of the Urban design concept. It is interesting, that this article as main topics directly mentions brownfields and "the way of their new arrangement" and doesn't use the term used in the definition section for brownfields regeneration. However, the next indent explains the areas of renewal, which might also be understood as brownfields (e.g. social, functional degradation). It seems, that the law distinguishes between brownfields as a result of abandoned industry and defines "areas of renewal" as housing, mixed use or similar areas that need interventions, renewal.

The same can be assumed in article 107, which defines the content of the Municipal Spatial plan and in article 116, which describes the Municipal detailed Spatial plan.

It is also interesting that in article 117, which determines the obligatory content of the Municipal detailed spatial plan, nothing points to brownfields regeneration, expect indirectly in the last section, which explain the cultural heritage protection.

The Spatial planning law of 2017 have a whole chapter (chapter 5) devoted to the renewal or regeneration. The article 3 introduced a new term for regeneration direct translation would be renovation of the area (prenova območja) and represent a term for a process (of regeneration). While article 5 (and some articles before) uses the term area for renovation (e.g. regeneration area) which indicated the area and not the process. It remains unclear what is the difference between the term brownfield (razvrednoteno območje) which is defined in the definition section of the law (and is clearly a brownfield) and the "renovation area" (območje prenove). Perhaps both terms can be translated as brownfields with just different typology.

For example, article 238 paragraph 1 explains, that "Property owners in the renovation area are required to make changes

to their properties in accordance with the Detailed Municipal Spatial plan made for the area. Other paragraph also indicates, that this might be understood in the case of renovation of the exterior of the buildings, predominantly in the old city centers and large housing estates.

The term rehabilitation (or maybe even remediation) is translated from Slovenian term "sanacija" It is mentioned in article 21, which was explained in detail in the section of the term brownfields with the assumption, that this term is mostly used in relation to the landscape related topics. The pattern is also seen in article 32 (planning spatial arrangements in other regulatory areas) which mentions rehabilitation of abandoned exploitation areas (probably meant quarries and other opencast mines). On the other hand, article 62 (related to landscape design concept) uses the term in direct relation with the term brownfield (razvrednoteno območje). It is then possible that it was meant to understand it as a remediation and even as a renaturation process in this section. Article 166 (Detailed Municipal spatial plan) uses the term rehabilitation in relation to the exploitation of mineral resources.

Article 252 also uses the term rehabilitation, yet in relation to implementation of land policy measures for a more effective parcel and ownership structure, while Articles 273, 280, 281 and 301 relate to rehabilitation of the urban sprawl.

4. CONCLUSIONS

Brownfield regeneration plays an important role in avoiding urban sprawl, improving the quality of urban environment and therefor create the conditions necessary for sustainable development. (Mušič and Cotič, 2012). The word "brownfield" is translated into many languages in many different ways. This may result in substantially different understanding when other nations (or disciplines) describe their own understanding of brownfields (Ferber (ed), 2006). Since, Brownfield regeneration is a complex and a long-term process that involved several disciplines and many stakeholders (Tabasso et al (ed), 2019), it is of vital interest to enable common understanding in order to achieve effective results. The terminological analysis of the three post-independence Spatial planning laws in Slovenia show that the Brownfield related content increased with each new version of the law. The terminology changed with each new law and the definitions as well. The ZUrep-1 didn't provide a definition of the brownfield in introductory part of the law, but the topic is included, and the main term used for a Brownfield is a degraded urban area as defined in the important research project made by Faculty of Architecture in 1998 (Koželj et al, 1998). The ZPNačrt changed the terminology for a Brownfield from Degraded urban area to degraded space. It is a step forward, since the research showed that brownfields can also occur in rural or other non-urbanized areas. Also, the definition of a regeneration process changed from renovation in ZUrep-1 to comprehensive renovation which is again in line with new findings at the time of the new law was prepared. Also, both main terms were clearly defined. ZUrep-2 again changed the terminology. Brownfields were defined as devalued areas and the regeneration process definition abolished the adjective comprehensive, which is a step back is the clarity viewpoint of definitions. There is a constant terminological differentiation in all three laws in the definition of the regeneration process. One is used for urban brownfields (prenova) and other for non-urban (rehabilitation, sanacija). It seems that one terminology came from the urban planning field and the other one from the environmental and landscape field. There is a need for a

more standardized approach in terminology and an overall shift towards understanding brownfields as a spatial phenomenon that regardless of its location needs a holistic approach in regeneration. It is interesting to notice, that the research project made by Faculty of Architecture, which strongly influenced the ZUreP-1 in the topic of Brownfields (Koželj et al 1998) and which definitions were used as standard for many years also used the term devalued when defining the term degraded urban areas. So, we can assume, that even after more than 20 years, the book also influenced the preparation of the latest Spatial planning act in Slovenia, the ZUreP-2. As Brownfield related knowledge is relatively new, it is normal that due to the constant and intensive flow of new knowledge, terminology cannot be fixed. However, the terminology used in certain law, should follow clear and concise common definition during the entire content of the law. Spatial planning legislation is such forum, that can and should set basic fundamentals for such common understanding in the field of Brownfields regeneration.

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Barbara Mušič: PRILOŽNOSTI ENERGIJSKE UČINKOVITOSTI V URBANISTIČNEM NAČRTOVANJU

OPPORTUNITIES FOR ENERGY EFFICIENCY IN URBAN PLANNING

DOI: <https://dx.doi.org/10.15292/IU-CG.2019.07.028-032> ■ UDK: 711.4:620.9 ■ SUBMITTED: July 2019 / REVISED: September 2019 / PUBLISHED: October 2019

1.02 Pregledni znanstveni članek / Review Article

IZVLEČEK

Na globalni ravni, je tematika podnebnih sprememb tesno povezana z intenzivno rabo energije, zato je energijska učinkovitost postala eden izmed ciljev trajnostnega razvoja. Energijska učinkovitost igra pomembno vlogo v političnih programih mnogih držav. Urbanistično načrtovanje se že dalj časa spopada s posledicami podnebnih sprememb, zaradi kompleksne narave načrtovanja pa vključevanje vidika energijske učinkovitosti za urbaniste predstavlja velik izziv. Glavni cilj preglednega članka je oceniti stanje raziskav na področju urbanističnega in energijskega načrtovanja ter prepoznati skupne tematike, ki bi jih bilo možno obravnavati v prostorskih načrtih na nivoju mesta, četrti, soseske in na ravni stavbe. Vprašanja, povezana z mestno morfologijo, gostoto, mešanico rabe zemljišč in mešanico urbanih funkcij, mobilnostjo in dostopnostjo ter vprašanja, povezana z mestnim podnebjem in odprtimi prostori, so bila prepoznana kot osrednje skupne tematike v urbanističnih in energijskih študijah. Rezultati pregleda literature so pokazali, da obstajajo priložnosti za izboljšanje energijske učinkovitosti v mestih skozi urbanistično energijske tematike, ki jih je treba obravnavati v prostorskih načrtih.

KLJUČNE BESEDE

urbanistično načrtovanje, energijsko načrtovanje, energijska učinkovitost, energijske potrebe, mesta, prostorski načrti

ABSTRACT

On the global level, the issue of the climate change is tightly connected to the intensive energy use, thus energy efficiency became one of the goals of sustainable development. Energy efficiency plays an important role in political agendas of many countries. Urban planning has long been facing the consequences of climate changes and due to the complex nature of the planning, the integration of the energy efficiency aspect represents a major challenge for urban planners. The main aim of the review is to assess the state of the research on the energy and urban planning and to identify cross-cutting issues which could be addressed in spatial and urban development plans at the city, neighbourhood, districts and the building level. Scale, urban morphology related issues, density, mix land use and mix of urban functions, mobility and accessibility and the urban climate and open spaces related issues have been core cross-cutting topics in energy and urban studies. The results indicated that there are opportunities for improvements of energy efficiency in cities through identified urban energy issues which need to be addressed in spatial development plans.

KEY-WORDS

urban planning, energy planning, energy efficiency, energy demand, cities, spatial development plans

UVODNIK
EDITORIAL
ČLANEK
ARTICLE

RAZPRAVA
DISCUSSION
RECENZIJA
REVIEW
PROJEKT
PROJECT
DELAVNICA
WORKSHOP
NATEČAJ
COMPETITION
PREDSTAVITEV
PRESENTATION
DIPLOMA
MASTER THESIS

1. INTRODUCTION

The transition process toward a low carbon society to meet the challenges of climate changes is the global trend which is clearly present in Europe (2030 Agenda for Sustainable Development, UN, 2016). Energy efficiency is the most important and the most cost-effective principle for reducing greenhouse gas emissions (Global Energy and Climate Outlook, 2018). It is the principle that delivers more services for the same amount of energy input or the same amount of services for less energy input (IEA, 2014). As a multidisciplinary issue it encompasses spatial and urban planning, architecture, geography and civil engineering (Poggi et al., 2017). Improving energy efficiency in all sectors is expected to play a key role (17%) in reducing CO₂ emissions by 2050 (Global Energy and Climate Outlook, 2018).

Improving energy efficiency is one of the flagship initiatives "Resource efficient Europe" of the most important development strategy, the General European Strategy for a Better Future for Europe 2020, launched in 2010 (Europe 2020, EC 2010). To support the sustainable growth, the EU 2020 launched the 20-20-20 target which beside reducing greenhouse gas emissions by minimum of the 20% and increasing the use of the renewable sources to 20% aims to improve energy efficiency for 20% by 2020 compared to 1990 (Europe 2020, EC 2010). Clean energy for all (2019) has set the new target to improve energy efficiency by at least 32.5 % by 2030. The targets are addressing buildings as the largest energy consumers responsible for 40% of energy consumption and 36% of greenhouse gas emissions in Europe (EP, 2012; Clean energy for all, EC, 2019). To improve energy efficiency in buildings, the European Commission launched the Energy Efficiency Directive 2012/27/EU (EED, 2012) which explains how to achieve the target to improve energy efficiency for 20% but the Member States need to find their own solutions. Since buildings are the largest energy consumers, they are the greatest potential for implementing energy efficient measures (Poggi et al., 2017). Many studies have been investigating the potential of improving energy efficiency at the building level neglecting the environmental impact of neighbouring buildings and vice versa (Strasser, 2015). Raising awareness that energy saving measures need to be addressed beyond the building scale was leading researchers to develop tools and models for improving energy consumption on the neighbourhood, district and the city scale (Roselt et al., 2015; Poggi et al., 2017; Silva et al., 2018; Yeo & Lee, 2018).

Spatial planning has long been facing the challenges caused by the effects of climate changes, unsustainable exploitation of natural resources, population growth and finally, fluctuations in the economic world, which has a strong impact on the economic development and consequently on the development of society. Due to the complex nature of spatial planning, the integration of the energy efficiency aspect into the spatial planning represents a major challenge for spatial planners. Even though urban and energy planning are closely related, there are weak links among those two (Strasser, 2015).

The main aim of reviewing the literature is to assess the state of research on the urban and energy planning. Based on the assessment, the review would like to answer the following research questions. First, which are the common issues of the studies of urban and energy planning and secondly, which cross-cutting thematic are more present at the city, the intermediate and the building level. The results of the research are important in order to find the gap which could be addressed in the future urban and energy planning research.

2. REVIEW METHODOLOGY

To identify the cross-cutting issues, the review of the most relevant scientific references on urban and energy planning needs was done. The literature review made it possible to get familiar with the relevant research topics. The literature was reviewed through the Digital Library of the University of Ljubljana (DiKUL) which enables the access to electronic resources of the most important publishers such as Elsevier Science Direct, Springer Link, EBSCO host, Taylor & Francis, Oxford University Press, Web of Science, Scopus, etc. To find the latest studies on the urban and energy planning the time period between 2015-2019 was selected. For selection of the literature other filters were selected like English language and scientific peer reviewed articles. Relevant scientific articles were found based on the search terms "urban planning", "energy planning" and "energy efficiency".

The greatest challenge in the process was to find relevant scientific articles for this review due to the differences in the understanding of the terminology used in the studies. This also revealed a number of different tools and approaches that were developed supporting the integration of the energy planning in to the urban planning. The literature review used the qualitative methods to recognize the cross-cutting thematic on the energy and urban planning to identify the approaches behind them.

3. URBAN PLANNING AND ENERGY EFFICIENCY ISSUES

3.1 Scale

Many studies have recognised that the problem of the energy consumption needs to be addressed beyond the building scale. For that reason, the leading researchers have developed various approaches, methods and instruments for integrating energy planning into the urban planning at the neighbourhood, districts and city level and the whole territory of the municipality till administrative borders (Poggi et al., 2017; Yeo & Lee, 2018; Silva et al., 2018; Amado et al., 2016).

Poggi et al. (2017) are arguing that the whole territory of the municipality needs to be addressed if the municipality wants to improve energy efficiency. Territorial areas of cities and municipalities till administrative borders are an important scale also for supporting decision makers in the process of development and implementation of energy efficiency policies (Conticelli et al., 2017, Amado et al., 2016). In the case that the municipality would like to evaluate the alternative developments in order to reduce the energy consumption, they need to be evaluated for the territory of the whole municipality (Silva et al., 2018) and not just for the part of it.

Other researches prefer the middle planning level between the building and the city scale (Roselt et al., 2015; Fletcher et al., 2017; Yeo & Lee, 2018). The reason is that the city level demands more actors to be involved, which can impede the successful implementation of energy efficient principles (Amaral et al., 2018). Some researchers prefer the districts scale as an intermediate scale (Cajot et al., 2017, Amaral et al., 2018) since it is the closest scale for plan realization (Yeo & Lee, 2018). The district scale is the most suitable scale also for more efficient integration of renewable energy and distribution systems (Amaral et al., 2018). On the other side, the neighbourhood scale is promoted as an intermediate scale with the greatest potential for energy optimization because in that spatial unit maximum energy efficiency may be grouped together (Roselt et al., 2015). And further, to improve energy sustainability also at the building

level, a neighbourhood scale needs to be assessed because of the interactions of neighbouring buildings (Fletcher et al., 2017).

3.2 Urban morphology and urban form

Urban morphology is referred to the urban form of cities and their transformation and formation of their spatial patterns at different urban scales. Urban morphology parameters have an important role on one side to reduce the energy consumption in buildings for heating, cooling or lightning and on the other side for their potential for wind and solar energy production (Amaral et al., 2018). Morphological parameters such as the density of the building, the height of the buildings, the building factor, the green open surface factor, energy consumption etc. have an important role in improving energy efficiency in cities (Rode et al., 2014; Chen et al., 2016; Silva et al., 2018; Poggi et al., 2017). These parameters have also a major impact on accessibility and sustainable accessibility solutions, which influence the energy consumption and CO₂ emissions (Silva et al., 2018). But different building morphologies require different energy demands (Rode et al., 2013) and they have an indirect role through building physics where architectural, land use and urban design parameters are playing a key role (You & Kim, 2018).

3.3 Density

Density is one of the most addressed issues in urban planning and energy efficiency studies. The most used way to measure the density in urban planning is the floor area ratio¹ (FAR) which is used for the needs of limitation of the construction in the certain area, in zoning regulations and in urban planning guidelines (Lehmann, 2016). Higher density can be achieved even through increasing the average building height or overall surface coverage (Rode et al., 2014). Beside the great impact on the energy efficiency combined with the mix land use it can reduce energy use for mobility by 15% (Silva et al., 2018).

There is also a limit for increasing the urban density. In high density areas, buildings are interacting with each other in a way that they are reducing each other the access to the natural daylight, obstructing the airflow, raising the temperature in the outdoor environment (Fletcher et al., 2017; Amaral et al., 2018) which consequently increases the energy demand. Higher density can be the reason also for the heat island effect which can increase the energy consumption for cooling. That can be improved by the increasing green areas and the proper selection of materials and surfaces for minimizing the solar heat gain (Lehmann, 2016). From the social perspective it is possible that raising density will have an effect on the overcrowding, overpopulation and overdevelopment causing the pressure on the existing infrastructure including energy (Lehmann, 2016) and on the other side on the liability conditions in buildings and outdoor spaces for all inhabitants (Amaral et al., 2018).

3.4 Infill development

Solutions for increasing compactness and densities in cities rely also on the infill development as one of the efficient approaches to achieve more energy efficient urban settings. Even though there are many positive effects like the reduction of the urban sprawl, mobility needs and alike there are certain barriers for integration of this aspect into the urban pattern. When tall buildings are integrated in a lower density urban setting, they can have an impact on the energy demand of lower neighbouring

buildings (Fletcher et al., 2017) - the infill development aspect greatly relates to the shading effects increasing the energy demand especially for heating (Silva et al., 2018).

3.5 Mix land use and mix of urban functions

Successful policies for reducing greenhouse gas emissions in relation to the energy demand in cities lies in promotion of the mix of land use and mix of functions (Fletcher et al., 2017; Silva et al., 2018; Conticelli et al., 2017). These have a positive impact on the accessibility to activities. Combined with mixed urban functions with the high densities can reduce the mobility needs for at least 15% (Silva et al., 2018). Promoting mixed land use, high-quality urban services and open spaces are the key factors of the compact cities with a positive impact on reducing greenhouse gas emissions and improving energy efficiency of buildings (Conticelli et al., 2017). While higher densities in cities can reduce the urban mobility needs, higher shares of non-residential uses are more effective in urban blocks which are farther away from the CBD (city business district) since they are mostly used for the residential purpose (Silva et al., 2018).

3.6 Mobility and accessibility

Increasing density and compactness of urban areas are important approaches stimulated by cities to improve sustainable and energy efficient use of energy since such solutions have a positive side effect on the decreasing travels distances (Amaral et al., 2018) and decrease the pressure on the urban infrastructure (Lehmann, 2016) including mobility. Silva et al. (2018) are arguing that most of the energy savings can be achieved through the transit-oriented development which is based on the promotion of new floor area around key public transport stations.

3.7 Urban climate and open spaces

Changing urban patterns are also influencing the climatic conditions and urban microclimates in cities. Growing urban structures with their complexity and urban morphological patterns are forming microclimates with airflows and windspeeds which have an impact on the solar radiation and outdoor temperature causing the urban heat island effect (Amaral et al., 2018). Therefore, the relationship among increasing urban densities and the heat island effect potential needs to be properly addressed (Lehmann, 2016).

What cannot be neglected is also the impact of the greenery on the energy consumption. Compared to the densification strategies it has only a low impact on the energy efficiency but on the other side it has several positive effects on the urban environment (Silva et al., 2018). Quality of living in compact cities demands balancing the density with the increasing green spaces allowing for the natural ventilation and breathability of the city (Lehmann, 2016).

3.8 Building typology

Typology of buildings has a great impact on the energy consumption. Energy consumption is inversely proportional to building density because, energy consumption increases when the building density is low (Chen et al., 2016). The most effective energy reduction for heating can be achieved by the higher building densities or by taller buildings while on the other side the detached houses require the worst energy demand (Rode et al., 2013; Lehmann, 2016). Thus, single family houses have a

¹ Floor area ratio (FAR) is measured as the total floor area of buildings divided by the land area of the plot upon which the buildings are built (Lehmann, 2016)

greatest potential for energy efficient improvements as they are responsible for around 50-80% of total energy demand of the housing stock (Csoknyai et al., 2016).

The potential lies also in the architectural design of buildings which can reduce the energy demand from 63 to 76% depending on the climate (Naboni et al., 2015). The orientation, form, openings, sun shading devices and appropriate use of materials are factors which needs to be considered in the architectural energy efficient design (Khalil, 2009; Naboni et al., 2015).

4. DISCUSSION

The main findings of the review are summarized in the following section in order to present new comprehensive and joint insights into the urban and energy planning and highlight the further research needed to better integrate these two fields. The main aim of the review is to identify cross cutting energy issues in urban and energy planning and how they can be addressed in urban planning at the city, district or neighbourhood and building level.

There are many discussions about the most suitable scale for integrating energy efficiency in urban and energy planning, but there is no consensus about the most appropriate scale for energy efficiency improvements. The most suitable scale depends on the context and questions asked (Cajot et al., 2017). Based on the fact, that it is not enough to improve energy efficiency at the level of the building and even at the intermediate level, as the district or neighbourhood scale are, the problem first needs to be addressed on the scale of the whole territory of the city or municipality (Amado et al., 2016; Conticelli et al., 2017; Silva et al., 2018).

Not all identified urban energy cross-cutting issues can be regulated on all scales, the city, the intermediate scale and the buildings scale, in urban planning. For successful improvements of the energy efficiency, it is important to address urban energy issues on each specific scale.

Urban form is one of the most important urban factors with the wide range of positive and negative impacts on build and no-build environment. Today, potentials of the urban morphology in spatial planning are underestimated. On the city and intermediate scale, urban morphology is very important because the shape and the design of the build environment, the size and orientation of buildings, layouts of streets and network of open spaces can have a great impact on the energy consumption of buildings and on the bioclimatic conditions in urban areas (Poggi et al., 2017). The building typology which can be defined and regulated on the intermediate scale and more precisely defined on the building scale shouldn't be underestimated either. While designing and integrating new buildings in the city or other urban areas spatial attention needs to be on the interactions of other buildings on new ones or vice versa especially because of the shading effect for which additional energy for heating is needed (Amaral et al., 2018).

Density is a highly promoted topic for improving not just sustainability but also the energy efficiency in cities. Increasing density has many positive effects on the urban environment. It promotes the sustainable use of land leading towards the reduction of potential soil sealing, urban sprawl and decrease travel distances leading toward more sustainable mobility and transportation. Density is strongly related to the compactness where compactness is desirable but if the density is too high, it can have a negative effect on the quality of life (Lehmann,

2016). Alongside many positive effects on the sustainable mobility, energy saving in buildings, there are also negative effects of the density among which are shading effect, potential for the urban heat island effects, raising temperature within the urban areas because of the interactions among buildings and others. Thus, it is important to find the right balance of the density in the city and this represents a big challenge.

Mix use functions are important on all three levels, the city, the intermediate and the building one. Mix use functions are having a great impact on the mobility and accessibility. With proper organisation of urban functions on the city level, the energy demand for transportation can be reduced. More detailed energy efficiency solutions can be achieved further also at the neighbourhood or the districts level and in some cases also at the level of the building. Previous researches evaluated mainly residential energy consumption, while other activities like economy and social activities have been neglected as they are more complicated and have their own energy demand. There is a need for the research methods and tools for defining symbiotic relationships between different uses.

Urban climate is an important issue which needs to be addressed when improving not just quality of air within urban areas but also to avoid the negative effects of the urban transformation of the build environment. With proper balance of buildings and open spaces and their orientation and sizes many negative effects can be reduced. One of them is an urban heat island effect causing overheating urban areas. The risk of the heat island effect can be reduced also through integration of the greenery (Silva et al., 2018) planned at the city, neighbourhood, district and the building level. Such solutions could not just reduce the energy consumption but on the other side can improve the quality of living in cities (Lehmann, 2016) and raise the attractiveness as a desirable living environment.

city scale	intermediate scale (district/neighborhood)	building scale
urban form	urban form + building typology	building typology
urban density	urban density	building density
mobility and accessibility	mobility and accessibility	accessibility
mixed land use	mixed land use	mixed urban functions
urban climate and open spaces	urban climate and open spaces	-

Table 1: Urban planning and energy efficiency issues at different levels of planning.

However, the role of the local governments as decision makers have an important role in developing and implementing energy efficiency policies. They are in charge of defining policies for improving energy efficiency for the whole city or municipality within territorial borders of official administrative units (Conticelli et al., 2017), and then measuring which could address energy efficiency improvements in parts of the city on the intermediate scale, which is the closest to implementation of the project (Yeo & Lee, 2018). Also, for the needs of the evaluation of the energy efficiency potentials, it is necessary to evaluate the entire territories of municipalities till the administrative boundaries (Poggi et al., 2015) because administrative units are the basis also for spatial development plans. In parallel with the limits and scope of measures, the complexity and obstacles with the impact on energy consumption are also growing because the bigger scale needs to engage more stakeholders than the district or the building scale (Amaral et al. 2018).

5. CONCLUSION

Previous research has highlighted that urban planning has an important role in achieving energy efficiency at the local level. Potentials of the urban planning today are not sufficiently used in the process of designing energy-efficient environments. Due to the challenges of finding solutions to adapt to climate changes the planning processes are becoming increasingly complex, including the complexity of stakeholder's inclusion. Review and evaluation of the past and current approaches represents an important step in understanding the relationships between energy systems and spatial interventions and enables the development of the more advanced models and tools that will incorporate more sophisticated systems.

The article presents a set of cross-cutting issues which have been commonly researched in urban and energy planning. It highlighted some potential core areas where urban planning can meaningfully contribute to the energy efficiency of the city and its systems at the city, district or neighbourhood and building levels. Scale, urban morphology related issues, density, mix land use and mix of urban functions, mobility and accessibility and the urban climate and open spaces have been recognized as core cross-cutting topics in energy and urban studies. Even if there is a wide range of opportunities within these topics, they are largely underestimated in the current urban planning practice thus it is important to highlight these opportunities for improvements of energy efficiency in cities through identification of the urban energy issues which need to be addressed in spatial development plans.

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Aurora Saidi: ARHITEKTURA V PRIMERJAVI Z NEVROZNANOSTJO: INTERPRETACIJA RAZISKOVALNIH REZULTATOV V NEVROZNANOSTI V PODPORO FENOMENOLOŠKIM VPRAŠANJEM V ARHITEKTURI

ARCHITECTURE VS NEUROSCIENCE: THE INTERPRETATION OF RESEARCH RESULTS IN NEUROSCIENCE TO SUPPORT PHENOMENOLOGICAL ISSUES IN ARCHITECTURE

DOI: <https://dx.doi.org/10.15292/IU-CG.2019.07.033-037> ■ UDK: 72.01:616.8 ■ SUBMITTED: June 2019 / REVISED: August 2019 / PUBLISHED: October 2019

1.02 Pregledni znanstveni članek / Review Article

IZVLEČEK

Vprašanja človekovega odnosa do grajenega prostora, kako ta oblikuje človekova fizična, duševna in družbena stanja in/ali kako ta stanja oblikujejo človekove izkušnje z grajenim prostorom so že več stoletij predmet odprte razprave med fenomenologi. Medtem ko fenomenologija razlaga izkušnje predvsem s prvoosebne vidika, nevroznanost ob uporabi učinkovitih novih tehnik merjenja empirično, na ravni nevronskega kroga, proučuje, kako številni notranji procesi, kot so občutki, zaznavanje in spoznavanje, ustvarjajo izkušnje. Le malo dognanj v nevroznanosti glede izkušenj sveta na splošno – in zlasti grajenega okolja – je zanesljivo odgovorilo na dolgo obravnavana fenomenološka vprašanja o naravi arhitekture. Zato je skupina nevroznanstvenikov in arhitektov spodbudila razvoj interdisciplinarnih raziskav, ki vključujejo tako nevroznanost kot arhitekturo. Med prvimi arhitekti, ki so ta pristop uporabili kot podlago za svoja fenomenološka opazovanja, je bil Juhani Pallasmaa. Arhitekt obravnava spregledano utelešeno naravo arhitekture, pri čemer svoje ugotovitve naslanja na nevroznanost in poziva k širjenju zavedanja o tem vprašanju med sodobnimi arhitekturnimi krogi. Toda ali dognanja v nevroznanosti res podpirajo Pallasmaajeve trditve? Nekateri nevroznanstveniki so namreč izrazili dvome o arhitektovi razlagi njihovih dognanj. Članek obravnava Pallasmaajeve zaključke in na splošno prikazuje, da arhitekti, ki podpirajo interdisciplinarne raziskave v nevroznanosti in arhitekturi, pripisujejo prevelik pomen dognanjem v nevroznanosti za krepitev lastnih stališč, medtem ko so nevroznanstveniki – četudi so navdušeni – mnogo bolj zadržani pri svojih sodbah in pozivajo k nadaljnjim poglobljenim raziskavam.

KLJUČNE BESEDE

arhitektura, nevroznanost, Juhani Pallasmaa, filozofija, fenomenologija.

ABSTRACT

The relationship that people have with the built environment, how it shapes their physical, mental, and social states, and/or how these states shape their experience of the built environment has remained an open discussion among phenomenologists for several centuries. Whereas phenomenology interprets the nature of experience mainly from the first-person perspective, neuroscience, using powerful new measurement techniques, investigates empirically at the level of neural circuits how multiple internal processes such as sensation, perception, and cognition yield experience. Few available findings in neuroscience regarding the experience of the world in general and the built environment in particular have proved sufficient to seal long discussed phenomenological issues about the nature of architecture. As a consequence, a group of neuroscientists and architects have initiated and promoted interdisciplinary studies combining neuroscience and architecture. Among the first architects that embraced this approach to support their phenomenological observations was Juhani Pallasmaa. Concerned about the disregarded embodied nature of architecture, he relies on findings in neuroscience to call for a greater awareness amongst contemporary architectural circles. But do findings in neuroscience really support Pallasmaa's arguments? While the architect is very enthusiastic, some neuroscientists have raised doubts about his interpretation of their findings. This article examines Pallasmaa's conclusions, and in general shows that architects who support interdisciplinary studies in neuroscience and architecture exaggerate the implications of neuroscience findings to advance their positions, while neuroscientists, even though they are enthusiastic, are more reserved in their judgments, calling instead for further in-depth research.

KEY-WORDS

architecture, neuroscience, Juhani Pallasmaa, philosophy, phenomenology

1. INTRODUCTION

Juhani Pallasmaa, Harry F. Mallgrave, Sara Robinson, Alberto Pérez-Gómez, and Steven Holl, to mention just a few, have expressed concerns that architectural culture today deals only with the technical, formal and material dimensions of the subject while disregarding the way people interact with the built environment and how they experience it. In a series of books and writings they intend to raise awareness of the disregarded embodied and psychological dimensions of architecture. However, because their approach is more phenomenological than empirical it has left much room for doubt and disbelief.

A person's every experience has a neural counterpart in the brain (Chatterjee, 2014). New technologies in neuroscience enable brain activity to be registered with considerable precision, and have provided an understanding of the "neurophysiological brain mechanisms that make possible our interaction with the world" (Gallese & Gattara, 2015, p. 161). This empirical methodology has been embraced and promoted by certain architects in the hope that it will provide objective evidence for architectural culture to shift its attention towards its hitherto unacknowledged embodied and psychological dimensions. Questions about the relationship between people and the built environment have also raised interest among some neuroscientists. They have started to think of ways in which neuroscience might be of use to architecture. While the benefits of an interdisciplinary approach involving philosophy, neuroscience, and architecture appear overstated by some architects, neuroscientists are more reserved. They look forward to more in-depth research before making any generalized conclusions. The hesitation and uncertainty expressed by some neuroscientists with regard to the way these architects have interpreted research results to support their phenomenological viewpoints is the subject of this article.

The problem will be illustrated by complementing Juhani Pallasmaa's viewpoints and opinions on the interdisciplinary cooperation between architecture and neuroscience with those of neuroscientists. His phenomenological approach is characterized by certain crucial statements about the experience of architecture. The most important of these is the disregard for embodied and multisensory nature of architecture in architectural education and practice. It follows with the supremacy of the tactile sense over the visual in the architectural experience, the intuition of the whole in an architectural setting over the identification of its parts, and the nature of emotional engagement with architecture. Only then can the subject be understood. Pallasmaa's interpretations have been chosen as a case study because he is among the first architects that have used research results in neuroscience to support his viewpoints and opinions about the nature of the architectural experience. He has written and spoken vociferously on the importance of interdisciplinary studies in understanding the relationship between people and the built environment.

2. THE DISREGARD FOR THE EMBODIED NATURE OF ARCHITECTURE

Juhani Pallasmaa is well-known as the architect and the theoretician who is attempting to raise awareness of the disregard for the multisensory and psychological nature of architecture as experience among architectural circles in particular, and contemporary culture in general. Influenced by the writings of Christian Norberg-Schulz, Gaston Bachelard, Martin Heidegger, and especially of the phenomenological philosopher Maurice Merleau-Ponty on the nature of perception, he criticizes

the over-rationalized formalism of architectural design of the past few decades. Furthermore, his greatest concerns are the tendency in the last few decades to conceptualize architectural design through computers, to present and advertise its qualities utilizing 3D models and pictures, and to build cities as if they were intended to be explored by the fast moving eye from motor vehicles or from the air (Pallasmaa, 2005).

The architecture of our time, according to Pallasmaa (2005, p. 30) is "an architecture of visual images" or a "mere retinal art of the eye" that in its essence treats the eye as detached from the body in its interaction with the world. Ignoring the way each sense, especially the tactile, interacts with the world in yielding the architectural experience, the architecture of the last several decades has failed to engage people emotionally (Pallasmaa, 2005, p. 17–19). He suggested that "an architectural work is not experienced as a collection of isolated visual pictures, but in its fully embodied, material and spiritual presence" (Pallasmaa, 2005, p. 44), "...life enhancing architecture has to address all the senses simultaneously and fuse our image of self with our experience of the world" (Pallasmaa, 2005, p. 11).

The embodied nature of the architectural experience initially introduced by Pallasmaa in one of the three essays in *Questions of Perception: Phenomenology of Architecture*, was further explored by him in *The Eyes of the Skin: Architecture and the Senses*. In the latter, the same issue was presented but with more confidence, because he had discovered that his viewpoints were supported by recent neuroscientific discoveries. His phenomenological approach, driven by his "personal experience, views and speculation" (Pallasmaa, 2005, p. 10), had arguably been confirmed by empirical evidence.

The model used by neuroscientists to illustrate the idea that we experience the world as bodies and brains interacting with it is called the action–perception cycle (Arbib, 2016). Pallasmaa (2005) noted that this describes the embodied nature of architecture as experience: the senses are not simply registering the world 'out there.' However, the information that senses are able to sample from the built environment are interpreted and reconstructed through our current schema (that is, our knowledge about the world built through experience), while an understanding of what is out there is generated, and on that basis we choose to act following our current needs and goals. During movement, the information that senses can sample changes constantly according to our goals and needs; the newly gained knowledge during this cycle changes how we see the world and perhaps our future goals and needs.

To grasp the model of the action–perception cycle in its entirety, firstly, for the sake of understanding how people interact with the world and secondly, to analyze Pallasmaa's viewpoint on the experience of architecture through the prism of neuroscience, it is necessary to provide a more detailed explanation of what schemas represent and how they are generated and stored. Schemas are the brain mechanisms that make possible, mainly through the subconscious, the recognition of the environment's affordances. They represent the building blocks of knowledge, a stored mental representation about the world that both compete and cooperate to provide coherent interpretations, or give meaning to the information that reaches us through the senses (Piaget, 1952).

Arbib (2015, p. 78–79) distinguished two types of schema: perceptual and motor. A perceptual schema is the process of recognizing an object, a person, or even abstract concepts such as personality, truth, or religion. To understand the enviro-

nment, it is necessary to recognize not one object at a time but many different objects and their relationships. A motor schema calculates and executes the action according to what affordances might have provided the detected objects for our goals and needs. The whole process is an endless cycle of simultaneously coordinated multiple perceptual and motor schemas that are activated and then compete in parallel to yield experience and understanding. For the brain to recognize an object as a computer does, pixel by pixel, would require enormous time and energy. Instead, it applies multiple levels of associations and meanings to sensory information to make possible a rapid understanding of the current state of the world. Schemas operate due to a cluster of neurons that fire whenever the individual sees a house, hears someone talking about a house, or imagines an event that happened in the house (Mlodinov, 2018). The world out there is mainly a constant world, but whenever we face something new, schemas merge, split, and cooperate to yield understanding and hence build new schemas. This means that people's experience of the world is yielded through the embodied condition of the human mind (Varela, Thompson, & Rosch, 1991). Our immediate interaction with the world is through our body via various sensorimotor capacities but also through our memorized experiences, which are shaped by exploring the world in different biological, psychological, and cultural contexts.

3. THE SUPREMACY OF THE TACTILE SENSE OVER THE VISUAL

Pallasmaa's phenomenological approach goes beyond an emphasis on the embodied condition of the human mind in the experience of architecture. With the introduction of the concept of hapticity (Pallasmaa, 2000, 2005), he intended not only to attack the cultural bias of our time toward the vision sense at the expense of other senses, but also to emphasize the fundamental and primary role of the tactile sense in the experience of architecture. Even though his approach appears as a revolt against architectural culture that designs only for the engagement of the eye, it is in fact a revolt against one of the two pathways of visual processing—the focused vision—and toward the treatment of the eyes as organs detached from the body that interact in the world. And rightly so.

The schema of the action-perception cycle confirms that a three-dimensional model or a picture of an architectural setting could not emulate the qualities of a real architectonic setting with various affordances awaiting to be explored and interpreted with all the senses during movement. Also, research has shown that only 5% of the information that reaches the eye can be processed consciously, through focused vision, while the rest is processed subconsciously, through peripheral vision (Mallgrave, 2018). While we are walking we are not consciously aware of every piece of information that surrounds us, even though that information subconsciously guides our behavior. We avoid, mostly subconsciously, the obstacles that might otherwise interrupt our walking while we are looking for a friend in a crowd, for example.

Nevertheless, the primacy of the tactile sense over the visual is not fully supported by neuroscience. Each of the sensory modalities provide different and unique aspects of the world. Vision makes it possible to process information in the distance and in a wider context, recognizing shapes and their spatial location, while touch makes it possible to engage in an emotional experience with the object, exploring its texture and materials in closer proximity (Goldhagen, 2017; Papale *et al.*,

2016). But of the total capacity that the brain devotes to processing information via the senses, one third of it is reserved for the processing of vision (Mlodinov, 2012).

Supporters of the concept of hapticity (e.g., Pallasmaa, 2005) insist on its importance in the experience of architecture. Hapticity relies on the fact that people can create spatial and social representations of the world when they lack one sensory modality. This attribution of the brain to perceive and represent perceptual schemas independently of the sensory modality is called supramodality, or degeneracy. Visually impaired people can process and represent in the brain distinct elements of forms and surfaces. This means that sensory systems cooperate and exchange information. Activity in the visual system is mapped to the auditory or haptic system, and auditory or haptic activity is mapped to the visual system (Papale *et al.*, 2016; Smith, 2005).

Because of the ability of the brain to assign multiple associations and meanings to a perceptual schema, we are able to recognize the texture of wood when we see it far away, along with the sensation of how it would feel to touch it, but we can also recognize that it is a wooden texture and generate a mental image of it with closed eyes simply by touching it (Williams Goldhagen, 2017). As Pallasmaa (2005, p. 42) noted, "through vision we touch the sun and the stars." However, even the concepts of supramodality or degeneracy and the evidentiary findings of neuroscience do not fully support the primacy of the haptic system in the experience of architecture. They can, on the other hand, encourage parties to consider more seriously the multisensory nature of architecture as experience, and also to investigate ways to integrate this knowledge within the field of architecture and promote further research in this domain.

4. THE WHOLE AND ITS PARTS IN AN ARCHITECTURAL SETTING

Within the framework of the action-perception cycle, Pallasmaa (2013, p. 13) emphasized the nature of the experience of architecture: "We have an amazing capacity to grasp complex environmental entities through simultaneous multi-sensory sensing of atmospheres, feelings, and moods. This capacity to instantaneously grasp existential essences of vast entities, such as spaces, places, landscapes and entire cities, suggests that we intuit entities before we identify their parts and details." Insofar as the action-perception cycle is an endless cycle, parts and details from the built environment continuously update the schemas from the consistency of the initial impression. The details may confirm or change the initial impression. Its qualities can be amplified or fade fundamentally. Arbib (2013, p. 73) stated that one should not underestimate the power of the details because it is the essential style of the brain to mix bottom up and top down processes in yielding experience about the world.

Consideration of the dialog between bottom up and top down processes in the brain is essential when discussing Pallasmaa's statement that people engage emotionally with architecture and art before they understand them. This is true, but again it describes more an initial impression whose meaning might continuously alter during an embodied interaction with an object or artwork, especially when the individual encounters new situations that are

not yet mapped in perceptual schemas. Arbib (2019) also suggested that this initial effect is not accidental, but the designer must think about all the qualities of the details and how they might affect the impression as a whole as much as how the whole might affect the understanding of its details.

5. THE MIRROR NEURONS

Discussions among leading architects as Juhani Pallasmaa (2000, 2005, 2013) and Harry Francis Mallgrave (2013), the philosopher Mark. L. Johnson (2015), and the neuroscientists Vittorio Gallese (2015) about how neuroscience can help to understand the hidden relationships of people with the built environment and how the built environment might shape people's physical, mental, emotional and social states, give enormous importance to the neuroscientific discovery of the mirror neuron system. Mirror neurons are the neurons that fire whenever one executes specific types of action, and also when one observes somebody else perform that type of action. As far as people are able to experience the feelings of an action performed by somebody else, due to mirror neurons, they are able to generate feelings, emotions, and empathy (that is, the ability to share and understand the feeling of another) for buildings as well. Because people have bodies, they map the building in their body, and hence feel its weight as if it were carried by their own muscles/body.

However, Arbib (2013, pp. 63–65) noted that “mirror neurons don't do action execution and recognition (or empathy) all by themselves.” Research carried out on a person observing a human talking, a monkey teeth-chattering, and a dog barking showed that there was considerable mirror neuron system activity in the first case, a small amount in the second, and none in the third. Thus, the person was able to recognize that the dog was barking, but could not know how it felt because barking is not a human activity. Arbib explained that “...all these actions can be recognized without the aid of mirror neurons, but if an action is in our own repertoire the mirror neuron activity enriches it by tying it in to our own motor experience.” Instead of assuming that mirror neurons are responsible for empathy for buildings in the same way that they are for people, he suggested that further research be initiated with the aim of understanding whether this overlap exists at all, and if it is, whether it is due to mirror neurons. Mirror neurons are just part of the overall perceptual cycle.

6. CONCLUSION

This article intended to show the complex implications of the interdisciplinary approach that unites neuroscience, philosophy, and architecture as experience. The nature of architecture as experience is in itself very complex, and the use of the philosophical approach, which interprets the experience of architecture from the subjective or first-person point of view, has very often proved to be misleading, generating only necessarily partial knowledge, or producing controversial interpretations within the field. Therefore, since the neuroscientific approach promises to

provide objective evidence of the experience of architecture through studies of the nervous system (the third-person aspect of experience) many architects, philosophers, and neuroscientists introduced the neuro-phenomenological approach as a solution to long discussed phenomenological issues concerning the nature of architecture. In the same fashion, Juhani Pallasmaa, among others, attempted to use research results in neuroscience to confirm his observations, viewpoints, and opinions about the nature of the architectural experience. However, while some findings in neuroscience seemed to confirm his statement regarding the embodied and multisensory nature of architecture, matters were much less clear when he attempted to use them to support his claim for the primacy of the haptic system in the architectural experience, either in terms of the perception of architecture as a whole anticipating the perception of its parts/details, or of the emotional engagement with architecture anticipating its understanding. Some neuroscientists have implied that Pallasmaa has overrated and overgeneralized research results to support his statements, or has given only a partial explanation for the phenomena he describes. The example of the mirror neuron system illustrates that empirical evidence from neuroscience about a phenomenon, if not carefully processed, interpreted, and used in its entirety by architects can be misleading in understanding the interrelation between people and the built environment. Whether the same mechanisms are engaged in empathy for buildings as they are for people remains to be investigated. There is no doubt that future interdisciplinary studies encompassing architecture and neuroscience will generate new knowledge about the hidden relationships between people and the built environment, but as long as there are so few studies in this area, and since the aim of the approach was to avoid the confusion caused by multiple controversial interpretations that existed within the field of architecture, the advocates of interdisciplinary studies may perhaps need to be more circumspect when interpreting findings to avoid further confusion. There is nothing wrong with recognizing potential, nor indeed with ‘romantic’ interpretations of the available scientific evidence, but it is better that connections between the two disciplines be presented in the form of hypotheses rather than statements.

Acknowledgment

This article is a result of research endeavors as part of the author's doctoral research, which has the working title “Understanding the popular taste in contemporary individual housing in Tetovo,” at the University of Ljubljana, Faculty of Architecture, Ljubljana, Slovenia, under the supervision of izr. prof. dr. Tadeja Zupančič.

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Gregor Čok, Mojca Furman Oman: DELO NA DOMU KOT PROSTORSKI POJAV – ARHITEKTURNI IN URBANISTIČNI VIDIK REGULACIJE DELA NA DOMU WORKING AT HOME AS A SPATIAL PHENOMENON – ARCHITECTURAL AND URBANISTIC ASPECTS OF REGULATING WORKING AT HOME

DOI: <https://dx.doi.org/10.15292/IU-CG.2018.06.038-045> ■ UDK: 711.4 ■ SUBMITTED: September 2019 / REVISED: September 2019 / PUBLISHED: October 2019

1.01 Izvirni znanstveni članek / Scientific Article

IZVLEČEK

Delo na domu je v Sloveniji tradicionalno prisotna prostorska paradigma s številnimi pozitivnimi vplivi na družbeni razvoj. V članku so predstavljeni rezultati raziskave, ki je bila usmerjena v analizo pojavnih oblik, obstoječih regulativnih instrumentov in opredelitev ukrepov za izboljšanje stanja na področju njegove prostorske regulacije. Delo na domu se pojavlja v širokem spektru prostorskih rešitev, od manjših prezidav ali prizidkov do umeščanja velikih stavbnih volumnov v strukturo naselja. Primerjalno s poslovanjem v gospodarski coni se njegove prednosti zrcalijo v redukciji stroškov dela in bivanja ter v mobilizaciji lastniških nepremičninskih kapacitet. Med negativne posledice pa sodijo zlasti povečan tovorni promet, hrup in uvajanje tipologije poslovnih stavb v morfološko zaključena stanovanjska območja. S tem se zmanjšuje antropogena kvaliteta bivalnega okolja in potencialna vrednost nepremičnin. Obstoječi prostorski akti v večini primerov določajo preohlapne pogoje za arhitekturno in urbanistično preoblikovanje stanovanjskih stavb in prisotnost odprtih deponij surovin, izdelkov in tehnoloških odpadkov. Poleg robnih vrednosti hrupa, emisij in drugih vplivov, ki jih določajo formalni normativi, je treba prepoznati tudi vizualni učinek modificiranih stavb in kumulativne vplive na širše bivalno okolje. Na ravni prostorskega planiranja je treba opredeliti ustrezno politiko glede razvojnega pomena in obsega dela na domu v posamezni enoti urejanja prostora. Na izvedbeni pa učinkovite projektne pogoje za razvoj kvalitetnih funkcionalnih in oblikovnih rešitev, ki bodo vključevale racionalnost posega v prostor in njegovo sprejemljivost v kontekstu lokalne skupnosti.

KLJUČNE BESEDE

delo na domu, prostorske oblike, regulacija, prostorski akti, vplivi na okolje

ABSTRACT

In Slovenia, working at home is a traditionally present spatial paradigm with many positive implications for social development. This paper presents the results of a study that focused on the analysis of its manifestations, existing regulatory instruments, and the definition of measures for improving the situation in the field of its spatial regulation. Working at home occurs in a wide range of spatial solutions, from small-scale conversions or extensions to introduction of large building volumes into a settlement's structure. Compared to operations in a business zone, its advantages are reflected in reduced labour and housing costs and in the mobilisation of owners' property capacities. The negative consequences include increased freight transport, noise, and introduction of the typology of business buildings into the morphologically completed residential areas. This decreases the anthropogenic quality of the living environment and the potential value of properties. In most cases, the conditions that the existing spatial planning documents provide for are too vague to support the architectural and urbanistic transformation of residential buildings and the presence of disposal sites of raw materials, products, and technological waste. Along with the boundary values of noise, emissions, and other impacts determined by formal norms, it is also necessary to recognise the visual effect of modified buildings and their cumulative impacts on the wider living environment. At the spatial planning level we need to define the appropriate policy regarding the developmental significance and scope of working at home in individual spatial planning units, while at the implementing level we need efficient design conditions to develop high-quality functional and design solutions, which will support rational spatial interventions and their acceptability in the context of the local community.

KEY-WORDS

urban planning, energy planning, energy efficiency, energy demand, cities, spatial development plans

UVODNIK
EDITORIAL
ČLANEK
ARTICLE

RAZPRAVA
DISCUSSION
RECENZIJA
REVIEW
PROJEKT
PROJECT
DELAVNICA
WORKSHOP
NATEČAJ
COMPETITION
PREDSTAVITEV
PRESENTATION
DIPLOMA
MASTER THESIS

1. UVOD

Umeščanje poslovnih dejavnosti v fizični prostor se izvaja v različnih oblikah in obsegu. Prvenstveno se v ta namen načrtujejo gospodarske cone. V Sloveniji imamo razvejano omrežje con različnih tipov, ki zagotavljajo prostorske razvojne pogoje širokemu spektru podjetniških potreb (Potočnik Slavič, 2010). Kot zaključena območja z načrtno izbrano lokacijo, ustrezno komunalno infrastrukturo, naborom dopustnih dejavnosti in posebnimi projektnimi pogoji v veliki meri tudi zagotavljajo obvladovanje vplivov na okolje. Vzporedno s conami pa se v prostoru pojavlja tudi omrežje poslovnih akterjev v obliki dela na domu. Ta pojav je relativno obsežen in izhaja iz obdobja planskega gospodarstva SFRJ znotraj katerega se je razvijala obrt kot posebna oblika zasebne prakse (Kos, 1990). Nov zagon je doživela po osamosvojitvi, ko se je z uvajanjem tržnega gospodarstva izoblikovala paradigma ustanavljanja mikro podjetij (Zupan, 2010). V obdobju po l. 1991 so se sicer zgradile številne nove poslovne cone (Sitar et al, 2002), vendar le te še vedno ne pokrivajo aktualnega povpraševanja po poslovnih površinah in objektih (Kavaš et al, 2013). V prostoru se še vedno soočamo s pobudami za ustanavljanje novih con ali zagotavljanju lokacijskih pogojev za umestitev poslovnih dejavnosti v bivalno okolje.

Delo na domu je v organizacijskem smislu konvencionalna oblika drobnega podjetništva, ki temelji na modelu tradicionalne obrti (Bird et al, 2002). Njene prostorske, ekonomske in sociološke karakteristike so se bistveno spremenile v dvajsetem stoletju z razvojem informacijskih tehnologij in globalizacijo trga dela (Beck, 1992). Paradigma dela na domu (tudi dela na daljavo) je v tem času postala predmet obsežnega raziskovanja, s katerim je stoka ocenjevala njene antropološke razsežnosti, ekonomske učinke in vplive na okolje (Toffler, 1981). Med ključne pozitivne učinke sodijo svobodno razporejanje delovnega časa, redukcije stroškov dela in bivanja ter vključevanje družinskih članov v delovni proces (Haddon in Lewis, 1994). Med negativne pa socialna izolacija delovnega mesta ter izkoriščanje neformalne pomoči (Wapshott in Mallett, 2012). Spremljajoči vplivi na okolje so odvisni od obsega in narave poslovne dejavnosti. Lahko so zanemarljivi (computerworking), v primeru proizvodnega obsega (hrup, emisije, vizualni učinek) pa evidentno moteči za zdravje in okolje (Downey in Van Willigen, 2005).

V tem okviru se pojavlja vprašanje njegove regulacije tako na planerski kot projektni ravni. Iz prostorskega vidika pomeni organizacija dela na domu predvsem strukturno umestitev poslovne dejavnosti v bivalno okolje (Felstead in Jewson, 2000). Takšna intervencija spreminja obstoječe programske, morfološke in tipološke karakteristike stavb in naselij. Pojavlja se v različnih oblikah prizidkov, prezidav, dodajanja novih stavbnih volumnov v stanovanjsko kompozicijo ali kot poslovno-stanovanjska novogradnja (Čok, 2005). Pri tem se spreminja tudi širši zaznavni prostor in osnovni elementi zasebnosti in suverenosti bivalnega okolja.

Preobrazba konvencionalne stanovanjske tipologije pa ni nujno a priori negativna in jo je potrebno razumeti v širšem družbeno-razvojnem kontekstu (Kärrholm, 2013). V kronološkem smislu se stavbe vedno odzivajo na spreminjajoče se ekonomske in kulturološke pogoje, kar vzpodbuja prilagajanje ustaljenih tipoloških elementov (Koch, 2014). V preteklem desetletju so načela trajnostnega načrtovanja in izzivi sodobne kulture bivanja bistveno spremenili predstavo o bivalnem in delovnem okolju. V arhitekturi in urbanizmu se srečujemo s hibridnimi stavbnimi tipi, vzajemno rabo prostora, redefinicijo mobilnosti delovne sile ter informacijskimi tehnologijami, ki uvajajo inovacije v konven-

cionalno percepcijo prostorskega načrtovanja in oblikovanja. V tem smislu bo potrebno spremeniti pristop v razumevanju razvojnih trendov in posledično izoblikovati ustrezne regulacijske mehanizme. Tudi v teh pogojih mora biti stroka usmerjena v razumevanje aktualnih potreb in oblikovanje produktivnih prostorskih rešitev.

Delo na domu ima poleg znanih pozitivnih učinkov na ekonomski in prostorski razvoj tudi določene negativne vplive. Iz vidika prostorskega načrtovanja je delo na domu predvsem lokalni pojav, zato je njegova prognoza (lokacija, dejavnost, obseg, oblika) težko predvidljiva in posledično težko regulirana. Formalne določbe prostorskih planskih in izvedbenih aktov sicer lahko opredelijo robne pogoje glede dopustnih dejavnosti in gabaritov preoblikovanja stanovanjskih stavb in naselij, težje pa se odzivajo na širok spekter specifičnih oblikovnih in tehnoloških zahtev posamezne poslovne dejavnosti, kot je to namensko opredeljeno na območjih poslovnih con. Takšna situacija dopušča realizacijo različnih posegov v arhitekturo stanovanjskih stavb, ki so formalno sicer legalni, strokovno pa vprašljivi iz vidika stranskih učinkov na kvaliteto bivanja in v določenih primerih tudi na učinkovitost izvajanja poslovne dejavnosti. V tem okviru sta pomembni naslednji raziskovalni vprašanji:

- V kakšnem obsegu in v kakšni prostorski obliki se pojavlja delo na domu v Sloveniji?
- Kateri regulativni instrumenti urejajo njegovo fizično materializacijo?

Delo na domu kot oblika prostorske organizacije poslovne dejavnosti je že dolgo prisotna na celoten teritorij Slovenije. V prostorskih planskih in izvedbenih aktih načeloma niso posebej opredeljena pravila za njegovo regulacijo. Potrebno bi bilo oblikovati ustrezne usmeritve in določbe, ki bi podrobneje opredeljevali sanacijske ukrepe za zmanjševanje vplivov na bivalno okolje, pravila za oblikovanje stavb in ukrepe za povečanje poslovne učinkovitosti poslovno-stanovanjskih stavb.

2. MATERIALI IN METODE RAZISKOVANJA PROSTORSKEGA VIDIKA DELA NA DOMU

Raziskava temelji na dveh virih podatkov. Prvi vir predstavlja referenčno gradivo (strokovne podlage za pripravo prostorskih aktov, znanstveni članki, prostorski planski in izvedbe akti itd.) iz katerih smo črpali izsledke glede dosedanje obravnave dela na domu na območju Slovenije. Drugi vir predstavlja študijski projekt Prostorske rešitve za organizacijo dela na domu v Savinski regiji (ŠIPK) (Čok et al, 2019).

Raziskava je potekala v štirih fazah. V prvi fazi smo evidentirali stanje na področju pojavnih oblik dela na domu. V okviru projekta ŠIPK smo v prvem koraku opredelili ožje območje analize (zahodni del Savinjske regije, občine: Ljubno, Luče, Mozirje, Nazarje, Solčava, Rečica ob Savinji, kjer smo evidentirali 61 primerov, ter vzhodni del regije, občine: Celje, Štore, Šentjur in Šmarje pri Jelšah kjer smo evidentirali 120 primerov. Pri izboru je bil uporabljen vizualni kriterij t.j. da je izvajanje poslovne dejavnosti, ki je integrirana v tipologijo stanovanjske stavbe ali naselja evidentno razvidno (s prizidkom, samostojnim poslovnim objektom ipd.). Pri tem je bila uporabljena aplikacija OruxMaps, ki je omogočala beleženje lokacij fotografiranja na digitalnem zemljevidu in kasnejšo obdelavo podatkov. V drugem koraku smo z deskriptivno metodo na podlagi treh kriterijev tipološke modifikacije stanovanjskih stavb ((a. lega poslovne dejavnosti glede na stavbo, b) tipologijo prostorske rešitve (obseg in oblika modifikacije) in c) lega glede na naselje) opredelili karakteristike

urbanistične in arhitekturne zasnove in razvrstili primere v pet skupin s podobnimi lastnostmi.

V drugi fazi smo evidentirali vsebine prostorskih aktov, ter analizirali določbe glede organizacije poslovnih dejavnosti v bivalnem okolju. Analizirali smo akte v tistih občinah, ki imajo veljaven občinski prostorski načrt (OPN). Takšnih občin je 19, od skupno 31 v regiji. Z deskriptivno in primerjalno metodo smo ugotavljali katere določbe in na kakšen način obravnavajo delo na domu na področju: a) namenske rabe zemljišč, b) dopustnih gabaritov preoblikovanja stavb, c) dopustnih dejavnosti in vplivov na okolje.

V tretji fazi smo izdelali aplikativne projekte, ki so simulirali izdelavo prostorske rešitve za posamezne primere dela na domu. Občine Savinjske regije smo pozvali, da nam za potrebe projekta podajo aktualne, referenčne primere pobud občanov za pripravo dokumentacije za delo na domu. Izbrali smo pet referenčnih primerov (različnih po obsegu, dejavnosti in lokaciji), ki so po obstoječih določbah prostorskih aktov ali zaradi drugih razlogov neizvedljivi. V naslednjem koraku smo izdelali študijske urbanistične in arhitekturne predloge (nivo idejne zasnove) ter opredelili potrebne modifikacije prostorskih aktov.

V četrti fazi smo na podlagi izsledkov analize prostorske dokumentacije in aplikativnih projektov oblikovali nabor sistemskih in strukturnih ukrepov za izboljšanje stanja.

3. REZULTATI

3.1. Pojavne oblike in vplivi na okolje

Ugotovili smo, da se delo na domu pojavlja na celotnem teritoriju obravnave in v podobnih pojavnih oblikah. Evidentirane primere smo razvrstili glede na tri kriterije: 1) lega v odnosu do stanovanjskega objekta (varianste: v objektu, v prizidku, ob objektu), 2) arhitekturna tipologija (varianste: v objektu ni evidentne spremembe, dozidava - povzemanje karakteristik stanovanjske tipologije, dozidava - povzemanje karakteristik poslovne oz. industrijske tipologije), 3) lega v naselju (varianste: v

naselju, na robu, dislociran) (preglednica 1). Podobno rezultate glede pojavnih oblik navajajo tudi druge študije in strokovne podlage (Čok et al. 2007).

Ugotovili smo, da med negativnimi vplivi na percepcijo bivalnega okolja izstopa predvsem njihova vizualna pojavnost (modifikacija stavbe). Med najmanj moteče oblike sodijo tisti primeri, ki imajo poslovanje integrirano v objektu brez evidentne zunanje spremembe, ter primeri dislociranih »poslovnih« stavb na robu naselja. Med najbolj moteče pa primeri prizidkov (neusklajena oz. nekontekstualna barvitost, izrazito tehnološki materiali fasadnega ovoja, raznolika neregulirana oblika in neproporcionalni gabariti stavbnega volumna). Med negativne posledice sodijo tudi vizualno izpostavljene deponije surovin ali izdelkov, moteča zasnova dostopa za zaposlene in stranke, permanentni odvozi izdelkov in/ali tehnoloških odpadkov itd. (slika 1).

Iz vidika hrupa so najbolj moteče prometno intenzivne dejavnosti (stranke, npr. gostinske dejavnosti, trgovina, frizerstvo itd.), najmanj pa poslovne dejavnosti individualnega obsega (računovodske storitve, projektivni biroji itd.). Posamezne proizvodne dejavnosti sicer spoštujejo veljavne predpise glede hrupa v naselju, emisij ipd., vseeno pa njihova prisotnost zmanjšuje ambien- talno privlačnost bivalnega okolja in posledično tudi materialno vrednost nepremični v vplivnem območju. Med primere dobrih praks sodijo predvsem tisti projekti, za katerimi stoji premišljen in strokovno utemeljen urbanistični in arhitekturni načrt.

3.2 Valorizacija stanja na področju obstoječe prostorske dokumentacije

Z analizo prostorskih dokumentov smo ugotovili naslednje:

- vsi obravnavani OPN-ji imajo skladno s pravilnikom o pripravi OPN (Url, 99/07) Območja stanovanjskih zemljišč (S) razdeljene v štiri podkategorije (SS – Stanovanjske površine, SB – stanovanjske površine za posebne namene, SK – Površine podeželskega naselja in SP – Površine počitniških hiš). V tekstualnem opisu namenske rabe je v večini primerov navedeno:

Preglednica 1: pojavne prostorske oblike dela na domu.

Skupina I: Organizacija dela na domu brez spremembe stavbnega volumna	Poslovna dejavnost se izvaja v stanovanjski stavbi pri čemer se njena zunanost zaradi dodatne funkcije ne spremeni. Te rešitve ustrezajo dejavnostim, ki potrebujejo relativno malo prostora (razne poslovne storitve itd.). Na zunanosti so evidentne le informacijske table in prilagojeno parkirišče za stranke.
Skupina II: Organizacija dela na domu z evidentno spremembo volumna in oblike osnovne stavbe	Poslovna dejavnost se izvaja v stavbi, ki je ustrezno organizacijsko prilagojena oziroma nadgrajena. V principu se ohranja stanovanjska tipologija, modifikacija v obliki prizidkov pa načeloma sledi primarni obliki stavbnega volumna (dvokapne dozidave, prezidave itd.). Problem vizualne pojavnosti nastane v primerih ne-kontekstualnega arhitekturnega oblikovanja (izstopajoči materiali, izjavalne barve itd.) in v prepletenih komunikacijah (stranke, stanovalci). Te rešitve obsegajo širok spektre dejavnosti, od poslovnih storitev, trgovine do proizvodne obrti.
Skupina III: Organizacija dela na domu v novem (dotikajočem se) objektu (prizidku)	Poslovna dejavnost se izvaja v novem, navidezno in vsebinsko sicer ločenem, vendar še vedno dotikajočem se objektu. Takšna rešitev ima določene funkcionalne prednosti. Nastajajo nove stavbne kompozicije, ki združujejo posamezne segmente v celoto. Dodani objekt se v različnih oblikah povezuje v kontekst z matično stavbo pri čemer sledi stanovanjski ali poslovni tipologiji. Problem vizualne pojavnosti nastane ob neproporcionalnem posegu, ko novi volumen nadgradi obstoječega (amorfne rešitve). Ti primeri obsegajo širok spekter dejavnosti, predvsem tistih, ki se zaradi ne združevanja z bivalno funkcijo umestijo v novi objekt (npr. vulkanizerstvo, mizarstvo, trgovina itd.). V mnogih primerih jih spremljajo tudi odprte in vizualno izpostavljene deponije (odpadki, surovine, izdelki).
Skupina IV: Organizacija dela na domu v ločenem objektu (v neposredni bližini)	Poslovna dejavnost se izvaja v fizično ločenem objektu, načeloma v obstoječem »tradicionalnem« gospodarskem poslopiju. Objekt je adaptiran oziroma prilagojen potrebam nove dejavnosti. Druga možnost je novogradnja v obliki stanovanjske ali poslovne tipologije. Načeloma so te rešitve prostorsko bolj sprejemljive, ker tipološko ne spreminjajo stanovanjske stavbe. Problem nastane ob njihovem predimenzioniranju, neskladni tipologiji ali neustreznosti umestitvi na parcelo. Tudi ti primeri obsegajo širok spekter dejavnosti (npr. kovino-plastika, servisne dejavnosti, mizarstvo itd.). Spremljajo jih odprte in vizualno izpostavljene deponije (odpadki, surovine, izdelki).
Skupina V: Organizacija dela na domu v ločenem (oddaljenem) objektu	Poslovna dejavnost se izvaja ločenem objektu, načeloma na obrobju naselja. V večini primerov služijo obsegu proizvodne obrti (kamnoseštvo, kovino-plastika, betonski izdelki itd.) ali trajnemu parkiranju velikih tovornih in potniških vozil (avto prevoznitvo). Potencialni problem predstavlja predimenzioniranje v merilu morfologije naselja, pojav tipologije industrijskih stavb in drugi vplivi na okolje.



Slika 1: primeri različnih pojavnih oblik dela na domu, lokacija Savinjska regija.

- da se v naselja lahko umeščajo različne dejavnosti v smeri mešanja funkcij bivanja in dela s čimer se zmanjšuje število in razdalja voženj na relaciji dom-delo-dom, pri čemer naj se dejavnosti razporejajo tako, da so medsebojno združljive in ne motijo druga druge,
- da se industrijske dejavnosti prednostno razvijajo v okviru industrijskih con, kamor se postopoma selijo obstoječe dejavnosti iz naselij, ki so moteče za bivanje in družbene dejavnosti.

Gre za splošno določbo, ki dopušča velik spekter interpretacij. V tem kontekstu je istočasno vzpodbujanje umeščanja in izse-ljevanja poslovnih dejavnosti v oz. iz naselja brez natančnejših opredelitev (nabor dejavnosti, obseg, fizična oblika itd.) tudi protislovna določba.

Med obravnavnimi primeri imata v OPN-ju posebne določbe glede dela na domu le občini Polzela in Žalec. Polzela ima posebno podkategorijo s katero ločuje stanovanjske površine (SS) na pretežno čiste (SSs) in stanovanjske površine s spremljajočimi manjšimi gospodarskimi dejavnostmi (SSg). Občina Žalec pa v enem od občinskih naselij določa namensko površino za manjše proizvodne obrate.

Glede dopustnih gabaritov modifikacije stanovanjskih stavb (na stanovanjskih površinah, ki so namenjene bivanju brez ali s spremljajočimi dejavnostmi) se praviloma uporablja splošna določba o možni organizaciji poslovne ali obrtne dejavnosti v obsegu do 100m². Modifikacija je pogojena z usmeritvami, da se ohrani prevladujoča stanovanjska raba, da je zemljišče ustrezno veliko za organizacijo te dejavnosti in da vplivi na okolje (povečan hrup, emisije) ne presegajo dopustnih normativov.

Podobno »splošno« opredeljene so tudi določbe glede dozi-dave, rekonstrukcije, spremembe namembnosti stanovanjskih

objektov, umeščanja nezahtevnih in enostavnih objektov ipd. v okviru prostorskih izvedbenih aktov (PIA). Te določbe so opre-deljene praktično enako za poslovno kot stanovanjsko modifikaci-jo stavb. Tudi določbe glede vplivov na okolje so podane zgolj kot upoštevanje pogojev veljavnih predpisov.

Ugotovili smo, da je ključna pomanjkljivost obstoječih pro-storskih aktov popolna odsotnost upoštevanja »vizualnega in funkcionalnega vpliva« na tipološke urbanistične in arhitekturne karakteristike stanovanjskih stavb in na morfologijo celotnih naselij. Gre za odsotnost potrebnih pogojev glede oblikovanja stavb (stavbna tipologija prizidkov, rekonstrukcij, enostavnih objektov itd.) in odsotnost potrebe po izvajanju sanacijskih ozi-roma omilitvenih ukrepov (zasnova protihrupnih barier, vizualna sanacija deponij, načrtovanje poslovnih parkirišč, funkcionalna organizacija dostave itd.).

3.3 Aplikativni projekti

Izbrane pobude za delo na domu (slika 2) smo podrobneje pre-učili in opredelili razloge zaradi katerih ti posegi niso formalno izvedljivi ali sprejemljivi za širši prostor. Ugotovili smo naslednje ključne probleme ali omejitve: a) neustrezna namenska raba zemljišča, b) pretiran obseg predvidene dejavnosti, c) preko-merno povečan hrup v odnosu do naselja, d) neželena vizualna pojavnost v prostoru (vpliv na morfološko strukturo) in e) ume-ščanje neskladne stavbne (industrijske) tipologije (preglednica 2). Na podlagi teh izhodišč smo oblikovali posamezne aplika-tivne rešitve (študijski nivo – idejna zasnova) z implementacijo posameznih projektnih in sanacijskih ukrepov (zmanjševanje hrupa, vizualnega vpliva, učinkovita organizacija itd.) (slika 3). Projekti predstavljajo simulacijo načrtovanja z upoštevanjem potreb investitorja in robnih pogojev lokacije ob predpostavki, da so potrebne določene dopolnitve dotičnih prostorskih aktov.

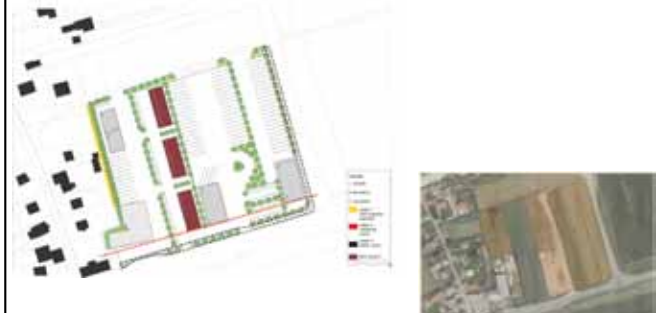
1. Šentrupert	2. Solčava	3. Liboje (Kotečnik)	4. Hramše	5. Buče (Kozje)

Slika 2: izbrani primeri (Šentrupert, Solčava, Liboje, Hramše, Buče) za izvedbo aplikativnih projektov.

Preglednica 2: prikaz programa, problema, karakteristik in predlaganih ukrepov.

Predlog ŠIPK: Aplikativni projekti – predlog prostorskih rešitev za izbrane karakteristične primere dela na domu					
Lokacija	Program	Delo na domu: tipologija	Projektni problem / izziv	Upravne ovire	Predlog ukrepov
1. Šentrupert	Parkirišče za tovornjake in spremljajoči tehnični objekti	- primer gruče poslovnih stavb in manipulativnih površin na robu naselja - relativno velik obseg	- namenska raba zemljišča - hrup v odnosu do naselja - vizualna pojavnost v prostoru (vpliv na morfološko strukturo) - nova stavbna tipologija	- dolgotrajen proces spremembe NRP - odsotnost strategije umeščanja tovrstnih kompleksov v teritorij občine (OPN) - dolgotrajen proces priprave PIA	- sanacija vizualnega vpliva na naselje - sanacija hrupa - strokovno gradivo, ki prispeva k spremembi namembnosti NRP
2. Solčava	Lesno-predelovalna dejavnost (žaga)	- primer samostojnega poslovnega objekta na vstopu v naselje	- vizualni vpliv (vstop v naselje) - namenska raba zemljišča - obstoječe določbe PIA	- dolgotrajen proces spremembe NRP	- sanacija vizualnega vpliva na naselje (deponija lesa znotraj objekta) - lesen fasadni ovoj (prostorski kontekst)
3. Liboje (Kotečnik)	Turistični kompleks (parkirišče, gostinstvo, nastanitve)	- primer dislocirane poslovne enote, program se izvaja v okviru obstoječe »skromne« prostorske ureditve	- odsotnost ustrezne prostorske rešitve - obstoječe določbe PIA	- odsotnost izvedbenega akta in posledično kvalitetne prostorske rešitve	- ustrezna prostorska rešitev - sodobno oblikovan turističen kompleks
4. Hramše	Projektivni biro v stanovanjski hiši	- primer modifikacije stanovanjskega objekta (prizidek)	- obstoječe določbe PIA - variantne in kompromisne rešitve	- nefleksibilne določbe prostorskega akta	- ustrezna prostorska rešitev (bivalni in poslovni del)
5. Kozje (Buče)	Glamping, dopolnilna dejavnost na kmetiji	- primer dopolnilne dejavnosti ob spremembi namembnosti kmetijskega zemljišča	- namenska raba zemljišča - umeščanje dejavnosti »glampinga« v značilno kulturno krajino Kozjanskega	- dolgotrajnost postopka spremembe NRP	- pripraviti ustrezno strokovno gradivo, ki prispeva k spremembi namembnosti NRP

Slika 3: Variantne rešitve zasnove parkirišča in servisnih objektov na lokaciji Šentrupert. Izpostavljeni so posamezni ukrepi za sanacijo hrupa in vizualnega vpliva na naselje.

Ukrepi	Ukrepi
1. protihrupna bariera v smeri proti naselju 2. gradbena linija 3. profilacija ob regionalni cesti Ljubljana-Celje (pločnik, drevored) 4. osrednji de ostane prosta površina	1. protihrupna bariera v smeri proti naselju 2. gradbena linija 3. profilacija ob regionalni cesti Ljubljana-Celje (pločnik, drevored) 4. umestitev parkirišča za dnevne migrante (dom-delo-dom) 5. umestitev dodatnih poslovnih stavb (lahko so v funkciji protihrupne in vizualne bariere)
Scenarij A	Scenarij
	

3.4 Predlog ukrepov za izboljšanje obstoječe prakse

Potencialna realizacija predlaganih prostorskih rešitev bi bila mogoča le z dopolnitvami prostorskih aktov na planskem in izvedbenem nivoju, ter z večjo motivacijo uporabnikov, stroke in ostalih deležnikov, ki deluje na področju prostorskega načrtovanja. Na podlagi podrobnejše preučitve obstoječih omejitev (a) NRP in dopustne dejavnosti, b) določbe glede oblikovanja stavb, c) določbe glede vplivov na okolje, d) trajanje upravnega postopka za sprejem OPPN oz. za spremembo NRP) smo oblikovali dve skupini ukrepov za katere smatramo, da lahko prispevajo k izboljšanju obstoječe prakse. Namenjeni so:

- promociji problema poslovnih površin in objektov v kontekstu sistema poselitve in gospodarske infrastrukture (planerski vidik),
- izoblikovanju prostorsko bolj sprejemljivih oblik umestitve poslovne dejavnosti v bivalno okolje oziroma omejevanju negativnih vplivov na okolje,
- poenostavitvi upravnih postopkov pridobivanja projektne dokumentacije in potrebnih dovoljenj,

- večanju učinkovitosti poslovanja in racionalizaciji posega v prostor,
- skrbi za fizični prostor kot dobrino in javni interes.

Po namenu in vsebini se delijo v dve skupini: a) strukturni ukrepi, ki jih izvajamo na mikro-nivoju (v procesu priprave prostorskih izvedbenih aktov oziroma pri razvoju konkretne prostorske rešitve in b) sistemski ukrepi, oziroma aktivnosti, ki na makro nivoju sploh omogočajo izvajanje strukturnih ukrepov.

3.4.1 Strukturni ukrepi za regulacijo dela na domu

V nadaljevanju so predstavljeni strukturni ukrepi s katerimi bi konkretizirali posamezne splošne določbe glede načrtovanja dela na domu:

I. ukrepi za sanacijo vizualnega vpliva obsegajo načrtovanje ustreznih rešitev na področju:

- preliminarne izbora lokacije (in/ali mikrolokacije na nivoju parcele) za umestitev poslovne dejavnosti (zadosten odmik od javnih površin, javnih stavb, zasebnih stanovanjskih stavb itd.),

Preglednica 3: štiri skupine »strukturnih ukrepov«, ki lahko prispevajo h kvalitetnejši integraciji dela na domu v določenem prostorskem kontekstu. Pri tem opozarjamo na pomen individualnega pristopa, saj se praktično vsak primer posebej (lokacija in dejavnost) razlikuje po specifičnih robnih pogojih in tehnoloških zahtevah.

STRUKTURNI UKREPI ZA REGULACIJO DELA NA DOMU (Kaj urejamo?)		
skupine strukturnih ukrepov	nabor ukrepov	opis
I. Ukrepi za sanacijo vizualnega vpliva	- ustrezna lokacija (prelimin. izbor) - ustrezna urbanistična rešitev - ustrezna arhitekturna rešitev - integracija zelenih elementov	- lega na nivoju soseske, naselja - morfologija, proporcionalnost... - stavbna tipologija, fasadni ovoj, barve v prostoru, materiali - zelene površine, bariere, ločnice
II. Ukrepi za zmanjševanje hrupa	- ustrezna lokacija - ustrezna orientacija - protihrupne bariere	- lega na nivoju naselja - vpliv na sosednje stavbe in javni prostor - - ustrezne projektne rešitve (nasipi, montažne ograje, zelene bariere...)
III. Ukrepi za izboljšanje poslovne učinkovitosti	- ustrezna lokacija - kvalitetna prostorska zasnova - ekonomija lokalnega okolja - robni pogoji	- enostavna dostopnost (nivo naselja) - urejen in privlačno oblikovan poslovni kompleks je tudi ekonomska kategorija (!) - upoštevati lokalne potenciale in omejitve
IV. Ukrepi za racionalizacijo projekta	- finančni vidik (strošek gradnje) - tipologija gradnje (jasen namen) - fleksibilnost funkcionalne zasnove	- kvaliteten investicijski načrt, amortizacija, - opredeljeno obdobje poslovanja - montažna gradnja/mobilna arhitektura - različna raba (potencialna bivalna enota)

- oblikovanja fasadnega ovoja (barve, texture, materiali), stavbnega volumna (proporcionalnost posega v odnosu do matične stanovanjske stavbe, njegove oblike oz. geometrije, izoblikovanje nove stavbne kompozicije - intervencija mora biti kontekstualno zasnovana),
- omejevanja vizualne izpostavljenosti zunanjih deponij, parkirišč, informacijskih svetilnih teles itd. (vizualne bariere; zelene in grajene strukture itd.), ki zmanjšujejo vizualno kvaliteto bivalnega okolja.

II. ukrepi za zmanjševanje hrupa obsegajo načrtovanje ustreznih rešitev na področju:

- preliminarne izbora ustrezne lokacije (in/ali mikrolokacije na nivoju parcele), ki zagotavlja potrebno oddaljenost do okoliških stavb,
- funkcionalne organizacije dostopa za zaposlene, stranke in surovine (orientacija poslovne in stanovanjske funkcije),
- organizacije in obsega mirujočega prometa, umestitve (lega) in zasnove (material, oblika, učinkovitost) protihrupnih ograj, nasipov in protihrupne vegetacije.

III. ukrepi za izboljšanje poslovne učinkovitosti, obsegajo načrtovanje ustreznih rešitev na področju:

- preliminarne izbora lokacije (in/ali mikrolokacije na nivoju parcele), ki je sprejemljiva za lokalno skupnost (ni sporna v smislu povečanega hrupa itd.),
- oblikovanja produktivnega delovnega oz. poslovnega okolja (orientacija delovnega mesta, osvetlitev, ergonomija),
- izoblikovanja vizualno privlačne arhitekturne in urbanistične rešitve (skladno s sodobnimi oblikovnimi pristopi, umeščanje zelenih elementov itd.),
- promocije izvajane dejavnosti (informacijske oznake),
- funkcionalne lege in velikosti parkirišč za stranke (predvsem pomembno pri gostinski dejavnosti), nemotene oskrbe s surovinami, energenti, odvoz odpadkov itd.

IV. ukrepi za racionalizacijo projekta obsegajo načrtovanje ustreznih rešitev na področju:

- dimenzioniranja predvidene gradnje, ki temelji na učinkovitem poslovnem načrtu (amortizacija: predvideno trajanje

in obseg izvajanja poslovne dejavnosti, predvideni stroški gradnje, poslovanja, vzdrževanja, davčni izdatki in dokončna odstranitev stavbe oz. njene nadgradnje za poslovno rabo),

- možnosti souporabe površin, tehničnih prostorov itd. tako na nivoju primarne stanovanjske stavbe kot na nivoju javnih površin in objektov na nivoju soseske oz. naselja (parkirišča, deponije, ekološki otok),
- preliminarne preveritve možnosti umestitve enostavnih (mobilnih) objektov in njihovih funkcionalnih zmogljivosti,
- preliminarne preveritve alternativnih možnosti najema ali nakupa poslovnih površin in/ali objektov v poslovni coni (v primeru širitve poslovanja).

V preglednici 3 je prikazana sinteza strukturnih ukrepov (izdelana na podlagi vmesnih rezultatov), ki lahko služi kot »model« pri interpretaciji določb PIA in posledično pri načrtovanju prostorskih rešitev.

Učinkovitost navadnega je odvisna od ustrezne implementacije v prostorske akte, ter interpretacije pri njihovi uporabi (investitor, projektant, upravni postopek).

3.4.2 Sistemski ukrepi

Sistemski ukrepi predstavljajo predpogoj, da se podrobnejše določbe sploh lahko izvajajo (preglednica 4), delimo jih na:

- ukrepe integrirane v prostorske akte (RPP, OPN, OPPN) kateri obsegajo: opredelitev »vloge in pomena« dela na domu v okviru širše prostorske razvojne strategije (kje in kako ga dopuščati, s kakšnim namenom in posledično s kako ohlapnimi ali rigoroznimi določbami – od opredelitve namenske rabe do določb za oblikovanje stavb in uporabe finančnih stimulatív in oz. destimulatív in instrumentov).
- implementacijo dobrih praks v proces planiranja in načrtovanja (usmeritve za kvalitetne prostorske rešitve, mobilizacija stavb in zemljišč v javni lasti, odzivnost v procesu upravnega postopka).

Na podlagi vmesnih rezultatov ugotavljamo, da obstoječa prostorska zakonodaja predstavlja ustrezno podlago za bolj učinkovito obravnavo dela na domu, potrebna je le večja motivacija pri razumevanju problema in iskanju ustreznih rešitev.

Preglednica 4: dve skupine »sistemsko-upravnih ukrepov«, ki lahko prispevajo k hitrejši in kvalitetnejši izvedljivosti posameznih projektov ali k mobilizaciji alternativnih lokacij/stavb za izvajanje določene podjetniške iniciative.

SISTEMSKO-UPRAVNI UKREPI ZA IZVEDLJIVOST DELA NA DOMU (Kako urejamo?)		
skupine sistemsko-upravnih ukrepov	nabor ukrepov	opis
A: Ukrepi integrirani v prostorske akte	• Prostorski planski akti (RPP, OPP)	- nabor in opredelitev ustreznih območij/lokacij, kjer ima regulacija dela na domu določen »usmerjen« namen (demografija, poselitev...) - opredelitev ustrezne namenske in podrobnejše namenske rabe zemljišč (NRP, PNRP)
	• Prostorski izvedbeni akti (OPPN, PIP)	- ustrezne določbe glede določanja gradbenih parcel, urbanističnih indikatorjev (Fz, Fgp, itd.) - prilagojena pravila za oblikovanje stavb (bivalni in poslovni del) - ustrezna opredelitev dopustnih dejavnosti (po SKD-ju) - dopuščanje t.i. »mobilne arhitekture« (montažni, nezahtevni objekti itd.)
	• Drugi relevantni dokumenti (odloki)	- npr. odloki o Programih opremljanja stavbnih zemljišč: merila za odmero komunalnega prispevka, kot mehanizem za vzpodbujanje oz. regulacijo dela na domu v posamezni prostorski enoti
B: Implementacija »dobrih praks«	• Kvalitetna prostorska rešitev (projekt PGD-PZI), ustrezen pristop vseh deležnikov (investitor, projektant, NUP)	- izbor primerne lokacije, lega na nivoju naselja - upoštevanje vpliva na sosednje stavbe in javni prostor: ustrezne projektne rešitve (nasipi, montažne ograje, zelene bariere...) - ustrezna sintezna rešitev, ki učinkovito integrira poslovne potrebe ter robne lokacijske in projektne pogoje
	• Mobilizacija stavb in zemljišč v javni lasti (domena občinske uprave)	- zagotavljanje določene kvote poslovnih površin in/ali objektov/prostorov za potrebe Co-workinga (mladi, ki začnejo svoj poslovno pot) v obstoječih občinskih stavbah, ki sicer niso v uporabi - souporaba obstoječih oz. že uporabljenih prostorskih kapacitet (npr. društveni prostori itd.)
	• Odzivnost v procesu upravnega postopka	- upravna in menedžerska pomoč kandidatom (marsikje v regiji se že uspešno izvaja) - večkratne dopolnitve OPN (primer Občina Žalec) za področje podjetništva (smiselno in po potrebi) - dosledno izvajanje 33. člena GZ (informativna pomoč pristojnega organa investitorju...) - fleksib. raba stavbe (potencialna bivalna enota)

4. ZAKLJUČEK

Delo na domu je evidenten prostorski pojav na celotnem teritoriju Slovenije. Pojavlja se v različnih prostorskih oblikah in obsegu. V sistemu poselitve predstavlja alternativo omrežju gospodarskih con saj omogoča realizacijo tistih podjetniških pobud, ki nimajo možnosti umestitve v ustrezno namensko cono. Poleg gospodarskih in posledično socialnih pozitivnih učinkov, sproža ta paradigma tudi negativne vplive na zdravje in okolje. Čeprav gre za relativno manjše vplive lokalnega dometa, pa je njihov število obsežno in skupni seštevek ni zanemarljiv. Obstoječi prostorski dokumenti, ki opredeljujejo njegovo regulacijo vsebujejo preveč splošne določbe glede preoblikovanja stavb za potrebe izvajanja poslovnih dejavnosti. Za učinkovito načrtovanje tega pojava je potrebno oblikovati bolj profilirana določila in upoštevati širši prostorsko razvojni kontekst. S temi ugotovitvami potrjujemo zastavljeno delovno hipotezo.

Poleg regulacije vplivov na okolje je pri načrtovanju prostorskih rešitev (prizidki, prezidave, spremljajoči objekti) potrebno upoštevati tudi druge vidike tako modificiranih stavb. V ta okvir sodijo zlasti: a) amortizacijski vidik (vložena sredstva za dozidavo, trajanje izvajanja dejavnosti, stroški vzdrževanja, višji nepremičninski davki in nadomestila za uporabo stavbnega zemljišča zaradi povečanja tlorisa in funkcionalnega zemljišča itd.), b) otežena možnost odprodaje takšne nepremičnine (zaradi specifične arhitekturne zasnove), potencialno tudi zmanjšanje njene materialne vrednosti in omejena potencialna reuporaba (*re-use*),

c) lastniško-upravni zapleti pri postopkih parcialne prodaje, dedovanja ali ukrepih finančnih izterjav poslovnega subjekta ali lastnika stanovanjske stavbe (deložacija: stanovanjsko-poslovna kompozicija).

Na podlagi ugotovitev ocenjujemo, da obstoječa prostorska zakonodaja, z ustrezno interpretacijo, predstavlja zadostno podlago za bolj učinkovito postopanje na tem področju. Problem vidimo v nezadostni motivaciji praktično vseh deležnikov (prostorska politika, javna uprava, stroka, investitorji), ki sodelujejo v procesu priprave razvojnih strategij, prostorskih aktov, projektne dokumentacije in same realizacije. V praksi prevladuje stališče, da gre za podedovano situacijo oziroma zatečeno »stanje v prostoru«, ki ne potrebuje določne spremembe, saj bi morebitna strokovno-regulativna intervencija v to področje vzbudila splošen odpor v imenu omejevanja pridobljenih pravic in ekonomske blaginje. Predpostavljamo, da bo prihajajoča obdavčitev nepremičnin prvi korak k stimulaciji poslovnega in strokovnega interesa tudi na področju organizacije in regulacije dela na domu.

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Ivan Smiljanić, Matija Zorn, Peter Mikša: SPOMENIKI V FUNKCIJI DRŽAVNE IDEOLOGIJE IN POENOTENJA TERITORIJA: PRIMER SPOMENIKOV VLADARSKE DRUŽINE KARAĐORĐEVIĆ NA SLOVENSKEM

MONUMENTS IN THE FUNCTION OF STATE IDEOLOGY AND UNIFICATION OF TERRITORY: THE CASE OF MONUMENTS TO THE RULING FAMILY OF KARAĐORĐEVIĆ IN SLOVENIA

DOI: <https://dx.doi.org/10.15292/IU-CG.2018.06.046-053> ■ UDK: 725.945 ■ SUBMITTED: September 2019 / REVISED: September 2019 / PUBLISHED: October 2019

1.02 Pregledni znanstveni članek / Review Article

UVODNIK
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ARTICLE

IZVLEČEK

Spomeniki vladarjem so skupaj z državnimi prazniki, praznovanji rojstnih dni vladajoče družine, to namenskih šolskih proslav ter različnega propagandnega gradiva eden od gradnikov utrjevanja oblasti vladajoče družine. V prispevku so predstavljeni spomeniki, ki so bili postavljeni pripadnikom dinastije Karađorđević na današnjem slovenskem ozemlju v obdobju Kraljevine Srbov, Hrvatov in Slovencev (1918–1929) ter Kraljevine Jugoslavije (1929–1941). Spomeniki so bili postavljeni kot zahvala kraljevi družini, da je osvobodila slovenski narod, hkrati pa so poveljevali vladajočo dinastijo in simbolizirali pripadnost jugoslavizmu. Tovrstnih spomenikov sta bila deležna kralj Peter I. in njegov sin Aleksander I. Lokacije spomenikov so bile pazljivo izbrane in so se nahajale v centrih naselij ali na simbolno pomembnejših krajih. Razen manjših ostankov se spomeniki niso ohranili.

KLJUČNE BESEDE

spomeniki, ideologija, kralj Aleksander I, kralj Peter I, Dravska banovina, Kraljevina Jugoslavija

ABSTRACT

Monuments to rulers are, like national holidays, celebrations of the ruling family's birthdays, school observances, and various printed, mass-distributed propaganda material, one of the building blocks of power consolidation of the ruling family, and a way of legitimization. This paper presents this phenomenon via public sculptural monuments that were erected to members of the Karađorđević dynasty in the present-day Slovenian territory during the Kingdom of Serbs, Croats, and Slovenians, and the Kingdom of Yugoslavia. A review of the material reveals that such monuments were erected only to King Peter I and his son Alexander I, who embodied the military power of the common state on one hand, and the guarantee of a just rule in an age of peace on the other. Commemorative monuments were usually designed relatively modestly, in the form of busts on pedestals, with some extravagant exceptions such as an obelisk, full-figure statue, and an equestrian statue. The locations were carefully selected, usually in town centers or symbolically significant places - primarily by the western and northern border. With the exception of a few fragments, none of the described monuments survived.

KEY-WORDS

monuments, ideology, King Alexander I, King Peter I, Karađorđević dynasty, Drava Banovina, Kingdom of Yugoslavia

1. INTRODUCTION

Erecting monuments to rulers is a practice established centuries before national consciousness was developed, and before national states were formed in the 19th century. But it was that period that saw the rise of a new, previously unknown function: monuments to rulers became the symbols of unity and strength of a certain nation. Monuments to rulers helped, like national holidays, celebrations of the ruling family's birthdays, school observances, and various printed, mass-distributed propaganda material, consolidate the power of the ruling family (Zorn, 1997; Smiljanić, 2019). Public monuments, therefore, had (and still have) an important role in forming collective memory, solidifying the state ideology and territorial unity (Mikša, 2018). *"They are not merely places of worship of individuals, events, and ideas, but also an influential visual instrument in the creation of (new) societies."* (Makuljević and Murovec, 2013, p.6). Monarchal monuments were thus of great dimensions, designed by most prominent domestic artists, and built from the most quality materials. Even the more modest monuments in smaller towns were given the most distinguished locations. Monarchal monuments were prestige, which was evident in their design, spatial placement, and landscaping. Despite that, *"dynastic monuments [...] saw different formal modernisms being repelled at the idea of authority and monarchy, in any way that was symbolized"* (Čopić, 1976, p.232).

The article discusses a group of monuments erected to the members of the Karađorđević dynasty in the territory of present-day Slovenia during the Kingdom of Serbs, Croats, and Slovenians (1918–1929) and the Kingdom of Yugoslavia (1929–1941). Since the dynasty never ruled the said territory prior to 1918, the monuments served as one of the propaganda approaches to the legitimization of the new rulers of the new Yugoslav state. The majority was dedicated to King Peter I. (ruled between 1918 and 1921), and his son King Alexander I. (ruled between 1921 and 1934).

The key leitmotifs of the majority of Yugoslav monarchal statues were: (1) military power, personified by both kings, especially by Peter I., as a representation of tribulations during the both Balkan Wars and World War I; and (2) the rule of law and justice during the period of peace, with the king being the supreme legislator and the protector of the rule of law (Manojlović Pintar, 2014, p.263–265).

Table 1: Monuments dedicated to kings Peter I. and Alexander I. in Drava Banovina.

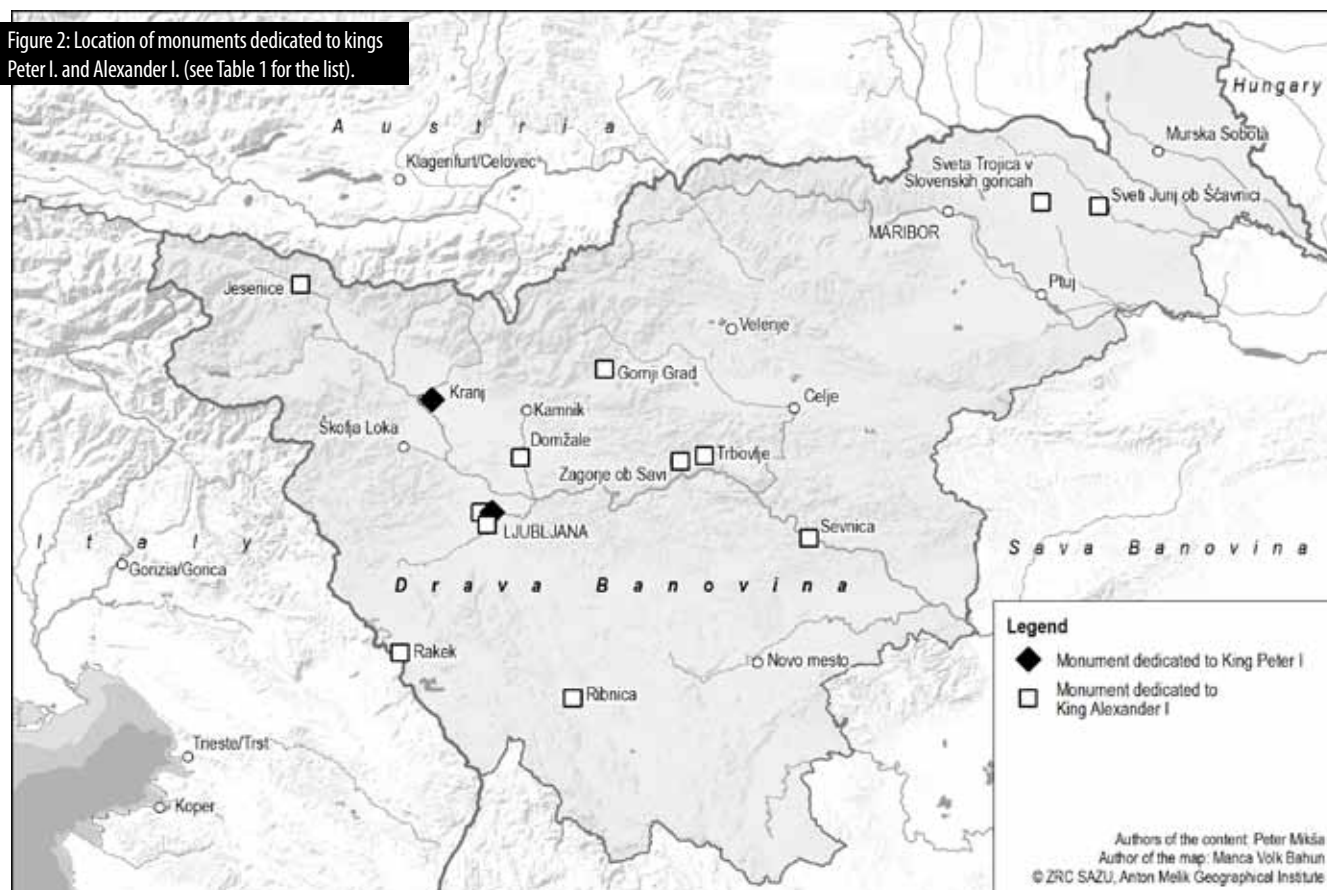
King Peter I.	Location	Date of unveiling	Sculptor
Statue	Kranj, Park Zvezda	August 1, 1926	Tine Kos
Equestrian	Ljubljana, town hall stairs	September 6, 1931	Lojze Dolinar
King Alexander I.	Location	Date of reveal	Sculptor
Bust statue	Domžale, the central intersection	June 8, 1924	Tine Kos
Bust statue	Ljubljana, Tobačna factory	June 16, 1935	Iva Despić Simonović
Waist statue	Ribnica, Sokol Society hall	July 12, 1936	Franc Repič
Bust statue	Gornji Grad, central park	July 19, 1936	Ivan Sajevic
Bust statue	Jesenice, People's School	October 11, 1936	Peter Loboda
Monument	Rakek, railway station	October 17, 1937	Ivan Sajevic
Bust Statue	Sveti Jurij ob Ščavnici, main square school	May 15, 1938	Nikolaj Pirnat
Bust statue	Sveta Trojica v Slovenskih Goricah, town center	June 19, 1938	Lojze Dolinar
Monument	Trbovlje, Sokol Society hall	June 18, 1939	Franc Repič
Waist statue	Sevnica, railway station park	December 1, 1939	Nikolaj Pirnat
Equestrian statue	Ljubljana, Park Zvezda	September 6, 1940	Lojze Dolinar
Bust statue	Zagorje ob Savi, Sokol Society hall	September 8, 1940	Boris Kalin

Figure 1: The Slovene newspapers regularly informed readers about the erection of monuments. In the figure is the cover page of the newspaper Slovenec from September 13, 1931 on the erection of a monument to King Peter I. in Ljubljana.



Hundreds of monuments were erected during the interwar period to the members of the Karađorđević dynasty (Figure 1). The state kept an eye on their quality since the committees in charge greenlit the applications to erect monuments that came from local communities after thorough reviews and correctly executed tenders. If the plans did not meet certain artistic standards, the initiative was denied, while already mounted low-quality monuments were removed from the public spaces (Manojlović Pintar, 2014, p.290). There is no complete list of all monuments dedicated to the Karađorđević dynasty on the

Figure 2: Location of monuments dedicated to kings Peter I. and Alexander I. (see Table 1 for the list).



Slovenian territory. Statues of the royal family adorned state headquarters and economic institutions; their names ended up in documents immured in foundation stones of important new buildings; and after the death of King Alexander I., countless memorial lime trees were planted, especially in smaller towns (Smiljanić, 2019). There was an abundance of memorial plaques, popular in smaller towns due to their inexpensiveness, while a number of free-standing sculptures were created to both kings (Table 1 and Figure 2).

2. MONUMENTS

2.1 Domžale

The first documented public sculpture dedicated to a Yugoslav king was unveiled on June 8, 1924, in Domžale, namely a stone bust of King Alexander I., standing on a granite base with an inscribed letter A. It was carved by the sculptor Tine Kos. It was a result of a private initiative by Andrej Slokar, the doyen of the Domžale charter of the Sokol Society (Spomenik kralja ..., 1924). The location of the statue was thus Slokar's garden, situated prominently by the central intersection. The importance of the location was also implied by the bust of Emperor Franz Joseph I. that had stood there until the collapse of Austria-Hungary. Although the memorial context of the Domžale central intersection fundamentally changed in the span of a couple of years, the location remained. King Alexander himself visited the monument on the anniversary of unveiling. „He stopped in front of the monument and observed his own image. Before he left, he gave Slokar's wife a carnation.“ (Spomeniki Viteškega ..., 1940, p.5). After the assassination in Marseilles, commemorative ceremonies took place at the statue, while a memorial plaque was revealed on October 10, 1937, to remind people of the King's violent death (Spomeniki Viteškega ..., 1940).

2.2 Kranj

The first larger monument to King Peter I. on the Slovenian territory was erected in the former Park Zvezda located between the high school and the People's Hall in Kranj. It was also designed by Tine Kos, but it was on a larger scale than the bust in Domžale. The obelisk (one of the oldest monument designs, devised to tower over its environment) from reinforced concrete was nine meters tall with an oval base decorated by a bronze statue of a kneeling young man (according to some explanations, it symbolized freedom/liberation or gratitude; Globočnik, 2011, p.114), a bronze medallion carrying Peter's profile, and a marble eagle on top of the obelisk. It was unveiled on August 1, 1926, with about 15,000 visitors - including King Alexander I. and Queen Mary (Veličastna ..., 1926). Interestingly enough, the sculptor was ignored during the reveal: „He received an ordinary invitation to the event as if he had to do with the monument as much as any other man. Furthermore, Mr. Kos was even barred from visiting the ceremonial space. He had to elbow through the crowd, or better: he had to infiltrate! The King did inquire about him, but Mr. Kos was never formally introduced to him!“ (Še nekaj ..., 1926, p.4).

The monument in Kranj was erected thanks to the municipal leadership, which was liberal at the time, and therefore sympathetic to the Yugoslav unitarism and the royal family. By founding the first monument to the late King on the Slovenian territory, they wanted to express their loyalty and the progressiveness of the capital of Gorenjska. The location itself reflected that position: Park Zvezda, later named after the heir to the throne Peter II., was the focal point of the newly built part of the town. It evolved outside the medieval town center and symbolized the rise and progress of the freshly industrialized town with its modernistic new buildings. The statue was framed by the People's Hall, the headquarters to many liberal societies of Kranj, which was designed by Ivan Vurnik. The monument was fashio-

ned to correspond with the architecture of the People's Hall, and the symbolic figures that were planned to be put on its façade (Globočnik, 2011).

2.3 Ljubljana

Six years later, a monument to King Peter I. rose in Ljubljana (Figures 3 and 4; Globočnik, 2014; Mikša, 2018). The project was initiated by the Society of reservist officers a few months after the unveiling in Kranj, but there was no mass response: the press criticized the lukewarm reaction and excuses, *„that it is not the right time for such things, that we're in the middle of recession, that unemployment rate is rising, that money shortage can be felt everywhere, etc.“* (Akcijski ..., 1927, p.3). The committee, therefore, had to be frugal: although the first estimate was 1.5 million dinars of income, they only collected 482,000 in five years. 275,000 dinars were spent for the statue itself, and the remainder was donated to charity (V čast ..., 1931). Scarcity of contributions hinted that King Peter I., who was dubbed „The Liberator“ after the war and the unification of Yugoslavia (Jezernik, 2004), faded away less than a decade after his death, while a cult of personality was built around the current monarch, Alexander I. (Manojlović, 1997).

The collected money went into the monument in front of the Ljubljana town hall, which was quite austere compared to the ambitious plans that imagined a majestic space where people could gather, and ceremonies could be organized. Art critic Karel Dobida proposed the statue to be built on a high base similar to the Trajan's Column or the monument to Tegetthoff in Vienna. He imagined the statue to be erected in the middle of Dunajska road or at the end of Miklošičeva road - or to simply build an entirely new square for the monument (Dobida, 1927). First concepts saw the statue in King Peter Square (nowadays Miklošič Park), but in the end, Jože Plečnik's idea to put the monument on the staircase of the town hall prevailed (Komič Marn, 2013). The equestrian statue that has represented the most archetypical way of depicting army leaders since the antiquity or the Renaissance, was carved from the black Podpeč marble by the sculptor Lojze Dolinar. Together with its base, the monument rose four meters up (much lower than the first design that imagined 5,8 meters of height), with an inscription Our Liberator on the front side (Kako ..., 1931). The committee had to decide between different modes of representing the late king since his public image was both of the indomitable military victor and the just legislator (Manojlović Pintar, 2014). Dolinar opted for the synthesis of both approaches: the king was, like many other army leaders, depicted on a horse, but the horse stood in a peaceful manner. In addition to that, Peter did not wear a uniform, but *„some kind of stylized coat with a hood and a raincoat“* (Zabel, 1996, p.188). Individual details of the statue, such as the uncovered rider, the sandals, and the tunic, revealed the ancient influence of antiquity.

The monument was unveiled with pomp on September 6, 1931, as part of the so-called King's Week, a series of events celebrating the 10th anniversary of King Alexander's rule. Up to 100,000 people reportedly participated in festivities. Engineer Ladislav Bevc was the main orator and he emphasized: *„The monument created by our master sculptor Lojze Dolinar is an expression of happiness, pride, and gratitude of the Slovenian folk for the historical fact of liberation and unification. The artist breathed life into stone with love and sacrifice of Slovenian people; the life that will watch over the destiny of our history, which was forever tied to the destiny of the royal house of Karađorđević.“* These words were accompanied by the thunder of cannons on Ljubljana Castle and



Figure 3: Statue to King Peter I. in Ljubljana. Photo archive: Museum of Contemporary History of Slovenia.



Figure 4: Memorial badge received for the erection of the monument to Peter I. in Ljubljana. Photo archive: Royal Collection of the Rogaška Slatina People's Museum.

the loud cheering of the crowds as the monument was unveiled (Govor ..., 1931). What Ljubljana obtained with Dolinar's statue, is its first equestrian monument, many European cities already boasted (Jezernik, 2014).

After Ljubljana got its equestrian monument to the late monarch in its very center, commemorating the loyalty of the capital of the Drava Banovina to the royal family in front of the town hall, the symbol of the city power, they also decided on a sculpture dedicated to King Alexander I. It was a bronze bust on a stone base, erected in front of the Tobačna factory headquarters on June 16, 1935 (Spomenik velikemu ..., 1935). It was the first figurative statue of King Alexander I., erected in pre-set-day Slovenia after his death. It was a cast of already existing statues standing in front of other tobacco factories, for example in Niš, Sarajevo, Banja Luka, and Travnik. Its artistic value was smaller due to the mass production, but the statue was nonetheless prominent for its maker, the sculptor from Sarajevo, Iva Despić-Simonović. She portrayed the monarch in flesh in 1926. The king named the statue the most representative portrait of him (Tobačni uslužbenici ..., 1935, p.4). It is also the first statue in the Slovenian space made by a female artist. The monument was funded by the workers of the tobacco factory. Representatives of King Peter II., the minister of war and finances, attended the ceremony. The main orator was the director of Tobačna factory, Edvard Jili, a native of Bosnia. He reportedly *„greeted the guests like a native, speaking beautiful Slovene. He remembered the great achievements of the late hero emperor in warm and enthusiastic words.“* (Odkritje ..., 1935, p.3).

The biggest monument to King Alexander I. in the Drava Banovina was the equestrian statue in Park Zvezda on Congress

Figure 5: Statue to King Alexander I. on the Congress Square in Ljubljana. It was erected on September 6, 1940. Photo archive: Royal Collection of the Rogaška Slatina People's Museum.



Square in Ljubljana (Figure 5). The idea was raised a week after the king's death when the organization of military volunteers started fundraising. The fiery appeal written by poets Oton Župančič and Alojz Gradnik said: „His outer image, carved in a hard mass of marble and bronze shall be the symbol of victory over the destructive power of Death. [...] Both in the center and on the frontiers, may His monument be the source of faith, steadfastness, and fortitude; the center for all our holidays of joy and sorrow; for all our victories. May it be the haven for all our affliction and anguish, for all our humiliation and defeats. When our spirit yields and diminishes, when our pride and dignity stumble and shiver, may His image comfort and encourage us, lift and enthrall us. Marrying present with future, may our heirs express the gratitude of our memory of His acts and His sacrifice. May he be the fountain that gives us strength, the light that shines, the hearth that warms. And may all the sinister and wicked heed this warning: The King is dead - Yugoslavia remains!” (Rojaki, 1934). Fundraising for this monument gathered more attention than the one for King Peter I. in Ljubljana. If the latter couldn't muster half a million dinars, the monument to Alexander raised 1,600,000 dinars in three years. It was evident that King Alexander became the fundamental figure of the Kingdom of Yugoslavia (Manojlović, 1997).

In March 1935, the monument committee decided Zvezda Park should be the location. They commissioned architect Herman Hus to draw detailed landscaping plans (Stelè, 1940) and opened a tender for a statue design, which received 16 drafts. The process of construction started to complicate at that point since the committee did not award anyone the first prize. In addition, new location ideas started floating. Architect Jože Plečnik also offered a couple of ideas, including the one with propylaea - the colonnades - around the king's statue, which were supposed to add the impression of much needed monumentality, according to the critics: „Alexander's propylaea with the statue and Plečnik's regulation are an enormous architectonic symphony of spatial art, architectural art, monumental plastics, and monumental composition. Alexander's propylaea with the statue of King Alexander in Southern Square shall be the central artistical symbol of the future

metropolis of Ljubljana” (Stupica, 1937, p.7). Numerous artists resisted the idea of propylaea as if to say, „the new statue project is merely architecture that serves the future arrangement of the complete terrain complex, where the sculptural and visual parts are just a decorative motif of absolutely subordinate character and significance” (Naši umetniki ..., 1937, p.3).

The political division between the town hall and the committee further stalled the erection of the statue. The location became an issue once again and in addition to Congress Square, the university garden, entrance to Park Tivoli, and the square in front of the People's Hall (present times National Gallery) were discussed. Architect Hus won the second tender as well, and he envisaged Park Tivoli as the location. Right after that, in the middle of October 1938, another tender invitation was issued, and among 26 contenders, Tine Kos won the first prize. Despite that, the commission to create an equestrian statue went to the second-placed Lojze Dolinar. When they probed the Tivoli location with a scale model, they realized setting up a statue there would cause traffic issues; in addition, the public demanded the statue to be erected in Park Zvezda. Four months before the reveal, the location was finally chosen (Kako ..., 1940).

Sculptor Dolinar designed a colossal equestrian statue and two reliefs (War and Peace) intended as a base. The statue represented Alexander, clothed in a long military coat, stately riding a horse; like a soldier and a warrior on his victory march, holding the scepter, the symbol of power issued by the people. The equestrian statue was 6.8 meters high, standing on a four-meter base (Kako ..., 1940). Dolinar commented on the statue thusly: „I have imagined the king's statue in large dimensions as something enormous that would impress the viewer with both its external form and its internal force. That is how I have imagined the giant statue that is supposed to represent the great idea of unification; and the triumph of the victorious king who won the war, and ruled with dignity Slovenians, Serbs and Croats united in one state. [...] I wanted to depict the warrior-king, the fighter and the winner on his march of triumph, draped in royal coat and holding the scepter of freedom, given to him by the people. That is the reason I have decided to carve the reliefs showing the two main events of a triumphant king: war and peace, victory and rule, soldier and statesman.” (Razgovor ..., 1940, p.3). The incredibly festive unveiling on September 6, 1940, was attended by around 50,000 people. The statue was revealed by the young king Peter II., who celebrated his 17th birthday on that very day (Nj. Vel. ..., 1940).

2.4 Ribnica

The first Town to celebrate Alexander I. with a statue after Ljubljana was Ribnica. On July 12, 1936, his bronze bust was unveiled in front of the Sokol Society hall. It was one meter high and it stood on a two-meter stone base. The project was led by the royal commission of the gymnastics Sokol Society with the mission to commemorate its 30th anniversary. They commissioned a less-known sculptor Franc Repič, who was a member of the society himself (Ribnica ..., 1936). Many speeches were given at the well-attended ceremony and the statue reveal was the climax: „As the national anthem was played, the bronze image of the Greatest Yugoslav slowly appeared [...]. All eyes were on the features of him, who was our Leader, Mentor, and Father. The eyes of the old veterans watered up.” (Sokolska ..., 1936, p.3). It is not surprising many more modest statues of the monarch stood in front of the halls of this society, considering Alexander was a great supporter of the Sokol cause, which evolved into an incredibly strong loyalist movement.

2.5 Gornji Grad

A mere week after the statue in Ribnica was unveiled, namely, on July 19, 1936, a bronze bust of Alexander I. standing on a stone base was erected in the central park of Gornji Grad. Soon after the king's death, the royal committee of Narodna Odbrana assembled a group dedicated to the statue to collect funds. When they reached the necessary amount, they commissioned sculptor Ivan Sajevec to depict the king wearing a uniform with stripes and medals. The statue was well received in the press and a mass of visitors and representatives of various societies attended the ceremony. King's representative, lieutenant colonel Budimir Martinović did the honors. In 1939, a stone fence was built around the statue (Spomeniki Viteškega ..., 1940).

2.6 Jesenice

The third statue of Alexander I. revealed in 1936 was erected in the park in front of the former People's School in Jesenice, present-day Tone Čufar Square. It was a bronze bust on a high stone base; five meters high. The statue was commissioned by the Union of Yugoslav Workers of Prince Andrew from the French town of Amnéville, which was an umbrella organization for 37 chapters of emigrant workers in industrial and mining towns all over France (Spomenik Viteškemu ..., 1936). Originally, another location was considered, namely by the railway in Hrušica, next to the state border, where it would greet all visitors to Yugoslavia. No suitable place was found, so the town hall suggested the school square, which already bore the king's name. They commissioned sculptor Peter Loboda, who designed the entire statue and modeled the bust. He also put a bronze two-headed eagle with the state coat-of-arms on the base, chiseling the dedication by the members of the union. The statue was unveiled on October 11, 1936, the second anniversary of the king's death, with attendance of around 6,000 visitors. About 70 Slovenian workers came from France and they were welcomed convivially by the locals (Spomeniki Viteškega ..., 1940).

2.7 Rakek

The monument of Alexander I. was unveiled with a rich program on October 17, 1937 in front of the Rakek railway station. Rakek became the new center of Notranjska region after the establishment of the Rapallo border with Italy (Mikša and Zorn, 2018) after World War I and the „loss“ of Postojna. The king's statue at the state border sent a message that that was the Yugoslav territory, supposedly encouraging Slovenian residents on both sides of the border (Čopič, 2000, p.347). The competent committee commissioned sculptor Ivan Sajevec to construct the statue. Sajevec, who already made the statue in Gornji Grad, modeled the bronze figure of the king (first full-figure statue of Alexander in present-day Slovenia), dressed in a military coat with his hands resting on a saber. The statue stood on a stone base with carved inscriptions (Prizori ..., 1937).

2.8 Sveti Jurij ob Ščavnici

The first monument to Alexander I. by the northern Yugoslav border (with Nazi Germany at that time) was a bronze bust on a granite base with an inscription plate that was ceremoniously revealed on May 15, 1938, in front of the school building on the main square in Sveti Jurij ob Ščavnici. The funds were collected by the locals (Spomeniki Viteškega ..., 1940). The statue was made by sculptor Nikolaj Pirnat, who depicted the king in a military uniform with a heavily twisted head, placed almost in a profile position. The ceremony was attended by more than

8,000 people, most of whom came from nearby Maribor (Spomenik kralju ..., 1939).

2.9 Sveta Trojica v Slovenskih Goricah

Shortly after the reveal of the statue in Sveti Jurij, another bronze bust on a stone base of the late king was erected not far from Sveta Trojica v Slovenskih Goricah. The plan for the memorial was the work of two engineers, Jelenc and Šlajmer, while the statue of the king, dressed in a military coat with medals, was made by Lojze Dolinar. The erection of the monument was organized by the local Sokol Society. The unveiling of the statue, which happened on June 19, 1938, was attended by thousands of people, with many members of the Sokol Society. The newspaper Jutro emphasized: „*Special emphasis was placed on the enormous attendance of the rural people from all parts of Slovenske Gorice low-hills, so this ceremony turned into a mighty national and state manifestation by the border. By erecting the monument, the Sokol Society commemorated the benevolent knight king and expressed their mission to always be watchful guards of the border and to strengthen the national consciousness, aware that only in national unity is our solution.*“ (Krasna ..., 1938, p.1). Even in the years after the unveiling, the statue in Sveta Trojica reportedly attracted a number of conscious Yugoslavs (Spomeniki Viteškega ..., 1940).

2.10 Trbovlje

Alexander's monument erected by the Sokol Society hall was a full-figure figure. This was another statue funded by the Sokol Society, namely by the Trbovlje charter and a couple of other societies. The leadership of the society raised funds among their members and other people from Trbovlje and commissioned the production of a bronze statue more than two meters high.



Figure 6: Shortly after the occupation of Ljubljana in 1941, the Italians removed the statues of kings Peter I. and Alexander I. They promised that both statues were to be moved to the National Museum, but both statues were destroyed. In the photo, the head of Peter I., which has been preserved and is now kept in the Museum of Contemporary History of Slovenia. Photo: Nani Poljanec.

It was made by the aforementioned sculptor Franc Repič, who had a close relationship with Alexander I. due to his renovation works in the court of Belgrade (Razgovor ..., 1939). He depicted the king in a hiking coat with his hand extended into a speaker's posture. The newspaper Jutro reported before the unveiling: „Trbovlje, the valley of miners, will erect a monument to King Alexander I. The Unifier, telling the entire world that the idea of the Yugoslav statehood is deeply rooted in the people of Trbovlje and that the miner loves Yugoslavia as well.“ (Spomenik Viteškemu ..., 1939, p.3). The monument was ceremoniously unveiled on the 30th anniversary of the Trbovlje chapter of the Sokol Society, on June 18, 1939, with a program prepared by the society and the army. The event included a serenade in front of the house of Franc Dežman, who donated land for the construction of the gym, where the monument stood (V Trbovljah ..., 1939).

2.11 Sevnica

In Sevnica, the idea of a monument dedicated to Alexander I. arose immediately after the king's death. Mayor Franc Tupej formed a committee to erect the monument right away and started collecting funds. The erection of the statue was made possible only by a generous donation from the Jugotaniin company, which contributed two thirds of the required amount of 30,000 dinars. The chosen design for the statue was made by the aforementioned Nikolaj Pirnat and it was a cast of the statue that Pirnat had created at the time of the king's death for the lobby of the University of Ljubljana, which at that time bore Alexander's name. Pirnat depicted the king from waist up, dressed in a coat with arms folded. The bronze statue on a stone base was erected in the park by the train station on December 1, 1939, on Unification Day (Sevničani ..., 1939).

2.12 Zagorje ob Savi

The last sculpture dedicated to King Alexander I. was erected in Zasavje region. In Zagorje ob Savi, the locals intended to unveil a commemorative plaque first, but the local chapter of the Sokol Society decided that the idea was too modest and opted for a bust (Spomenik Viteškega ..., 1940). The bronze bust of the king, dressed in a uniform with medals, was made by sculptor Boris Kalin, while the stone base and the spatial placement were the domain of architect Ivan Spinčič. The ceremonial unveiling of the statue in front of the Sokol Society hall took place on September 8, 1940, celebrating the 50th anniversary of the Zagorje chapter (Spomeniki Viteškega ..., 1940).

3. CONCLUSION

»The Karađorđević monuments were erected as expressions of gratitude to the kings who had liberated the Slovene nation. At the same time, they glorified the ruling dynasty and symbolized the idea of Yugoslavism« (Komić Marn, 2013, p.93). A review of the monuments shows that the figurative (thus the most luxurious) monuments dedicated to the kings Peter I. and Alexander I. were not exclusively a matter of larger settlements and that their location was carefully chosen in every case. The statues adorned local centers, central parks, or Sokol Society halls. Several monuments were strategically erected along the state border, where they were supposed to encourage the Slovenes and other Yugoslavs while acting as a reminder to hostile foreigners. The list of sculptors and architects who designed and created the monuments is full of distinguished names of the Slovenian interwar sculpture and architecture milieu, which points to the strict scrutiny enjoyed by said monuments. Even though the monuments were in the service of propaganda meant to

Figure 7: Italians demolish the statue to King Alexander I. in Ljubljana. Photo archive: Museum of Contemporary History of Slovenia, photo by Miran Pavlin.



Figure 8: A small remnant of Alexander I. bronze monument. Photo archive: Royal Collection of the Rogaška Slatina People's Museum.

strengthen the power of the state, they were also works of art, thanks to carefully selected authors. Unfortunately, none of the monuments described is preserved. During the World War II occupation, statues depicting the former royal dynasty were an unwanted memory of a bygone era in the eyes of the occupiers and were therefore destroyed in the first weeks and months of the occupation (Figures 6–8; Mikša, 2018).

Acknowledgment

The work was partly supported by the Slovenian Research Agency through research programs „Slovenska zgodovina“ (P6-0235) and „Geografija Slovenije“ (P6-0101).

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Domen Kušar: PLANINSKE KOČE V SLOVENSKEM VISOKOGORJU — MED TRADICIJO IN PRIHODNOSTJO MOUNTAIN HUTS IN SLOVENIAN HIGHLANDS — BETWEEN TRADITION AND THE FUTURE

DOI: <https://dx.doi.org/10.15292/IU-CG.2018.06.054-059> ■ UDK: 728.61 ■ SUBMITTED: September 2019 / REVISED: September 2019 / PUBLISHED: October 2019

1.02 Pregledni znanstveni članek / Review Article

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IZVLEČEK

Prispevek obravnava planinske koče v slovenskem visokogorju. Gre za specifične stavbe glede na svoj nastanek, namen, čas uporabe in drugo. V zadnjem obdobju novih gradenj praktično ni bilo, več je bilo le energetske in ekološke sanacije. V večini primerov gre za starejše stavbe, potrebnih prenov ali celo zamenjav. Zanimivo je, da smo v zadnjem času pričali kvalitativnim rešitvam novih bivačev po slovenskih gorah. Glede na razvoj v sosednjih alpskih državah, kjer so zgradili nekaj povsem novih koč (na mestu starih), ki so tako tehnološki kot tudi arhitekturni presežki, želimo ugotoviti stanje naših koč. S pomočjo različnih kategorij kot so nadmorska višina, leto izgradnje in prenov, velikost, dostopnost in oblikovanje stavb smo skušali izluščiti nekatere značilnosti, ki so predstavljene v nadaljevanju.

KLJUČNE BESEDE

arhitektura, planinske koče, Slovenija, visokogorje

ABSTRACT

The article is about mountain huts in the Slovenian highlands. These buildings are specific according to: origin, purpose, time of use, etc. In these area of highlands there were practically no new project in the last few decades. There were only some small interventions in the field of energy efficiency and ecology. In most cases, these buildings are old. They need to be renovated or even replacement. It is interesting that some quality solutions for new bivouacs in the Slovenian mountains have been made. Considering the developments in the neighbouring Alpine countries, where they replaced some old huts with new ones, which they have both technological and architectural surpluses, we want to determine the condition of our huts. With the help of various categories such as elevation, year of construction and renovation, size, accessibility and design of buildings, we tried to extract some of the important features that are presented below.

KEY-WORDS

architecture, highland, mountain huts, Slovenia



Slika 1: Obnovitvena dela na domu Z. Jelinčiča na Črni prsti. Dom je nastal iz nekdanje obmejne vojaške stavbe (foto: avtor).

1. UVOD

Visokogorski svet obsega najvišje predele Slovenije. Gre za obširna področja Julijskih Alp, Kamniško-Savinjskih Alp, Karavank in nekaterih najvišjih vrhov sredogorja. Visokogorje predstavlja področje, kamor človek zaradi zahtevnih pogojev v preteklosti ni zahajal pogosto, prav tako pa se tam tudi ni naseljeval. Človekova dejavnost je bila omejena na občasno bivanje v času poletne paše, lova ali izkoriščanja rudnega bogastva.

Pojav gorskega turizma pred okoli 150 leti je narekoval gradnjo ustreznih prenočitvenih zmogljivostih v visokogorju. Najstarejša planinska koča v vzhodnih Alpah naj bi bila Salmhütte pod Grosglocknerjem, ki je bila postavljena 1799. Prvotna koča se je ohranila le eno leto, današnja je bila končana leta 1929 in dobila prizidek leta 2017 (Salmhütte, 2017). Pri nas je bila prva planinska koča oz. zavetišče na Podih pod Triglavom postavljena leta 1871 (Mikša in Zorn, 2018; Stojin, 2003). Žal je kasneje propadla. Šest let kasneje (1877) je na tem mestu DÖAV (Deutsch Österreich Alpen Verein – Nemško avstrijsko planinsko društvo) postavilo novo kočo (Eržen, 2019, str. 18). Postavljanje planinskih zavetišč je na ozemlju današnje Slovenije sovpadalo tudi z narodnostnim prebujenjem in bojem za prevlado slovenskega jezika v gorah. Velik vpliv na gradnjo planinskih koč pri nas je imela prva svetovna vojna in sprememba meje po njej. V tem času so zgradili veliko poti, žičnic in stavb za potrebe vojske in kasneje nadziranje meje. V mirnem času, zlasti po II. svetovni vojni, so kar nekaj teh stavb spremenili v planinske koč.

Oblika koč je večinoma posnemala tipologijo stavb v dolini, seveda v bolj skromni obliki. To je narekovala težavnost gradnje in okolje, v katerem so stale. Preprosta zavetišča so bila zgrajena

iz lokalnega materiala po vzoru pastirskih zavetišč ali pa so bile pastirske stavbe spremenjene v planinske koč. Z razvojem turizma se je večalo tudi število planinskih koč. Razvoj sta prekinili obe svetovni vojni z uničenjem nekaterih koč. Po drugi strani so zlasti med 1. svetovno vojno bili napravljeni vojaški objekti, ki so bili pozneje preurejeni v planinske koč. Pri nas je bilo največ koč narejenih v letih pred 1. sv. vojno in v času po 2. svetovni vojni (Graf 1). V zadnjih desetletjih gradnje novih planinskih koč v visokogorju ni. Razlogov je več. En razlog je obstoječa, relativno gosta mreža koč, ki večinoma zadostujejo trenutnim potrebam. Drugi razlog so območja zaščitene narave (narodni in drugi parki), kjer je gradnja koč prepovedana ali zelo omejena. Tretji razlog je povezan z velikimi stroški gradnje in vzdrževanja koč v visokogorju, kjer sezona običajno traja le nekaj mesecev.

Večina sedanjih koč je relativno stara, saj so bile v povprečju postavljene pred več kot petdesetimi leti. Koče se je ves čas vzdrževalo, obnavljalo, predelovalo, povečevalo (slika 1). V zadnjih desetletjih je bil poudarek na izboljšanju preskrbe z energijo in zmanjševanju onesnaževanja. V ta namen so lahko lastniki koristili tudi evropska sredstva in sredstva za čezmejno sodelovanje. Tudi zunanja podoba se je spreminjala, tako da je le redkokatera koča takšna, kot je bila ob nastanku.

Tudi drugod po Alpah se srečujejo s problemi vzdrževanja starih koč oziroma gradnjo nadomestnih koč. Ena starejših koč je Olpererhütte v Avstriji, ki je bila postavljena leta 1881. Zaradi zahtev po modernizaciji in varstvu pred požarom, ki jih stara koča ni mogla izpolnjevati, so kočo ob sto petindvajset letnici leta 2006 porušili in naslednje leto postavili novo (Olpererhütte). Podobno so v nemškem Wettersteingebirgu leta 2013 podrli staro Höllentalangerhütte (1381 m) in jo v letih 2014-15 nadomestili s popolnoma novo, drugačne oblike (Gesell, 2015). Spomin na staro je ostal v leseni zunanji oblogi. Nova koča sodi med 10 najlepših bavarskih planinskih koč (Pärsch, 2017). Podobno so storili Švicarji, ki so namesto več kot 100 let stare koč Monterossa leta 2009 postavili sodobno, praktično energetska samozadostno in ekološko neoporečno, leseno, prefabricirano planinsko kočo, s futuristično fasado v obliki kristala (Girardier, 2015).

Za razliko od planinskih koč so bili v zadnjem času zamenjani nekateri bivaki v visokogorju. Ti so bili sodobno oblikovani, uporabljena je bila najnovejša tehnologija, zlasti plošče iz križnolepljenega lesa. Nekateri novi bivaki so bili tudi nagrajeni kot kvalitetna arhitektura (Kajzelj, 2019, str. 22). Žal pri prenovah planinskih koč ne moremo govoriti o arhitekturnih presežkih.

Graf 1: Število koč glede na leto postavitve.



Razlogov za to je več. Verjetno je glavna razlika med sodobnimi bivaki in prenovljenimi kočami ta, da so bivaki bistveno manjše stavbe, kar pomeni, da za njihovo izvedbo niso potrebni veliki finančni vložki. Poleg tega večina koč obratuje le nekaj mesecev poleti, v ostalem delu leta pa so zaprte in ne prinašajo dohodka. Tu je potrebno omeniti tudi planinsko miselnost pri nas, kjer so poti označene in zato ni potrebno najeti vodnika, prav tako je brezplačna gorska reševalna služba, v koči lahko jemo s seboj prineseno hrano itd. Ob tem je potrebno vedeti, da so bolj oblegane koče tiste na bolj atraktivnih lokacijah (okolica Triglava...). Te se lažje (ekonomsko) vzdržujejo, ostale pa težje. Vzdrževanje t.i. »planinskega turizma« tako sloni na prostovoljnem delu mnogih ljudi po številnih planinskih društvih, ki skrbijo za urejenost poti, obnovitvena dela na kočah in podobno. Zato je denarja že za vzdrževanje malo, misliti o novogradnji pa je skoraj greh. V turistično bolj razvitih predelih Alp (Italija, Avstrija, Švica ...) so posamezni deležniki turistične ponudbe bolj povezani in se medsebojno podpirajo, oziroma podpirajo tudi finančno manj perspektivne dejavnosti, ki pa so potrebne za delovanje območja kot celote.

Uničenje koč zaradi plazov (Dolič) in požarov (Korošica, Okrešelj), ki smo jima bili priče v bližnji preteklosti, lahko pomenijo samozpravevanja stroke in vseh deležnikov, kako graditi (obnavljati) planinske koče. Prvo uničeno kočjo so obnovili na mestu stare, kljub opozorilu strokovnjakov, da je lokacija zaradi plazov neprimerna. Žal tega niso upoštevali in niso postavili nove kočje nekaj sto metrov višje na varni lokaciji (Kajzelj, 2019, str. 26). Obnova pogorele kočje na Korošici (trenutno je narejen projekt) k sreči ni šla v smeri ponovne zgraditve enake kočje, pač pa kaže, da bodo postavili sodobno stavbo. Razlog za tako dejanje je tudi v tem, da obstoječa kočja ni bila arhitekturni presežek, poleg tega se ni zgledovala po »arhitekturi« bližnjih pastirskih planin oziroma doline, hkrati pa tudi ne stoji v narodnem ali naravnem parku.

Ta dva primera kažeta kompleksnost oziroma anarhičnost stanja na tem področju pri nas. Prav zato smo analizirali planinske koče v visokogorju in skušali določiti značilnosti obstoječih planinskih koč. Analiza sedanjega stanja lahko odgovori na vprašanje ali skupne značilnosti slovenskih planinskih koč sploh obstajajo in bi jih bilo treba upoštevati tudi v prihodnje ali ne? Primerjava z nekaterimi uspešnimi primeri iz alpskega sveta v tujini pa bi skušala določiti smernice nadaljnega razvoja. Rezultati bodo uporabni za prostorske načrtovalce občin, zavodov, arhitekta ter člane planinskih društev, ki načrtujejo prenove obstoječih ter morebitne gradnje novih planinskih koč.

2. METODA:

Geografska opredelitev visokogorja ni enotna (Gams, 2002). Gozdna meja kot eden poglavitnih kriterijev za opredelitev visokogorja v Sloveniji, se spreminja od nekaj čez 1400 m do okoli 1900 m nadmorske višine (v nadaljevanju: m.n.v.). Odvisna je od lege, reliefa, padavin, podlage... Bolj natančen je Planinski terminološki slovar, ki arbitarno opredeli visokogorje kot svet, ki v naših geografskih širinah sega nad 2000 m.n.v. (Humar, 2002). Planinska zveza Slovenije, ki je s svojimi članicami (društvi) lastnica koč, v svojih dokumentih večkrat uporabi besedo »visokogorje«, vendar je podrobno ne opredeli. Pri opisu, kaj pomeni izraz planinska kočja, se izrazu visokogorje izogiba. Kategorizacija koč sledi Pravilniku o planinskih kočah, bivakih in planinskih učnih središčih (2017), ki kočje razvrsti v tri kategorije. Kategorizacija je odvisna od lege kočje, zlati pa od dostopnosti za obiskovalce in oskrbo. Koče I. kategorije so tiste, ki se nahajajo v Julijskih Alpah, Karavankah, Kamniško-Savinjskih Alpah in na Snežniku. Do njih je možen le peš dostop (vsaj 1 uro hoje),

prav tako pa po cesti ni možen dovoz za oskrbo. Kategorizacija koč opravi komisija. V obravnavanem prispevku smo se, ne glede na določila Planinskega terminološkega slovarja, omejili na kočje, ki so na nadmorski višini nad 1600 m.n.v. in to ne glede na dostopnost. Ta višina je v naših gorah blizu meje dostopnosti s terenskimi vozili kot najbolj enostavnega načina za oskrbo koč. Po podatkih PZS (2019) je v Sloveniji 161 planinskih koč in zavetišč ter 17 bivakov. Ker v praksi pri nas ni razlike med zavetiščem in kočjo (Gomiščkovo zavetišče na Krnu je npr. v bistvu planinska kočja) smo obravnavali oba tipa. Od 161 koč in zavetišč jih kar 134 leži pod 1600 m.n.v. Od teh, nižje ležečih planinskih koč, jih samo devet ni dostopnih z vozili. Sedem od teh devetih pa ima oskrbo urejeno s tovorno žičnico. Dostop z vozili ali žičnico pomeni lažji dovoz materiala in izvedbo prenove. Po drugi strani so nižje ležeče kočje bolj vpete v lokalno arhitekturno krajino oziroma so v odnosu z njo, kar se odraža tudi v njihovi podobi. Planšarska naselja, kot primer arhitekture v naših planinah, segajo do okoli 1600 m.n.v. in so del arhitekturne krajine, ki jo Mihelič in sod. (2015) opredeli kot prostorsko enoto, ki ima zaradi posebnih geografskih, podnebnih ... in drugih okoliščin podobne arhitekturne značilnosti in razpoznavno identiteto. Ta identiteta stavb se je razvila skozi zgodovino in večinoma zajema uporabo lokalnega gradiva, likovnega izročila in obrtno-tehniškega znanja prebivalcev. Koče v visokogorju so praviloma zelo oddaljene od ostalih stavb in težje dostopne. Zato je v obravnavanih kočah, ki vse ležijo nad 1600 m.n.v., težko govoriti o sestavnem delu arhitekturne krajine, četudi so ponekod opazni vplivi arhitekturnega izročila doline. Po podatkih Planinske zveze Slovenije (Planinska zveza Slovenije, 2019) je koč, ki ležijo nad 1600 m.n.v. 27, od tega 18 v Julijskih Alpah, 4 v Kamniških in Savinjskih Alpah, 4 v Karavankah in ena na Snežniku. Ne glede na to, da je Kocbekov dom na Korošici pogorel in ga praktično ni več, smo ga vseeno vzeli v obravnavo. Podatki o kočah so bili pridobljeni na spletnih straneh Planinske zveze Slovenije (Planinska zveza Slovenije, 2019), iz člankov v Planinskem vestniku (di Bartolomeo, 2018; Strojnik, 2003) in ogledih večine obravnavanih koč. V raziskavi smo ugotavljali naslednje podatke:

- nadmorsko višino,
- velikost,
- način oskrbe,
- dostopnost za obiskovalce,
- število stavb na lokaciji,
- tlorisno obliko kočje,
- tip strehe,
- material zunanje opne (zidov in strehe),
- število prenov.

Pridobljeni podatki so bili obdelani s programom Microsoft Excell.

3. REZULTATI

Na oblikovanje planinskih koč vplivajo različni dejavniki. Eden izmed njih je gotovo lega. Nižje kočje naj bi bile običajno lažje dostopne tako za obiskovalce kot tudi za oskrbovanje. Raziskava je pokazala, da večina obravnavanih koč stoji na nižji nadmorski višini – to je od 1600 m.n.v. do 1800 m.n.v. (graf 2). Glede dostopnosti se je pokazalo, da so le tri dostopne za obiskovalce s prevoznimi sredstvi kot so avto, avtobus, žičnica. Več kot tri četrtine je dostopnih le peš. Pri tem traja čas hoje od najbližjega izhodišča več kot eno uro (graf 3). To pomeni, da so obravnavane planinske kočje pomembne za tiste obiskovalce, ki cenijo to obliko rekreacije. Zaradi spremenjenega načina obiskovanja

Graf 2: Število koč glede na nadmorsko višino.



Graf 3: Število koč glede dostopnosti za obiskovalce.



Graf 4: Število koč glede na število ležišč.



Graf 5: Delež koč glede na način oskrbe.



gora, zlasti dostopnosti, je marsikatera nižje ležeča planinska koča izgubila status planinske koč in se spremenila v gostišča (s prenočišči). Temu primerna je tudi kapaciteta koč glede prenočišč (graf 4). Povprečno je v obravnavanih kočah nekaj čez 80 ležišč (82.5) v sobah in skupnih ležiščih. Večje število ležišč imata le najbolj oblegani koči in sicer Koča pri Triglavskih jezerih (207) in Triglavski dom na Kredarici (341).

Glede oskrbovanja smo koč razdelili v tri kategorije. V prvo sodijo tiste, ki so med obratovalno sezono dosegljive z (terenskim) vozilom. Oskrba takih koč je najpreprostejša. Druga možnost je (tovarna) žičnica, ki od spodnje postaje, dostopne z vozilom, potrebuje prepelje v neposredno bližino koč. V tretjo kategorijo sodijo koč, kjer je oskrbovanje običajno možno s helikopterjem, peš oziroma s konji. Raziskava je pokazala, da se samo 18 % koč oskrbuje po cesti in 30 % z žičnico. Največ (52 %) je tistih, ki imajo drugačen način oskrbe (graf 5), kar pomeni veliko oviro pri vzdrževanju in prenovah koč.

Ker večina koč stoji na kraškem terenu oziroma blizu vrhov, imajo urejeno zbiranje kapnice v ustrezne cisterne. Glede na količino in časovno razporeditev padavin – slovensko visokogorje je eden bolj namočenih delov celotnih Alp (Ogrin, 1996), zbrana količina ob skrbnem ravnanju z vodo zadošča. Vendar je potrebno poudariti, da v večini koč tuširanje za obiskovalce ni možno. Kjer je v bližini koč izvir ali drug uporaben vir vode, so ga izkoristili za oskrbo stavbe. Če so pred desetletji za preskrbo z elektriko skrbeli agregati, danes čedalje več koč uporablja fotovoltaični sistem ter energijo vetra. Fotovoltaične sisteme so večinoma nameščali v zadnjem desetletju prejšnjega stoletja.

Vrsto gradbenega materiala je pogojevala lokacija in dostopnost stavbe. V Sloveniji gre predvsem za kamen in les, kot najlažje dostopna gradbena materiala. Pri kombinaciji tega

materiala gre običajno za spodnji zidan del in zgornji lesen del. S tem se je zaščitilo vremensko bolj občutljive lesene elemente pred uničenjem zaradi vlage. Koče so namreč večinoma postavljene na območja z dolgotrajno in visoko snežno odejo (Slovenske Alpe jutri, 2019). V tujini se pri obnovi in menjavi koč čedalje bolj uporabljajo prefabricirani leseni elementi, narejeni iz križno-lepljenega lesa. V tovarni tako naredijo stene, strope s ključnimi izvrtaninami, toplotno izolacijo itd. Namesto gradbenega žerjava elemente na mesto montaže pripelje helikopter. Pri tem uporabijo lokalni material – les. Poleg tega tak način omogoča hitro postavitve stavbe, kar je pomembna prednost v okolju, kjer je gradbena sezona kratka in nepredvidljiva. V slovenskem visokogorju se je ta »nov« način začel uveljavljati pri postavitvi bivačkov.

Osnovna oblika koč je kvader s streho. S kasnejšimi prizidavami in dozidavami se je osnovnemu delu dodajalo volumne, ki so ustrezali zahtevam časa, lastnika in mikrolokaciji. Raziskava osnovne oblike tlorisa je pokazala, da se pravokotnik pojavi le v 44.4 %. V ostalih primerih gre večinoma za sestavljen lik več različnih pravokotnikov. Slednje je običajno posledica različnih dozidav, ki so bile izvršene zaradi povečanja kapacitet ali izboljšanja lastnosti stavbe. Po zbranih podatkih so le štiri koč, ki niso doživele večje prenove ali dozidave. Kar enajst koč je bilo vsaj 3x adaptiranih. Povprečje adaptacij pa je preko 2. Število prenov je verjetno podcenjeno, saj vse gotovo niso dokumentirane. Za pridobivanje dodatnih prostorov so lastniki izvedli potrebne dozidave ali pa gradnje dodatnih manjših pomožnih objektov, kot so npr. zimske sobe, postaje žičnic, skladišča... v neposredni bližini glavne stavbe. Pričakovali bi, da gre v primeru planinskih koč za osamljene stavbe, vendar temu ni tako. Le v sedmih primerih (25,9 %) obravnavanih stavb je na lokaciji le ena sama stavba, v vseh ostalih primerih so v neposredni bližini še druge (največkrat pomožne) stavbe (slika 2).

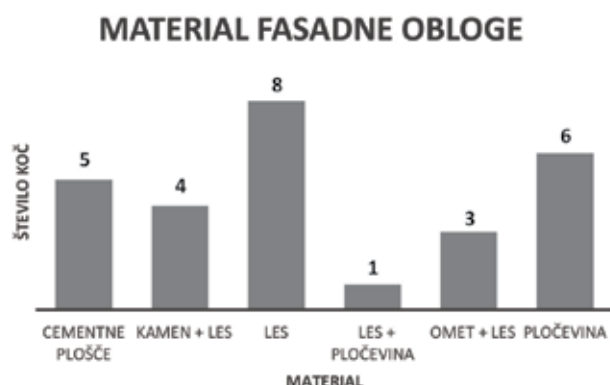
Slika 2: Dom Planika pod Triglavom. Na tem mestu je stalo prvo zavetišče že leta 1871. Poleg glavne koče stojijo na lokaciji še trije pripadajoči objekti (foto: avtor).



Zunanja opna, naj bo streha ali pa zaščita zunanjih sten, mora ustrezati različnim zahtevam gorskega okolja. Preprečevati mora prehod vlage (dež, sneg) skozi konstrukcijo. Hkrati mora biti obstojna pri močnih vetrovih in prenašati težo velike količine snega. Obenem mora omogočati enostaven transport iz doline. Prvotno so bile stene koč zaščitene s skodlami. Tako ima danes slaba tretjina (29.6 %) stavb leseno zunanjo oblogo. Tem sledi pločevina (22.2 %), ki se je pojavila po prvi svetovni vojni, ko je bila pobrana z opušenih vojaških objektov kot uporabna kritina. Pri prenovah v bližnji preteklosti se je zaradi odličnih lastnosti in trpežnosti uveljavila tudi trapezna pločevina. Zunanja obloga sten je tudi viden kamen, omet, betonske plošče in kombinacija različnih materialov (graf 6).

Z zunanjo opno je povezan tudi tip strehe. Prvotno so bile planinske koč narejene po principu stavb v dolini. Običajna streha je bila dvokapnica. Tako streho ima danes približno dve tretjini (63.0 %) planinskih koč v visokogorju. Sprememba v tipologiji strehe je nastala po I. in še zlasti II. svetovni vojni, s spremembo namembnosti nekdanjih vojaških objektov. Pojavile so se enokapnice, položna streha in tudi ravna streha. Naklon strehe, manjši od 22°, ima tako kar osem koč, večjega pa devetnajst. Že omenjena uporaba pločevine je omogočila tudi uporabno izvedbo mansardnih in bolj položnih streh, kakršni sta npr. koči na Kamniškem in Kokrskem sedlu ter Korošici. Sprememba oblike strehe in kritine je bila kljub nekaterim pomislekom izvedena z utemeljitvijo nekaterih članov PZS, da naj bi se tako zbralo več

Graf 6: Prevladujoča zunanja obloga zidov.



kapnice (ustni vir). Tovrstna moda uporabe pločevine je bila zlasti v 80. letih preteklega stoletja, uporabili pa so jo tudi namesto prvotno predvidene lesene obloge pri Domu na Komni (Kajzeli, 2019, str. 26).

Arhitekturni vidik prenove koč usmerjajo prostorski načrti občin. Slednji predvsem sledijo arhitekturni tradiciji stavb »doline« oziroma zgodovinskim oblikam obstoječih stavb in to želijo ohraniti (Občinski prostorski načrt občine Bovec, 2008). Dovoljujejo le manjše posege, kot so vzdrževalna dela rekonstrukcije, ter gradnja v zvezi z ekološko in energetsko sanacijo stavbe (Odlok o... Bohinj, 2017). Povečanje objekta ali kapacitet je prepovedano. Poleg tega predstavlja omejitev pri posegih tudi lega v zavarovanih območjih. Vse obravnavane koč ležijo ali v narodnem parku ali pa v varovanih območjih Natura 2000. Šestnajst koč leži v Triglavskem narodnem parku (krajše TNP). Zakon o TNP (2010) sicer prepoveduje gradnjo novih planinskih koč »zunaj naselij in razpršene poselitve«, ne nasprotujejo pa prenovam. Zahteva pa, da se kapacitete koč ne povečujejo.

Izkušnje iz tujine kažejo, da je smiselno arhitekturno tradicijo upoštevati pri nižje ležečih stavbah, ki so bolj povezane z arhitekturo okolice, kot pa v visokogorju. V visokogorju so bližnji prostorski vzori skalni stolpi, stene, balvani in druge naravne oblike. Drug vzor predstavljajo kristali kot primer naravne geometrijske urejenosti, kar so upoštevali tudi Švicarji pri zamenjavi koč Monterossa (Girardier, 2015).

V tujini pri prenovah in zamenjavah stremijo k temu, da je prenova kvalitetna tudi z arhitekturnega vidika. Tam sledenje starim oblikam ni vedno na mestu. Ker so planinske koč del turistične ponudbe, predstavljajo koč, ki so s svojo arhitekturno podobo presežek, magnet za obiskovalce. Zato ni nenavadno, da zamenjajo tudi več kot sto let staro koč s popolnoma novo.

4. ZAKLJUČEK

Planinske koč v slovenskem visokogorju s svojo obliko in pojavnostjo odsevajo duh časa, v katerem so nastale in »živele«. Glede na zgodovinske, naravne, materialne in družbene danosti lahko govorimo o veliki pestrosti teh stavb. Z različnimi prezidavami, dozidavami in podobno se je osnovna arhitekturna podoba stavb spreminjala. Del naših koč izvira iz nekdanjih vojaških objektov, kjer je bila oblika podrejena funkcionalnosti. Ne glede na delno navezanost arhitekture koč na arhitekturno izročilo doline, lega izven območij arhitekturnih krajin dopušča tudi sodobno oblikovanje, ki ne sloni na neposrednem arhitekturnem izročilu doline, ampak sledi racionalni uporabi lokalnih materialov in funkcionalnim zahtevam v zahtevnih klimatskih razmerah (slika 3).

Po drugi strani obstoječe koč v visokogorju večinoma ne ustrezajo sodobnim zahtevam varstva pred požarom. Te so v gorskem okolju specifične. Lokacija, običajno nedostopna gasilskim vozilom, pomeni težavo za gašenje, kar se je izkazalo pri požaru na Korošici. Drugi problem je odkrivanje in javljanje požara, kar se je pokazalo na Okrešlju. Naslednji problem so evakuacijske poti. Večina koč ima le eno stopnišče, ki ne ustreza zahtevam po zaščitenem stopnišču (TSG 1 001: 2019). V primeru požara, zlasti v nočnem času, bi bile posledice lahko katastrofalne. Problem evakuacije v tujini običajno rešijo s fiksno zunanjo lestvijo, ki omogoča bolj zahtevno, a še vedno varno pot pobege po zunanji steni.

Visokogorje je ohranjen naravni svet, v katerega naj bi se čim manj posegalo. Vendar zgledi iz tujine, zlasti iz Alp, kažejo, da je večkrat bolje porušiti staro stavbo in postaviti novo, ki je sodob-

no oblikovana, energetska samooskrbna in emisijsko neproblematična, kot pa prenavljati malo tu in malo tam. Prvi preizkus pri nas bo nova koča na Korošici. V kolikor bo ambiciozen predlog (slika 4) uresničen in bo postal vzorčen primer uspešne prenove, bo to lahko vplivalo tudi na deležnike pri odločitvah za prenove oziroma gradnjo nadomestnih stavb.

Če predpostavljamo, da je v mentalni podobi obiskovalcev tipična planinska koča »hiša«, ki ima spodnji del zidan ali lesen, na vrhu pa tipično dvokapnico z naklonskim kotom nekje med 40° in 60° in morda še čop, je takih koč sedaj v visokogorju le dobra polovica. Ostale pa od te podobe že sedaj odstopajo.

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Slika 3: Gomiščkovo zavetišče na Krnu. Koča, ki z lokalno, dolinsko arhitekturo strme simetrične dvokapnice z napuščem nima dosti povezave. Bolj spominja na skromne hiše kje na Arktiki, kjer so vremenski pogoji večinoma podobni našim visokogorju in torej ustreza definiciji po »hiši«, ki je prilagojena zahtevam okolja (vir: www.hribi.net).



Slika 4: Izgled novega Kocbekovega doma na Korošici (vir: Rok Bordon – z dovoljenjem avtorja).

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Manja Kitek Kuzman, Martina Zbašnik-Senegačnik: PROCESI DIGITALIZACIJE V ARHITEKTURI: LES IN LESENE KONSTRUKCIJE

DIGITALIZATION PROCESS IN ARCHITECTURE: WOOD AND WOOD CONSTRUCTIONS

DOI: <https://dx.doi.org/10.15292/IU-CG.2018.06.060-067> ■ UDK: 624.011.1:004 ■ SUBMITTED: September 2019 / REVISED: September 2019 / PUBLISHED: October 2019

1.02 Pregledni znanstveni članek / Review Article

IZVLEČEK

Oblike, ki jih je izoblikovala narava, so bile vedno inspiracija za oblikovanje grajenega okolja. Narava je namreč oblike organizmov in procese v njih razvila v smislu največje optimizacije. Organska arhitektura nastaja na podlagi študij oblik v naravi; te po pravilu skorajda niso ravne, ampak zaobljene. Načrtovanje in izvedba takih oblik pa je težja od ortogonalnih in zahteva dobro prostorsko predstavo, poznavanje geometrije in tudi primerna fizična orodja. Digitalizacija je pripeljala tudi do razvoja orodij za načrtovanje zahtevnih geometrijskih oblik, ki s preprostimi pripomočki niso bili obvladljive. Z digitalnimi orodji je danes mogoče načrtovati in oblikovati konstrukcije in konstrukcijske elemente, ki odstopajo od ortogonalne prakse in tvorijo kompleksne upognjene ravnine. Digitalizirani procesi so stopili tudi v druge panoge, ki so vezane na gradnjo stavb, in spremenili način dela pa tudi končne produkte. Arhitektom, oblikovalcem in inženirjem so na voljo zmogljiva analitična orodja, s katerimi lahko ustvarijo nove oblike, napovedujejo njihovo vedenje in oblikujejo učinkovite proizvodne strategije. Dosedanjim gradivom, ki so bila značilna za organsko oblikovano arhitekturo, se pridružujejo novi leseni inženirski proizvodi, katerih prednost je visoka nosilnost glede na težo, dobra dimenzijska stabilnost in fleksibilnost v konstruiranju večjih dimenzij in so zato idealen material za uresničevanje ambicioznih konstrukcijskih oblik z digitalno podprto tehnologijo oblikovanja in izdelave. Klasičnim načinom gradnje se pridružuje tehnologija 3D tiska, tudi z lesom, ki že omogoča nastanek stavb večjega formata. V članku so predstavljeni digitalizirani procesi v arhitekturi s primeri najnovejših realiziranih projektov, pri katerih so bili vključeni v fazah nastajanja.

KLJUČNE BESEDE

digitalizacija, les, lesene konstrukcije, arhitektura

ABSTRACT

Organic, flowing natural forms have always been the inspiration for creating a built environment. Nature has developed the forms of organisms and their processes in terms of maximum optimization. Organic architecture is based on studies of forms in nature; as a rule, they are almost not straight but rounded. The design and implementation of such shapes, however, is more difficult than orthogonal and requires a good spatial performance, knowledge of geometry and also suitable tools. Digitization has also led to the development of designing complex geometric shapes - free form shape that were not manageable with simple tools. Thanks to the potential of computing, parametric design and digital manufacture, it is now possible to design structural elements and structures that deviate from orthogonal practice and form complex shapes. Digitized processes have also entered other industries, which are related to buildings construction and changed the way they work, as well as finished products. Architects, designers and engineers are provided with powerful analytical tools to create new designs, predict their behavior, and formulate effective production strategies. The current materials that has been typical for organic architecture joined new engineered wood products, which have the advantage of high load-bearing capacity, good dimensional stability and flexibility in larger dimensions. Engineered wood products offers greater design freedom for ambitious construction and manufacture technology. The classic construction methods are joined by a novel 3D printing technology, including 3D printing with wood filaments, which already allows large building structures. The article presents digitalization processes in architecture – with examples of the most recent realized projects in which they were involved in different design stages.

KEY-WORDS

digitalization, wood, timber constructions, architecture

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MASTER THESIS

»It will evidently follow, upon our application of this test of natural resemblance, that we shall at once conclude that all perfectly beautiful forms must be composed of; since there is hardly any common natural form in which it is possible to discover a straight line« (Ruskin, 1981).

1 UVOD

Še pred dvema desetletjema je bilo v arhitekturnih birojih nekaj računalnikov, večinoma so se uporabljali za pisanje tekstov in vodenje računovodstva. Ob prelomu tisočletja pa so posodobili opremo z računalniki, skenerji, tiskalniki ter softverjem kot so AutoCad, ArchiCad, Maya, Rhino... Danes ni več arhitekturnega biroja brez digitalne tehnologije. Vprašanje ni, če je ta dobra ali slaba, ampak samo, kakšna je smer, ki jo arhitektura ubira pod njenim vplivom (Picon, 2010). Soočeni smo s številnimi tehnološkimi inovacijami, spremembe, ki jo prinašajo, pa imajo velik vpliv na arhitekturno oblikovanje.

Do razvoja digitalne arhitekture je nedvomno prišlo zaradi želja po oblikah, ki so bile z obstoječimi orodji nemogoče. Do zgodnjih 90-tih je bilo sofisticirano geometrijsko oblikovanje sinonim za paraboloidne in hiperboloidne oblike, kot npr. v betonskih lupinah ali nateznih konstrukcijah ali gladke ter ohlapno definirane oblike vlite plastike ali pnevmatske konstrukcije. Širjenje računalnikov je to spremenilo, digitalni arhitekti so dramatično povečali formalni vokabular. Nova ni samo različnost samih oblik, ampak tudi možnost, da se te oblike natančno določijo z uporabo računalniškega modeliranja (Bianconi et al., 2019).

Digitalna arhitektura je ponovno oživila posnemanje oblik iz narave. Arhitekturne oblike so skozi zgodovino temeljile na geometrijskih linijah, prisotnih v naravi. Prvim civilizacijam so bile oblike v naravi navdih za oblikovanje enostavnih osnovnih geometrijskih likov. Krog, elipso, trikotnik in pravokotnik so povezovali v harmonične proporcije (npr. zlati rez), ki so bile generator logaritmčnih spiral (Hemenway, 2008). Spirale so prisotne v volutah ionskih stebrov. Najstarejša primera spiralne stavbe sta Babilonski stolp in minaret Velike mošeje Sammara v Iraku (Birindelli and Cedrone, 2012) (Veliko kasneje, 1959, je kot primer spiralne stavbe nastal Wrightov Guggenheimov muzej v New Yorku (Slika 1)). Etruščani so iz osnovnih geometrijskih likov razvili lok in obok, Rimljani so ta razvoj nadgradili s kupolo. Gotska arhitektura je prevzela grško geometrijo in ji dodala keltsko posnemanje oblik iz narave. Renesansa je utemeljila arhitekturo kot novo znanost. Zahtevala je, da mora biti vsak del stavbe integriran v enega izmed sistemov matematičnih razmerij – pravilo, ki je predhodnica matematičnih zakonitosti, vključenih v digitalna orodja za oblikovanje in projektiranje.

V arhitekturo se z digitalnimi orodji ponovno vrača pojem organska arhitektura. Prvič se je pojavil na začetku 20. stol., izhaja iz idej Viollet-le-Duca in Johna Ruskina. Le-Duc je bil kot mnogi teoretiki 19. stol. prepričan, da arhitektura v nasprotju s slikarstvom in kiparstvom narave ne sme enostavno imitirati, ampak mora posnemati predvsem naravne zakone (Viollet-Le-Duc, 1854–1868), Ruskin pa, da mora lepota izhajati iz narave in biti oblikovana po človeku (Ruskin, 1981). Wright je njune ideje dopolnil z Sullivanovim aksiomom »form follows function« in razvil organsko arhitekturo, ki v zasnovo stavbe rahločutno vključuje naravo in se z njo popolnoma zlije (Wright, 1963) (Slika 2). Gaudí je preučeval statične sile v naravi. Stebri v njegovi arhitekturi so pogosto posnetek debel dreves, ki jih je narava skozi evolucijo optimirala (Zerbst, 2005) (Slika 3). Organska arhitektura išče inspiracije v naravi tudi s posnemanjem oblik živih organizmov. Te so skozi evolucijo nastale kot odgovor na zunanje vplive. Buckminster Fuller je vire za izčrpne strategije



Slika 1: Guggenheimov muzej, New York, 1959, Frank Lloyd Wright. Muzej je vlit v betonski stolp v obliki logaritmčne spirale, ki se dviguje proti dvanajstkupolni strehi. (Foto: Zbašnik-Senegačnik)



Slika 2: Hiša Hanna, San Francisco, 1936, Frank Lloyd Wright. Hiša je zrasla iz tal. (Foto: Kitek Kuzman)

oblikovanja kupol našel v radiolarijah, enoceličnih, radialno simetričnih praorganizmih, ki jih je s pomočjo poznavanja geometrije prevedel v arhitekturne konstrukcije. Številnim arhitektom so bile navdih (Fuller, 2005). Oblika Eifflovega stolpa je bila inspirirana s človeško stegnenico, ki dobro prenaša ekscentrične obremenitve, strop Kristalne palače pa posnema obliko orjaškega lokvanja vrste Victoria Amazonica. Biomimikrija je sestavni del arhitekturnega načrtovanja tudi v 21. stol. Norman Foster je obliko Gherkin Tower v Londonu (2003) našel v morski kumari, ki se z okroglo obliko upira močnim vodnim tokovom v globini morja (Benyus, 2008).

Mojstrovine Wrighta, Gaudija, Fullerja in drugih so nastale zaradi izredne geometrijske predstave avtorjev. Idejne zasnove konstrukcij so preverjali z modeli z različnimi tehnikami in materiali. Njihovi arhitekturni dosežki so bili izjemni, posnemovalcev pa



Slika 3: Park Güell, Barcelona, 1900–1914, Antoni Gaudí. Gaudí v svojih delih pogosto posnema oblike iz narave. (Foto: Zbašnik-Senegačnik)

zaradi zahtevnosti načrtovanja zelo malo. Digitalizacija načrtovalskih procesov je to spremenila. Oblike, ki s klasičnimi risarskimi in geometrijskimi pripomočki do sedaj niso bile enostavno obvladljive, omogočajo nova digitalna orodja. Ključno je, da so orodja nadgrajena z digitaliziranimi procesi v tehnoloških in proizvodnih fazah, kar je tako zelo spremenilo proces nastajanja stavb, da govorimo o nadaljevanju serij industrijskih revolucij. Prvo je prinesel izum parnega stroja 1780, drugo pa elektrika okrog 1900. Naslednje tri je sprožil računalnik. V 70-tih letih prejšnjega stoletja je s tretjo industrijsko revolucijo omogočil mehanizacijo tehnoloških procesov. Do četrte industrijske revolucije je prišlo ob prelomu tisočletja s pojavom interneta; zaznamovana je s popolno digitalizacijo procesov, integracijo sodobnih informacijskih sistemov in tehnologijami s fizično proizvodnjo in procesi. Trenutno smo na prehodu med 4. in 5. industrijsko revolucijo. Peta industrijska revolucija, ki prihaja, želi izboljšati kreativnost in inovativnost človeškega uma z naprednimi, sodobnimi in digitaliziranimi industrijskimi procesi. Ti po eni strani prinašajo natančnejšo in hitrejšo izvedbo, po drugi izpolnjujejo težnjo po večji trajnostnosti, fleksibilnosti in ekonomičnosti. Z novimi pristopi k načrtovanju sovpadajo tudi razvoj novih materialov, ki podpirajo izvedbo organskih oblik.

V arhitekturo ponovno prihaja les, tokrat v visokotehnološki izvedbi, v obliki masivnih elementov in kompozitov. V oblikovanju in konstrukcijsko zahtevnih projektih imajo morda nekateri materiali, konkurenčni lesu, še določene tehnične prednosti, vendar je njihova energijska in ekološka bilanca, kot jo določata količina sive energije materialov in ocena življenjskega cikla izdelkov, dramatično slabša od lesa (Torelli, 2009). Z modernimi tehnologijami dezintegracije in reintegracije lesa je mogoče izločiti naravne »napake« in tako optimirati lesne lastnosti v obliki lesnih tvoriv. Zelo uspešno se da dodajati vrednost z inovativnim oblikovanjem.

V prispevku obravnavamo digitalizacijo procesov v arhitekturi od načrtovanja do izvedbe lesenih konstrukcij. Digitalno podprta tehnologija oblikovanja in izdelave je razkrila nov potencial za uresničitev zapletenih kompleksnih oblik s trajnostnimi gradivi.

2 DIGITALNA ORODJA ZA VIRTUALNO NAČRTOVANJE

Peta industrijska revolucija prinaša z digitalizacijo, povezljivostjo in direktno izmenjavo informacij v arhitekturi in gradbeništvu težnjo po izboljšanju produktivnosti pri gradnji. Uvaja informacijsko modeliranje stavb (Building Information Modeling – BIM), proces oblikovanja digitalnega modela, ki spremlja vse procese v stavbi skozi celotni življenjski cikel – od oblikovanja in projektiranja do izgradnje, upravljanja in vzdrževanja stavbe in infrastrukture, ter podpira multidisciplinarni pristop načrtovanja. Poleg BIM-a, ki se navaja kot vodilni način digitalizacije in povezljivosti delovnih procesov, peta industrijska revolucija uvaja še robotiko, 3D-tiskanje, virtualno resničnost (VR – Virtual Reality), razširjeno resničnost (AR – Augmented Reality), uporabo dronov, umetno inteligenco idr. (Furman in Kuhta, 2019; Singh et al., 2017).

V zadnjem poldrugem desetletju so nova orodja ponudila možnost za eksperimentiranje z različnimi organskimi oblikami v arhitekturnem oblikovanju. Digitalizacija procesov uvaja pojem »digitalna arhitektura«. V procesih nastajanja grajenega okolja se uporablja različne digitalizirane procese, v katerih s pomočjo virtualnih oblik nastajajo fizične oblike. Računalniška orodja niso nadomestila samo klasičnih risarskih pripomočkov, temveč predstavljajo nadgradnjo do nedavnega poznanih risarskih tehnik in omogočajo načrtovanje oblik, ki jih je bilo z obstoječimi orodji nemogoče narisati oz. skonstruirati. Digitalizacija je

v procesih arhitekturnega načrtovanja prinesla možnosti oblikovanja s sinergijo oblik iz narave (biomimetika, biomimikrija), intuicije, ... ter matematike in geometrije. Do zgodnjih 90-tih so bile sofisticirane geometrijske oblike sinonim za paraboloidne in hiperboloidne oblike, kot npr. lupine, membrane, vrve konstrukcije ali gladke ter ohlapno definirane oblike vlite plastike ali pnevmatske konstrukcije, itd. Uporaba računalniških orodij je to spremenila, digitalni arhitekti so dramatično povečali formalni vokabular arhitekturnih oblik, kjer so ravne linije zamenjali za organske oblike, vzorce so našli v naravi (npr. radiolarije, amebe, ježki ...). Te oblike so bile popolno nasprotje trendu v arhitekturi, ki se je do pred kratkim izražal skozi ravne linije (Zbašnik-Senegačnik in Kitek Kuzman, 2014); nova ni postala samo različnost samih oblik, ampak tudi možnost, da se te oblike natančno izrišejo in skonstruirajo z uporabo računalniškega modeliranja (Bianconi et al., 2019). Najbolj neposredna posledica rabe računalniških orodij je brez dvoma zato prav možnost manipuliranja s kompleksno geometrijo, ki omogoča obvladovanje upogrnjenih površin.

2.1 Digitalna arhitektura

Digitalna arhitektura nastaja s pomočjo računalniškega modeliranja, programiranja, simulacij in upodabljanja in z njimi ustvarja virtualne in fizične oblike. Omogočajo jo kompleksni izračuni, ki s pomočjo zmogljivih računalniških algoritmov nudijo raznolike kompleksne oblike (Fischer, 2012). CAD programe se lahko nadgradi z različnimi digitalnimi orodji, s katerimi se generira krivulje in tridimenzionalne ploskve. Realni eksperimenti v obliki modelov in maket v procesu načrtovanja niso več potrebni, nadomeščajo jih simulacije in modeliranje. V zgodnji fazi načrtovanja omogočajo natančno vizualizacijo in nadomeščajo prototipe oz. makete, ki so včasih služili za eksperimentiranje z oblikami in preverjanje ustreznosti zasnove. Orodje DMU (Digital MockUp), ki se je prvotno uporabljalo pri oblikovanju avtomobilov in letal, je v arhitekturi prvi uporabil Frank Gehry za Guggenheimov muzej v Bilbao (1997) (Szalapaj, 2005) (Slika 4). Z orodjem NURBS (Non Uniform Rational Basis Splines) sta med drugim izdelana zgradba Modernega muzeja v Gradcu (Peter Cook, Colin Fournier, 2003) in Aquatic Center Zahe Hadid v Londonu (2012). Za razvoj oblik z novimi računalniškimi tehnikami se uporabljajo programi za generiranje, npr. L-sistem, »botanični« algoritmični sistem, ki se sicer uporablja za simulacijo rasti rastlin v laboratorijskih testih in simulacijah (Issa, 2009). Le z algoritmičnim postopkom oblikovanja je bilo možno ustvariti streho nad dvoriščem Britanskega muzeja v Londonu (2000, Norman Foster & Partners), Paviljon Serpentine Gallery v Londonu (2002, Toyo Ito) in objekte za olimpijske igre v Pekingu 2008 (Aquatics Center Water Cube, PTW Architects; National Stadium Bird's Nest, Herzog & de Meuron) (Szalapaj, 2005).

2.2 Digitalno oblikovanje lesa

Digitalizacija načrtovalskega procesa je vključena tudi v lesno industrijo in lesene konstrukcije. Tako imenovano »digitalno oblikovanje lesa« (ang. digital wood design) zaznamujejo inovativne tehnike, ki se uporabljajo v arhitekturi in omogočajo visoko stopnjo predizdelanosti ter zagotavljajo največjo možno svobodo v arhitekturnem oblikovanju in najvišjo kakovost izvedbe lesene konstrukcije s kombinacijo tradicije in inovativnosti ter omogočajo tudi nestandardne organske oblike (Bianconi in Fillippucci, 2019). Prihodnost trajnostno načrtovanih lesenih arhitekturnih konstrukcij je v kombinaciji vidnega lesa, digitalnega dizajna in naprednih mehansko obdelovalnih tehnologij.



Slika 4: Guggenheimov muzej, Bilbao, 1997, Frank Gehry. Zasnova muzeja je močno odvisna od digitalne programske opreme za modeliranje ukrivljenih površin. (Foto: Zbašnik-Senegačnik)

Les je naravni kompozit in se je skozi vso zgodovino uporabljal kot trajen in vzdržljiv konstrukcijski material. Obnovljivi les je ekološko zdrava surovina, vendar le, če je njegovo pridobivanje, predelava in raba zdržna (Torelli, 2009). Sodobne, oblikovalsko ambiciozne arhitekturne konstrukcije pa danes zahtevajo od gradiva še večje razpone ob minimalnih premerih nosilnih elementov in oblike, ki jih masivni les ne omogoča. Lesna industrija razvija številne nove inženirske proizvode na osnovi lesa, ki ohranjajo trajnostni značaj in fizikalne lastnosti tega naravnega materiala, hkrati pa sledijo trendom po organskih oblikah, ki včasih že kljubujejo zakonom težnosti. Z ustreznimi načini predelave in obdelave lesnih tvoriv se lahko zmanjša ali povsem izloči neželene napake v masivnem lesu, hkrati se z uporabo osnovnih inženirskih principov izboljša njegove lastnosti ter prilagodi konstrukcijo, presek in obliko takega kompozita predvidenemu namenu uporabe (Šernek, 2009; Kitek Kuzman et.al., 2018) (Sliki 5 in 6). Les in lesni inženirski materiali, kamor spadajo lepljen lameliran les, križno lepljen les, proizvodi PSL, LSL in LVL, masivni les, furnirna vezana plošča, različne vlaknene plošče, furnirne plošče, iverna plošča, OSB plošča, lahki ploščni kompoziti, lesno-plastični kompoziti, modificiran les, izolacijske plošče iz lesnih vlaken. (Foto: Sandberg, Kitek Kuzman)

Slika 5. Inženirski lesni materiali, gradniki v sodobnih digitalnih konstrukcijah: lepljen lameliran les, križno lepljen les, proizvodi PSL, LSL in LVL, masivni les, furnirna vezana plošča, različne vlaknene plošče, furnirne plošče, iverna plošča, OSB plošča, lahki ploščni kompoziti, lesno-plastični kompoziti, modificiran les, izolacijske plošče iz lesnih vlaken. (Foto: Sandberg, Kitek Kuzman)

Lepljen lameliran les	Križno lepljen les	Proizvodi PSL (Parallel strand lumber)	LSL (Laminated strand lumber)	LVL (Laminated veneer lumber)
Masivni les	Furnirna vezana plošča	Različne vlaknene plošče LDF/MDF/HDF	Furnirna plošče	Iverna plošča
OSB plošča	Lahki ploščni kompoziti	Lesno-plastični kompoziti	Termično modificiran les	Izolacijska plošča iz lesnih vlaken

kompoziti, lesno-plastični kompoziti, modificiran les, izolacijske plošče iz lesnih vlaken idr. so idealen material za izgradnjo zapletenih konstrukcijskih oblik z digitalno podprto tehnologijo oblikovanja in izdelave (Sandberg et al., 2018).

Po fazi načrtovanja se digitalizirani procesi nadaljujejo v izvedbenih fazah. Tudi sodobne lesene konstrukcije nastajajo v procesih digitalnega načrtovanja in proizvodnje. V teh procesih se uporabljajo računalniško podprto konstruiranje – CAE (Computer-Aided Engineering), računalniško podprto oblikovanje – CAD (Computer Aided Design) in računalniško podprta proizvodnja – CAM (Computer-Aided Manufacturing) (Neubau Swatch Biel, 2019). Proizvajalci danes pokrivajo že vse faze v celotnem konstrukcijskem procesu: od tehničnega razvoja do izvedbe konstrukcije, uporabe in vzdrževanja. Fleksibilna načrtovalska orodja in CNC procesi (Computer Numerically Controlled) dovoljujejo načrtovanje in gradnjo naprednih lesenih arhitekturnih konstrukcij novih dimenzij in oblik (Nine Bridges Country Club / Shigeru Ban Architects, 2019). Okvir za izdelavo komponent sestavljajo matematično natančni parametrizirani modeli konstrukcije in njenih sestavnih delov, ki zagotavljajo, da so odstopanja v fazah izdelave, obdelave in vgradnje čim manjša (Slika 7).

2.3 Možnosti uporabe lesa v dodajalnih tehnologijah – 3D tiskanje z lesom

Digitalni procesi v proizvodnji so pripeljali do razvoja dodatnih tehnologij (ang. Additive technologies) ali pogovorno tehnologije 3D tiskanja. 3D tiskalniki, ki so bili sprva uporabljeni za izdelavo modelov v majhnih dimenzijah, so se razvili do velikosti, ki omogočajo tiskanje večjih konstrukcijskih elementov in konstrukcij. Sočasno se razvijajo tudi okolju prijazni in hkrati cenovno ugodni materiali iz lesa, namenjeni 3D tiskanju, ki omogočajo različne načine tiskanja (stereolitografija, inkjet prašno tiskanje/ kapljično nanašanje/brizganje veziva, nalaaganje krojenih plasti, modeliranje s spajanjem slojev (FDM) in ekstrudiranje – brizganje materiala). Poseben poudarek je na razvoju materialov, ki izhajajo iz naravnih surovin in bi bili cenejši in brez izpustov škodljivih snovi med postopkom izdelave, z možnostjo uporabe odpadnih surovin ter možnostjo reciklaže po odsluženju. Les oziroma lesni ostanki so ena od surovin, ki



Slika 6. Uporaba inženirskih lesnih materialov v prostoru, House N at Linnaeus University (Educational building), Växjö, Sweden, 2011. (Kitek Kuzman et al., 2018) (Foto: Sandberg)

se bodo uporabljale za 3D-tiskanje v kombinaciji z naravnimi in sintetičnimi polimeri tudi v arhitekturi (Kariž et al., 2017; Kitek Kuzman et al., 2019).

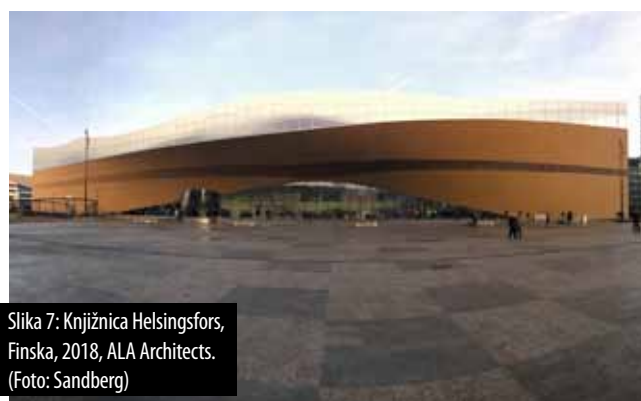
Med različnimi 3D tehnikami je les najbolj uporaben pri tehniki FDM (ang. Fused Deposition Modeling) (Tao et al., 2017), ki je z ustrezno opremo primerna tudi za tisk večjih izdelkov. Na trgu so filamenti različnih proizvajalcev z različnimi deleži lesa (npr. Laywoo-d3) (Slika 8). Les je polnilo, primešan je termoplastičnemu polimeru v fazi izdelave filamenta. V filamentih je večinoma do 40 % lesa (Slika 9), večji deleži že predstavljajo možnost mašenja šob, staljeni polimeri z večjim deležem imajo previsoko viskoznost za ekstrudiranje na obstoječih 3D tiskalnikih. Filamenti z večjim deležem lesa so bolj krhki.

Začetnim modelom 3D tiskalnikov, ki so omogočali izdelavo prototipov majhnih dimenzij, so se do danes pridružile tehnike, s katerimi je mogoče zgraditi modele v velikosti hiše. Oblike niso omejene zgolj na ortogonalne linije, saj 3D tiskalniki omogočajo izvedbo tudi zelo zapletenih organskih oblik v zelo visoki resoluciji, kvaliteti površine in uporabljajo zelo različne obstojne materiale. Prototip 3D natisnjene stene je bil zasnovan in oblikovan na Institute for Advanced Architecture of Catalonia, izvedel pa ga je Crane WASP v okviru Open Thesis Fabrication research programa, ki se osredotoča na proizvodnjo aditivov s področja gradbeništva.

3 MATERIALIZACIJA DIGITALNEGA MODELA Z DIGITALNIMI PROCESI IN TRAJNOSTNIM GRADIVOM – LESOM

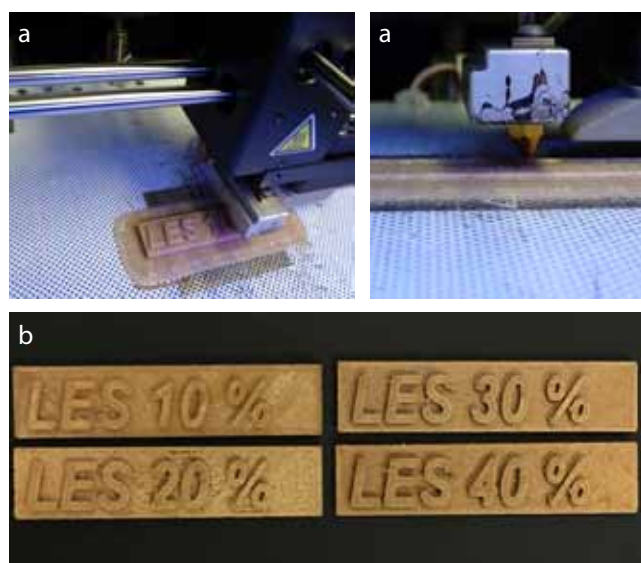
Kompleksne oblike stavb so s sodobnimi orodji veliko lažje dosegljive. Tudi seznam materialov se je razširil – prvotno uporabljenemu betonu, kovinskim paličjem in oblogam iz umetnih mas se pridružuje les v različnih oblikah (od masivne izvedbe, lesnih kompozitov do 3D tiskanja).

Lesene konstrukcije dobivajo danes organske oblike in soustvarjajo organsko arhitekturo, kot npr. Kilden Performing Arts Centre (Norveška, 2012, ALA Architects in SMS Arkitekter) (Kilden / ALA Architects, 2019), Metropol Parasol (Španija, 2011, Jürgen Mayer) (Metropol Parasol / J. Mayer H + Arup, 2019), House of bread (Avstrija, 2017, Coop Himmelb(l)au) (House of Bread, 2019) in La Seine Musicale (Francija, 2017, Shigeru Ban in Jean de Gastines) (La Seine Musicale / Shigeru Ban Architects, 2019). Stopajo ob

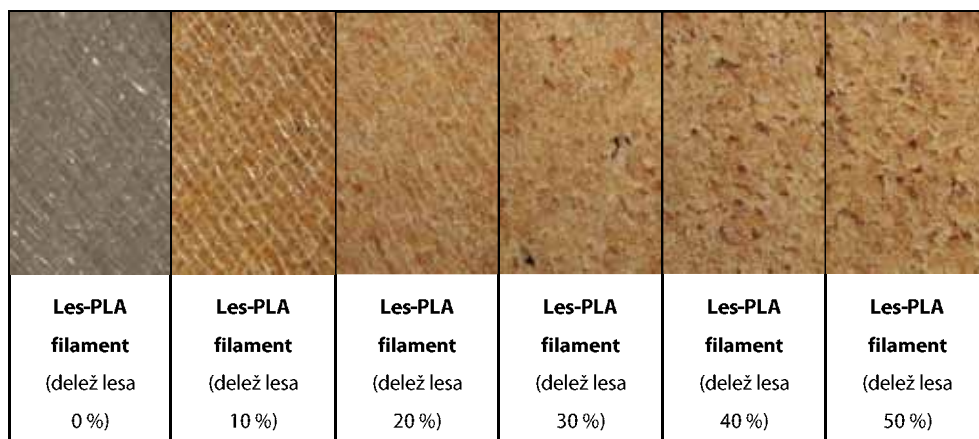


Slika 7: Knjžnica Helsingsfors, Finska, 2018, ALA Architects. (Foto: Sandberg)

bok tradicionalnim, kar pa zahteva digitaliziran proces izvedbe, kjer so vsi sestavni deli hitro, fleksibilno in natančno načrtovani in izvedeni z digitalnimi procesi v delavnicah. Preverjanje zasnove s 3D modeli, možnost statične presoje konstrukcije, reševanje tehničnih problemov v proizvodnji, sestavljanje delov ali celotne konstrukcije na gradbišču rezultira v hitro izgradnjo zgradbe na lokaciji in majhno število dodelavnih del (Slika 10).



Slika 8: a - 3D tiskanje FDM tehnika s PLA filamenti; b - filamenti z različnim deležem lesa od 10% do 40 % lesnega prahu. (Foto: Kariž)



Slika 9. Videz površine izdelka, tiskane- ga s filamenti z različnimi deleži lesa. (20-kratna povečava) (Foto: Žigon)

Les kot konstrukcijski material postaja tudi pri večjih objektih enakovreden betonu in jeklu, lesene nosilne konstrukcije pa imajo poleg konstrukcijske vloge še oblikovno. Z uporabo digitalnih orodij v oblikovanju se odpira novo poglavje t.i. konstrukcijskega ornamenta. Primeri konstrukcijske ornamentike, kot so npr. Sendai Mediatheque (Japonska, 2001, Toyo Ito), Prada Aoyama Epicenter (Japonska, 2003, Herzog & de Meuron), The Gherkin Tower (Anglija, 2003, Norman Foster), Simmons Hall Student Housing (ZDA, 2002, Steven Hall) so le nekateri izmed mnogih, ki jasno kažejo, da ornament v sodobni fasadi ni več le posledica oblikovanja, ampak je lahko tudi izhodiščna točka konstrukcije. Trend se nadaljuje tudi v oblikovanju z lesom in lesnimi kompoziti: BUGA wood pavilion, zgrajen v Bundesgartenschau Heilbronn (2019, ICD/ITKE University of Stuttgart) predstavlja nov pristop k digitalnemu načrtovanju in izvedbi konstrukcije iz lesa. Njegova segmentirana lesena lupina je inspirirana iz oblike lupine morskih ježkov, ki je grajena z minimalno porabo materiala in maksimalno nosilnostjo. V okviru projekta je bila razvita robotska platforma za samodejno sestavljanje in rezkanje 376 votlih lesnih segmentov z milimetrsko natančnostjo (ICD, 2019). Prav tako je inovativna zasnova objekta Fiber Pavilion (Bundesgartenschau Heilbronn, 2019, CD/ITKE University of Stuttgart), ki združuje vrhunske digitalne tehnologije in konstrukcijska načela, ki jih lahko najdemo v naravi. Uporabljeni so sicer umetni kompoziti, na primer bioplastika, ojačana s steklenimi ali ogljikovimi vlakni, ki svoje temeljne značilnosti deli z naravnimi kompoziti. Narava je večino nosilnih struktur izoblikovala iz vlaknastih kompozitov in v oblikah, ki imajo izredne zmogljivosti. Poleg organizacije, usmerjenosti in gostote vlaken sta pomembna njihova pozicija in dimenzije, da se zagotovi optimalnost porabe materiala; material se nahaja samo tam, kjer je to potrebno. V arhitekturo prinaša biološki princip (Suyi in Wang, 2017).

Slika 10: Lesene konstrukcije kot produkt digitalnega načrtovanja in izvedbe: a – Univerza Tokio (Foto: Kitek Kuzman), b – Sejmišče v Hannoveru, Madžarski paviljon 2000 (Foto: Sandberg), c – Kapela Kamppi Chapel, Helsinki, 2012. (Foto: Sandberg)



Raziskovalni paviljon Bowooss Bionic Inspired Research Pavilion (2019) na Fakulteti za arhitekturo Univerze Saarland v Nemčiji (2012) je nastal kot plod raziskovalnega projekta bioničnih lesenih lupinastih konstrukcij. Organske oblike je inspirirala narava, ki je skozi evolucijo oblike organizmov in procese, s pomočjo katerih delujejo, ter s procesi reprodukcije, mutacije, rekombinacije in selekcije izoblikovala tako, da lahko delujejo optimalno (Pohl in Nachtigall, 2015b). Raziskava je potekala na preučevanju raznolikih enoceličnih organizmov, diatomej, z namenom, da se osredotoči na razvoj trajnostnih, fleksibilnih in razstavljivih enot in spodbuja močnejšo povezavo med uporabniki izdelkov in naravo.

Pri izvedbi začasnega objekta Temporary chapel for the Deaconesses of St-Loup (Švica, 2008, Localarchitecture in Danilo Mondad) so se pri iskanju ustrezne oblike opirali na geometrijsko študijo origamija za doseganje skladnosti gradnje po načelih tektonike (Weinand, 2017). Leseni ploskovni kompoziti so bili idealna izbira za izvedbo nosilnih elementov zloženega volumna, ki poudarja notranji prostor in s pregibi ustvarja ritem. Oblika arhitekture je posledica konstrukcijskega premisleka in prezentacija konstrukcije navzven, kar je načelo tektonike (Temporary chapel for the Deaconesses of St-Loup, 2019).

Posnemanje narave se razširja tudi na področje samooblikovanja. Zasnova projekta Urbach Tower (2019, CD/ITKE Univerza v Stuttgartu) izhaja iz novega procesa samooblikovanja ukrivljenih lesenih konstrukcijskih elementov. Ta pionirski razvoj pomeni premik paradigme v proizvodnji lesa od prefinjenih in energijsko intenzivnih postopkov mehanskega oblikovanja, ki zahtevajo težke stroje, do procesa, kjer se material v celoti oblikuje sam. Ta sprememba oblike temelji na značilnem naravnem krčenju lesa med zmanjšanjem vsebnosti vlage. Sestavni deli 14 m visokega stolpa so zasnovani in izdelani v ravnem stanju in se avtonomno pretvorijo v končne, programirane ukrivljene oblike med standardnim tehničnim sušenjem. Možnost, da se material sam oblikuje, odpira nove in nepričakovane arhitekturne možnosti za visoko zmogljive in elegantne konstrukcije z uporabo

trajnostnega, obnovljivega in lokalno pridobljenega gradbenega materiala. Urbach Tower je prva tovrstna stavba na svetu, ki je izdelana iz samooblikovanih sestavnih delov (University of Stuttgart makes Urbach Tower..., 2019).

Klasičnim načinom gradnje se pridružuje tehnologija 3D tiska, ki že omogoča nastanek stavb večjega formata. Znani so poskusi uporabe novih dodajalnih tehnologij, ki omogočajo tiskanje večjih konstrukcijskih elementov in zagotavljajo inovativne rešitve za bolj trajnostni habitat in mesto. Nizozemski arhitekti so npr. začeli v Amsterdamu večletni projekt živega laboratorija 3D Print Canal House. Urban Cabin (2014, DUS architects in mesto Amsterdam) je 3D natisnjen urbani paviljon, ki na novo razmišlja o intimnosti in individualnem prostoru znotraj mesta (Urban Cabin, 2019). Zgradba Office of the future (Dubaj, 2016, Killa Design) je prva poslovna zgradba, izdelana s pomočjo 3D tiskanja z uporabo trajnostnih bioplastičnih materialov (3D Printed Office Building..., 2019).

Predvidevamo, da se bo v razvoju dodajalnih tehnologij z uporabo lesa širil tudi spekter njihove uporabe na gradbenem področju, predvsem pri gradnji montažnih hiš in za izdelavo posamezniku prilagojenih kompleksnejših izdelkov z višjo stopnjo funkcionalnosti in oblikovalskim presežkom.

4. DISKUSIJA IN ZAKLJUČEK

Pristop k oblikovanju v arhitekturi se je z digitalizacijo spremenil; objekti niso več oblikovani, ampak izračunani (Bianconi et al., 2019), kar omogoča izvedbo zapletenih oblik z upogljivenimi površinami, ki bi jih bilo težko predstaviti z uporabo tradicionalnih načinov risanja in izdelati s standardnimi načini proizvodnje. S pomočjo naprednega digitalnega modeliranja (digitalizacije) je možna serijska izdelava geometrijsko skladnih, pa vendar različnih elementov, ter hkrati vrhunskih, natančnih in relativno cenovno ugodnih unikatnih komponent (Zellner, 1999; Mitchell, 2005).

V arhitekturi se je začel ponovno pojavljati trend po oblikovanju z organskimi, neortogonalnimi linijami, kar omogočajo sodobna digitalna orodja. Organske oblike, ki so jih bili v preteklosti zmožni pripeljati od idejne do izvedbene faze samo največji umi (kot npr. Gaudi, Wright, Fuller), so danes lažje dosegljive s podporo računalnikov in parametričnih orodij. Vanje pa so skriti vsi koncepti, ki so se razvili v zgodovini – od idej Ruskina in Viollet-le-Duca ter Wrighta in Gaudija, preko matematikov 20. stol. do Grega Lynna, Williama Mitchella, Petra Eisenmanna, Franka Gehryja, idejnih očetov digitalizacije v arhitekturi (Picon, 2010). Digitalizacija v arhitekturi prinaša možnosti oblikovanja s sinergijo narave, matematike, geometrije, intuicije itd.

Intenzivnejše so tudi težnje po inspiriranju oblik in procesov v naravi. Čeprav narave ni mogoče neposredno kopirati z analizo fizičnih subjektov, lahko živi svet arhitektom in inženirjem ponudi veliko navdihov za njihove kreativne zasnove (Pohl in Nachtigall, 2015). Po drugi strani pa naj bi se s povezovanjem grajenega okolja z naravo – z razgledi na naravo, z uporabo naravnih materialov (predvsem lokalnih gradiv) ter z upoštevanjem lokalne ekologije pri načrtovanju gradnje in uporabe – izboljšalo uporabnikovo dožemanje naravnega okolja in povečala motivacija k večji skrbi za okolje. Restorativno okoljsko oblikovanje (angl. "restorative environmental design", RED) združuje ideje trajnostnega in "biofilicnega" oblikovanja. RED poskuša spodbujati močnejšo povezavo med uporabniki izdelkov in naravo, da bi navdihnili uporabnike in jih motivirali k skrbi za okolje.

Digitalno načrtovanje in sodobne tehnologije proizvodnje označujejo les kot optimalno gradivo. Za ta namen je poleg masivnega žaganega lesa razvitih veliko inženirskih lesnih proizvodov, ki

imajo dobre mehanske lastnosti, so estetski, na pogled atraktivni in zelo funkcionalni. Les in lesni kompoziti ponujajo sposobnost gradnje s trajnostnim, popolnoma obnovljivim in visoko zmogljivim materialom tako iz energijskega kot konstrukcijskega vidika. Skupaj z arhitekturnimi rešitvami organskih oblik je les dragocena alternativa materialom, ki so do nedavnega služili za arhitekturno artikulacijo (Bianconi in Filippucci, 2019). Poleg tega postaja ključnega pomena tudi trajnostni doprinos pri izbiri gradiv. Izkoristek lesa (finančni in tudi z vidika trajnostnega razvoja) zgolj za energetiko je majhen, zato ga ni smiselno uporabljati samo kot energent. Upoštevati je treba načelo, da les uporabimo večkrat oz. v več stopnjah, pri uporabi pa naj se ohranja čim dlje v masivni obliki. S tem dosežemo v vsaki stopnji (ponovne) rabe tudi optimalno skladiščenje CO₂ (Meier et al., 1990; Kitek Kuzman et al., 2019). Na (1) prvi stopnji bi ga morali najprej uporabiti kot produkt (žagan les, lepljen les, lepljen les, ki je izdelan z lepljenjem masivnega lesa, furnirne plošče, stavbno pohištvo, bivalno pohištvo ...), (2) drugič kot material v procesu ponovne uporabe/recikliranja (lepljeni kompoziti iz dezintegriranega lesa; npr. OSB, iverne plošče, vlaknene plošče, lesno-cementne plošče ..., ali produkti iz različnih vrst odpadne lignocelulozne biomase (karton, papir ...) – tu pridejo v poštev tudi stranski produkti iz prve stopnje oz. zavoja in šele na koncu te tako imenovane »kaskade« (3) za pridobivanje »zelene energije« iz gozdnih ostankov, ostankov pri posameznih tehnoloških postopkih in ostankih, ki nastanejo pri rabi starega lesa ali celo odslužen les.

3D tisk z naravnimi materiali se širi tudi na področje nestandardne arhitekture organskih oblik. 3D tisk in digitalna izdelava je ena izmed prihodnosti oblikovanja. Smiselno bi bilo tudi vlagati v nadaljnje raziskave novih biopolimernih materialov, ki bi po svojih konstrukcijskih zmogljivostih bili celo primerljivi z visokotrdnostnimi kompoziti iz steklenih vlaken.

Razvojni potencial sodobnih lesenih konstrukcij, ki so kombinacija tradicije in inovativnosti, vidimo v upoštevanju biomimetičnih načel v arhitekturi in inženirskem oblikovanju, v povezavi digitalnega oblikovanja in izdelavi konstrukcijskih elementov s pomočjo numerično krmiljenih strojev. Inženirji poznajo digitalna orodja, imajo sposobnost geometrijske predstave in konstrukcijsko znanje, medtem ko imajo arhitekti ambiciozne ideje za posebne oblike zgradb, ki jih omogoča digitalizacija procesov.

Zahvala

Raziskava je bila podprta s strani ARRS, Program P4-0015 in P5-0068.

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Uroš Rozman, Gašper Mrak: PRIMERJAVA OMREŽIJ DRŽAVNIH KOLESARSKIH POVEZAV V TUJINI IN SLOVENIJI

COMPARISON OF NATIONAL CYCLING NETWORKS ABROAD AND IN SLOVENIA

DOI: <https://dx.doi.org/10.15292/IU-CG.2018.06.068-075> ■ UDK: 656.183 ■ SUBMITTED: July 2019 / REVISED: September 2019 / PUBLISHED: October 2019

1.02 Pregledni znanstveni članek / Review Article

IZVLEČEK

Kolesarjenje tako v Evropi in v svetu postaja ena najbolj trajnostnih oblik mobilnosti, ki ni obremenjujoča za okolje, ekonomsko je razmeroma nezahtevna in hkrati izboljšuje kvaliteto življenja prebivalcev. Primeri iz tujine nam kažejo, da se večanje uporabe kolesa kot glavnega prevoznega sredstva odraža tudi v spremembi politike upravljanja prometa tako na ravni mest, regij kot evropskih držav. Kvalitetno zasnovano in varno kolesarsko omrežje v severnih evropskih državah se že odraža v večjem deležu potovanj, ki so opravljena s kolesom. V članku so predstavljeni sistemi urejanja kolesarskega omrežja v Evropi in v svetu, od načrtovanja omrežja do kategorizacije kolesarskih povezav ali primerov izvedbe in obiskanosti posameznih poti. Predstavljeni so dokumenti zasnove državnega kolesarskega omrežja v Sloveniji skozi daljše časovno obdobje in rezultati projekta CRP V2-1513: Izdelava modela povezanosti celotne Slovenije s kolesarskimi potmi. V zaključku so predlagane usmeritve za urejanje državnega kolesarskega omrežja saj lahko z dobro zasnovo kolesarskega omrežja izboljšamo njegovo uporabnost in atraktivnost.

KLJUČNE BESEDE

državno kolesarsko omrežje, kolesarska povezava, kolesarske poti, Slovenija

ABSTRACT

Cycling has become one of the most sustainable forms of mobility in Europe and around the world, which does not pollute the environment, is economically undemanding and at the same time improves the quality of life of its inhabitants. Examples from abroad show an increasing use of the bicycle as the main means of transport, which is also reflected in changes in transport management policies at urban, regional and national level. A well thought-out and safe network of cycle paths in Northern European countries is already reflected in the higher proportion of cycling trips. This article presents different systems for managing bicycle networks in Europe and worldwide, from network design categorisation of bicycle connections to examples of implementation and frequency of use of individual routes. The paper presents documents of the national cycling network in Slovenia in recent years and the results of project CRP V2-1513 (B): Model of the integration of Slovenian bicycle network. Finally, the guidelines for the establishment of the national bicycle network in Slovenia are proposed, because only through good design of the bicycle network can we ensure its usefulness and attractiveness.

KEY-WORDS

National cycling network, cycling route, cycling path, Slovenia

UVODNIK
EDITORIAL
ČLANEK
ARTICLE

RAZPRAVA
DISCUSSION
RECENZIJA
REVIEW
PROJEKT
PROJECT
DELAVNICA
WORKSHOP
NATEČAJ
COMPETITION
PREDSTAVITEV
PRESENTATION
DIPLOMA
MASTER THESIS

1. UVOD

Dobra zasnova kolesarske infrastrukture je osnova za vzpostavitev atraktivnega, varnega in povezanega državnega kolesarskega omrežja. Le ta mora tvoriti hrbenico za vzpostavitev vseh drugih podrejenih ravni kolesarske infrastrukture, tako regionalne in lokalne. Slovenija še nima urejene ustrezne infrastrukture v podporo daljinskemu kolesarjenju (Žura idr., 2017), zato moramo dobre primere iz prakse iskati predvsem v tujini, v kolesarsko bolj razvitih državah, med katere sodijo severnejše evropske države: Nizozemska, Danska, Nemčija, Belgija ... in tudi druge. Kolesarske poti morajo zadovoljiti potrebe lokalnih skupnosti in življenja njihovih prebivalcev: delovnih migracij, vsakodnevnih opravkov, poti v šolo ... Urejeno in varno kolesarsko omrežje lahko prispeva k višji kakovosti bivanja prebivalstva in tudi dvigu raznolikosti turistične ponudbe (Andrejčič Mušič, 2009). Pravtako priložnosti v kolesarskem turizmu prinašajo državi, regiji ali lokalnim skupnostim nova delovna mesta, pogosto tudi v drugih dejavnostih, ki so bolj ali manj povezana s turizmom.

V zahodnem svetu kolesarstvo doživlja razcvet kot vsakodnevna izbira osebnega prevoznega sredstva oziroma tudi kot glavno sredstvo preživljanja prostega časa zaradi vse večje ozaveščenosti prebivalstva o okolju, zmanjšanja hrupa ter zaradi izboljšanja življenjske ravni (Gao, Kamphuis, Dijst in Helbich, 2018). Bonham in Suh (2008) ugotavljata, da višja, kot je izobrazba, večja je uporaba kolesa kot prevoznega sredstva, npr. delovnega mesta. Andersen (2009) celo trdi, da je kolo ponovno postalo spoštovano in sprejeto ter da kolesarjenje predstavlja enega najbolj praktičnih načinov osebnega transporta v sodobnih mestih. Po drugi strani pa razvoj v državah kot sta Indija in Kitajska, kjer je nekdaj veljalo kolo kot edino prevozno sredstvo, kaže da z bujno rast standarda prebivalcev kolo nadomeščajo sodobnejša (motorna) prevozna sredstva, kar se sicer ne sklada z sodobnimi trajnostnimi usmeritvami po svetu. Tako se je lastništvo motorjev v 10 letnem časovnem obdobju v Indiji povečalo 3-kratno, na Kitajskem pa 10-kratno – iz 5 milijonov leta 1991 na 50 milijonov v leto 2002 (Pucher, Peng, Mittal, Zhu in Korattyswaroopam, 2007).

2. METODOLOGIJA

Po literaturi smo naredili pregled in izbor člankov, ki obravnavajo različne vidike vpliva kolesarjenja na družbo in v katerih avtorji izpostavljajo različne pozitivne plati spodbujanja kolesarjenja kot aktivne oblike trajnostne mobilnosti ter njihovih pozitivnih učinkov na zdravje prebivalstva kot na izboljšanje kakovosti bivalnega okolja. Avtorji kažejo na povezanost vpliva kolesarjenja na izboljšanje zdravje prebivalstva in posledično zmanjševanje pojavnosti kroničnih bolezni. Pogosto avtorji izpostavljajo povezavo občutka varnosti kolesarjev z večanjem uporabe koles. V članku prikazujemo tudi različne načine načrtovanja in kategorizacije omrežij državnih kolesarskih povezav v evropskih državah in svetu ter načine upravljanja ali načrtovanja kolesarskih poti. Predstavili smo strategijo razvoja kolesarskega omrežja v Sloveniji z primerjavo Zasnov kolesarskega omrežja iz leta 2004 in leta 2009, ugotovitve projekta CRP V2-1513: Izdelava modela povezanosti celotne Slovenije s kolesarskimi potmi 2017 ter najnovejši Pravilnik o kolesarskih povezavah v Sloveniji. V zaključku smo predstavili učinkovite rešitve iz tujini in podali usmeritve, ki bi jih bilo potrebno upoštevati pri načrtovanju in zasnovi ter implementaciji državnega kolesarskega omrežja v Sloveniji.

3. KOLESARJENJE IN PRIMERI DRŽAVNIH KOLESARSKIH

OMREŽIJ V TUJINI

Kolesarjenje je ena od najbolj čistih oblik trajnostne mobilnosti. Za razliko od motornega prometa, kolesarjenje ni obremenjujoče za okolje, ekonomsko ne zahteva velikih infrastrukturnih vložkov in hkrati izboljšuje kvaliteto življenja prebivalcev (Gao idr., 2018). S povečanjem aktivnosti v mestih (predvsem hoje in kolesarjenja) se kažejo pozitivni znaki, tako na izboljšanju zdravja prebivalcev s povečano fizično aktivnostjo kot z vplivom na zmanjševanje onesnaženosti in emisij hrupa (de Nazelle idr., 2011; Edwards in Tsouros, 2006; Jarrett idr., 2012). Vendar tudi v razvitih državah opazamo, da je v razpršenih urbanih predmestjih uporaba kolesa opazno manjša kot pa v mestnih središčih (Adam, Jones in te Brömmelstroet, 2018). Po drugi strani pa je skoraj nemogoče kratkoročno ovrednotiti prihranjeni denar na račun izboljšanja zdravja, zmanjševanja emisij hrupa in toplogrednih plinov ali izboljšanja kvaliteta zraka v mestih (prav tam).

Čeprav se Nizozemska, Danska in Nemčija ponašajo z velikim številom lastnikov avtomobilov, pa jim je s pravilnim pristopom razvoja trajnostnih politik na državni ravni v zadnjih desetletjih uspelo izboljšati podobo kolesarjenja kot varnega in praktičnega ter s tem drastično povečati vsakodnevno uporabo kolesa (Pucher & Buehler, 2008). Prav Nizozemska (Gao idr., 2018) se ponaša s prijaznim cestnim omrežjem za kolesarje, z varno kolesarsko infrastrukturo pa povečuje uporabo in dostopnost številnih točk (delovnih mest, družbenih dejavnosti, turističnih znamenitosti ...) lokalnemu prebivalstvu. Tako se kar 25 odstotkov vsakodnevnih potovanj na Nizozemskem se opravi s kolesom (Dufour, 2010), po podatkih Eurobarometra iz leta 2014 pa je ta delež kar 36 odstoten (CBI, 2018). V sosednji Danski državna statistika beleži, da je kar 18 odstotkov vseh potovanj opravljenih s kolesi. (Sirše, Berčič, & Sila, 2005). Dobra zasnova osnovne kolesarske infrastrukture je osnova za vzpostavitev atraktivnega in privlačnega kolesarskega omrežja (Steklačič, 2017).

Varna kolesarska infrastruktura (tako poti kot križišča) so tudi predpogoj za povečanje kolesarske mobilnosti (Adam idr., 2018). Parkin (2007) v svojih raziskavi kolesarjenju in občutenju varnosti v prometu ugotavlja, da je občutek varnosti večji tam, kjer so urejene samostojne kolesarske poti ali so poti zgrajene vzporedno s cestami, vendar občutek varnosti pade z večanjem hitrosti motornega prometa in z večanjem števila parkiranih avtomobilov ob cestah. V anketah o varnosti kolesarjenja se kolesarji na Nizozemskem počutijo petkrat bolj varne kot kolesarji v ZDA (Pucher in Buehler, 2008). Krizek in Johnson (2006) v svoji študiji v mestu Minneapolis ugotovita, da prav bližina in dostopnost kolesarske infrastrukture povečujejo verjetnost uporabe kolesa (opazno je bilo povečanje uporabe kolesa, če so bile kolesarske poti dostopne na manj kot 400 metrih od izhodišča). Od dolžine in ravni (ne)obstoječe infrastrukture pa je odvisno tudi časovna izvedba, finančna vrednost in izgradnja celovitega ter sklenjenega omrežja kolesarskih povezav ali poti (Andrejčič Mušič, 2009).

Ena prvih študij o pozitivnih vplivih kolesarjenja, je obravnavala široko povezavo med aktivno mobilnostjo (hojo ali kolesarjenje) z večanjem zdravja in manjšo umrljivostjo prebivalstva (Rojas-Rueda idr., 2016). Kot navajajo Jarrett idr. (2012) se z povečanjem hoje in kolesarjenja, zmanjšuje pojavnost različnih primerov kroničnih bolezni (Gao idr., 2018) in s tem posredno zmanjšajo stroški bolnišničnega zdravljenja, navkljub dejstvu, da se z večanjem uporabe kolesa deloma poveča tudi število poškodb kolesarjev. Vendar pa se tudi ta delež lahko zniža ob primernih

ukrepov glede varnosti in pravih politikah (prav tam).

Po drugi strani pa pridobiva na pomenu tudi rekreacijsko kolesarjenje, ki se razvija v smislu turističnega produkta (Andrejčič Mušič, 2005). Bližina narave, atraktivnost in varnost kolesarske poti, ter spremljajoča ponudba so glavni aduti, ki pripomorejo z večji uporabi samih poti in zagotavljajo uspeh poti z vidika turizma (Rozman, 2014). Z vidika izletništva in turizma se kolesarjenje vedno bolj uveljavlja kot ena od pomembnih panog, kjer npr. v Avstriji že leta opažajo stalno rast števila kolesarjev kot rast števila gostov, ki za transport uporabljajo izključno kolesa (Weston, Davies, Peeters in Eijelaar, 2012). Ob primerni infrastrukturi in v povezavi z zanimivi turističnimi znamenitostmi ter ohranjenemu naravo lahko kolesarski turizem predstavlja idealni model trajnostnega turističnega razvoja (Meschik, 2012). Turisti, ki kolesarijo, prinesejo veliko priložnosti lokalnim skupnostim na podeželju in pogosto obiščejo kraje, ki se jih glavnina masovnega turizma izogne ter jim z obiskom prinašajo finančne koristi (Davies idr., 2012; Piket, Eijelaar in Peeters, 2013).

Eurovelo je omrežje Evropskih kolesarskih povezav, ki potekajo večinoma po že obstoječih kolesarskih poteh ali manj prometnih cestah in se povezujejo v vseevropsko omrežje kolesarskih povezav (Larsen, 2012). Prav Davies (2012) predstavlja evropsko kolesarsko omrežje Eurovelo kot enega ključnih evropskih trajnostnih turističnih produktov, ki pa je trenutno še nezadostno razvit in tudi slabo promoviran. Po drugi strani pa v svoji raziskavi o kolesarjenju na Češkem Kaplanov idr. (2019) ugotavlja, da čeprav je država umeščena v mrežo Eurovelo in ima sama izgradnja kolesarskega omrežja tudi podporo Češke vlade, pa realnost na terenu odraža slabo financiranje in posledično enostavne, poceni in nevarne rešitve, ki ne omogočajo varne izvedbe ter od motornega prometa ločenih kolesarskih poti.

3.1 Državno kolesarsko omrežje v Angliji

Državno kolesarsko omrežje je v Angliji dolgo 26.700 km (do leta 2017), od tega 7.900 samostojnih kolesarskih poti in 18.800 kilometrov povezav po obstoječih cestah (Wikipedia, 2018). Kolesarske povezave se uporabljajo kot vsakodnevna mestna potovanja v službo, šolo ali trgovino ali za daljša turistična potovanja. Kolesarske povezave (slika 1) so sestavljene iz ločenih kolesarskih poti kot tudi manj obremenjenih lokalnih cest (Weston idr., 2012). Ob kolesarjih ga uporabljajo pešci, tekači, invalidi in jahači konjev, kjer vsaj polovica potovanj naredijo pešci; od tega 27 milijonov potovanj naredijo otroci na poti v šolo (prav tam). Skupaj pa je bilo v letu 2017 zabeleženih 786 milijonov potovanj, tako kolesarjev kot pešcev (Sustrans, 2018).

Začetek uresničitve državnega kolesarskega omrežja sega v leto 1977. Takratna vizija je bila izboljšati pogoje za kolesarjenje in pešačenje. V 90. letih je bilo zgrajenih veliko kolesarskih povezav, vendar niso bile medsebojno povezane. Leta 1995 so tako namenili začetnih 42.2 milijona funtov za povezovanje obstoječih kolesarskih povezav. K načrtovanju omrežja so se vključile tako lokalne skupnosti, železnice, upravljalci kanalov in rek, družba za avtoceste, Zavod za gozdove in drugi deležniki, ki še vedno sodelujejo pri razvoju omrežja. Sedaj je glavna želja načrtovalcev omrežja, da se razvijejo tudi lokalne kolesarske povezave. Finančne koristi od kolesarskega omrežja so bile v letu 2015 ocenjene na več kot 1 milijarda funtov. Odgovornost za vzdrževanje kolesarskih povezav je na lokalnih skupnostih in agenciji za razvoj avtocest ter drugih lastnikov zemljišč (elektrarne, železnice, upravljalci kanalov, itn). Omrežje delo vzdržuje neprofitna organizacija (Sustrans), ki je financirana iz prostovoljnih prispevkov in kjer prostovoljci zagotavljajo vzdrževanje in urejen izgled kolesarskemu omrežju. (Weston idr., 2012)



Slika 1: Prikaz državnega kolesarskega omrežja v Veliki Britaniji in na Severnem Irskem (vir: Wikipedia, 2018).

Kolesarske povezave se v Angliji ločijo na (Weston idr., 2012):

- državne in lokalne;
- posebej definirano na odseke, kjer so ločene od prometa in tiste, ki potekajo po cestah;
- kolesarske povezave za družine, povezave za ljubitelje narave, poti za ljubitelje umetnosti, regionalne povezave, daljinske povezave, mestne povezave

3.2 Državno kolesarsko omrežje v Avstriji

Avstrija na državni ravni opredeljuje zgolj smernice za načrtovanje in označitev kolesarskih povezav. Avstrijska študija iz leta 2014 kaže, da posredna in neposredna dodana vrednost kolesarskega prometa v Avstriji znaša 900 milijonov evrov, kar je enakovredno približno 18.300 delovnim mestom s polnim delovnim časom (Weston idr., 2012). Kot primer: kolesarska pot ob Donavi, ki poteka od Passaua do Dunaja in se nadaljuje tudi do Bratislave ter večinoma po obeh straneh reke v dolžini prek 381 km (Danube Cycle Path—Donau Österreich, 2017) privablja v poletnih mesecih preko 40.000 kolesarjev mesečno (Meschik, 2012), letno pa preko 1,5 milijona obiskovalcev, ki večino nočitev opravijo v krajih vzdolž poti (Sirše idr., 2005). Načrtovanje in gradnjo kolesarskih povezav prevzemajo posamezne zvezne dežele.



Slika 2: Kolesarske poti dežele Koroška – Avstrija (Radwegbechilderung Karten, 2010).

Koroška zvezna dežela ima opredeljene zgolj regionalne povezave, kjer ima glavno vlogo Dravska kolesarska pot (R1), saj ima le ta največji potencial v kolesarskem turizmu. Skupaj imajo na Avstrijskem Koroškem 10 kolesarskih poti, nekatere imajo več pod-povezav (npr. R1A, R1B itd.). Koroška dežela, ki je po velikosti primerljiva z Slovenijo, ima v načrtu ureditev 1330 km kolesarskih poti, od tega je 950 km že urejenih. Polovica je urejenih po poteh, ki so posebej urejene za kolesarje, polovica je urejenih po drugih omrežjih (slika 2). (Weston idr., 2012)

3.3 Državno kolesarsko omrežje v Nemčiji

Nemčija je med najbolj razvitimi državami z urejenim kolesarskim omrežjem. Nemško kolesarsko omrežje je iz 12.911 kilometrov v sedemdesetih se je do leta 1996 skoraj potrojilo, na 31.236 (Pucher in Buehler, 2008). Zaradi svojega položnega reliefa in velikosti velja za zelo priljubljeno destinacijo daljinskih kolesarjev, saj premore več daljših daljinskih, predvsem obrečnih povezav čeprav so poti pogosto potekajo na opuščeni železniški trasah. Država določa državno kolesarsko omrežje (med zveznimi deželami), ki je sestavljeno iz najpomembnejših kolesarskih povezav. Nižje kategorije kolesarskih povezav določajo posamezne dežele. (Weston idr., 2012)

Slika 3 prikazuje dva različna sistema kolesarskega omrežja v Nemčiji. Rdeče so prikazane obrečne daljinske kolesarske povezave, ki so zanimive za turistično-družinsko kolesarjenje. Z zeleno barvo so prikazane povezave EUROVELO kolesarskega omrežja. V nekaterih posameznih primerih, so uporabljene iste kolesarske povezave. Nemčija je primer, kjer je kolesarska infrastruktura že zgrajena in označena, zato je oblikovanje povezav in turističnih produktov zgolj vprašanja potreb posameznih skupin uporabnikov. (Weston idr., 2012)

Slika 3: Kolesarske povezave v Nemčiji, rdeče je prikazano nemško državno kolesarsko omrežje, z zeleno so prikazane Eurovelo povezave v Nemčiji (The German Cycle Network, 2012).



Čeprav je Nemčija znana po svoji naklonjenosti motornemu prometu in prvih avtocestah, so za izboljšanje kolesarskega omrežja zasnovali tudi t.i. 'kolesarske avtoceste', ki so štiri metre široke asfaltiranje kolesarske poti, ločene od motornega povezave, ki trenutno povezujejo 10 večjih mest (O'Sullivan, 2016). S tem želijo zagotoviti prebivalcem varne povezave med posameznimi mesti in tako povečati uporabo koles v vsakodnevem življenju. Pomembno je poudariti, da je ob 100 kilometrov dolgi stezi in zgolj znotraj 30 minutne oddaljenosti od te 'avtoceste' živi 2 milijona potencialnih uporabnikov (prav tam).

3.4 Državno kolesarsko omrežje v Švici

Švica je primer najbolj celovite obravnave mobilnosti ter povezovanja različnih tipov uporabnikov na isti infrastrukturi. Švica na istem portalu združuje pohodništvo, kolesarjenje, gorsko kolesarjenje, rolanje in plovbo. S tem omogoča optimalno povezovanje med različnimi oblikami rekreacije. Kolesarske povezave se ločujejo na: državne, regionalne in lokalne. Poznajo samo 9 državnih kolesarskih povezav. Ostalo omrežje je sestavljeno iz regionalnih (54) in lokalnih povezav (46). Posebnost Švice je, da večina kolesarskih povezav, zaradi reliefa poteka po zahtevnejših terenih (kolesarske povezave imajo tudi več kot 4000 m razlik v nadmorski višini). Najugodnejše za kolesarje tako ostajajo obrečne kolesarske povezave, ki so lahko bolj položne. (Weston idr., 2012)

3.5 Vzpostavitev kolesarskih koridorjev in poti v ZDA

Kolesarsko omrežje je definirano kot povezane kolesarske prometne zmogljivosti, ki omogočajo ljudem vseh starosti in zmoglosti, da pridejo varno in udobno do cilja (Weston idr., 2012). Upošteva se naslednja načela: povezanost, direktnost, alternative, varnost in udobje.

Sistem kolesarskih poti v ZDA (United States Bicycle Route System, USBRS) sledi državnemu načrtu koridorjev, sprejetem leta 2008. Koridorji so 50 milj široki pasovi, kjer so kolesarske poti obstoječe ali v načrtovalski fazi (slika 4). Državni načrt koridorjev je živ in dinamičen načrt tako, da se nove koridorje po reviziji lahko dodaja ali odstranjuje stare glede na potrebe vin spremembe. (Weston idr., 2012)

Slika 4: Prikaz že zgrajenega (krepko) ali predvidenih koridorjev (črtkano) Sistema kolesarske poti v Združenih državah Amerike, (Adventure Cycling Association, 2016).



Načrt posamezne zvezne države vključuje definicijo kriterijev in metod za oceno in izbor poti znotraj posameznega koridorja, in predviden ali obstoječ proces za delo z lokalnimi skupnostmi za urejanje delov poti. Kolesarski načrt posamezne države lahko prepozna obstoječe ali načrtovane poti, ki pomagajo pri implementaciji državnega načrta koridorjev. To so lahko poti na dolge razdalje, obstoječe turistične ali doživljajske poti, zelene poti ali občinske kolesarske poti. Posamezna zvezna država se pri določanju prioriteten kolesarskih koridorjev lahko opre na številne vire, vključno s podatki o kolesarskih objektih, namenski rabi, demografskimi podatki, podatki v povezavi z varnostjo poti in statistični podatki o uporabi cest. Podatke lahko pridobi s strani državnih institucij (cestni podatki in popisi prebivalstva), izvede potovalne ankete, študije izhodišč in ciljev potovanja ter preko sodelovanja z javnostjo. (Weston idr., 2012)

3.6 Državno kolesarsko omrežje v Sloveniji

Načrtovanje državnega kolesarskega omrežja (DKO) je bilo v preteklosti predvsem naloga države oz. DRSI. Zaradi neuspešne določitve, kaj državno kolesarsko omrežje v Sloveniji je in kje poteka v preteklosti, so pobudo za umestitev in določitev kolesarskega omrežja v vmesnem času prevzele nekatere regije oz. razvojne agencije (Rozman, 2014). Vendar pa A. Klemenc pravi, da v Sloveniji "kolesarske steze in pasovi ne tvorijo niti osnovne sklenjene mreže na ravni mest, velikokrat so tudi neustrezno zasnovane ... in se vse prevečkrat nevarno iztečejo na površine z motornim prometom" (Deffner idr., 2014: 7).

Zakon o cestah v 41. členu (Uradni list Republike Slovenije, 2010) deli kolesarske povezave daljinske, glavne, regionalne in lokalne kolesarske povezave in so lahko na terenu izvedene kot kolesarske poti, kolesarske steze, kolesarske pasove ali kot prometna površina, ki je namenjena tudi drugim udeležencem v prometu.

Vlada Republike Slovenije se je leta 2004 obvezala, da bo pripravila strategijo razvoja daljinskih povezav kolesarskih poti v Sloveniji. Med drugim je zapisala, da se bo kolesarsko omrežje prilagajalo različnim ciljnim skupinam. Za uspešno delovanje kolesarske mreže je potrebno medsebojno povezati in uskladiti naslednja področja (Andrejčič Mušič, 2005):

- prevoz na krajše razdalje v mestih namesto vožnje z avtomobili na razdalji, krajši od 10 km, kjer se pričakuje omejitve in visoki stroški parkiranja;
- lokalna potovanja znotraj in okoli številnih manjših naselij v Sloveniji, kjer topografski pogoji to omogočajo;
- kratke »zbirne« vožnje na železniške ali avtobusne postaje, kjer se pričakuje, da bo kombinacija z javnim potniškim in železniškim prometom postala pomembna pri dnevnem prevozu iz predmestnih in primestnih predelov (angl. »bike and ride«);
- rekreativno turistično kolesarjenje v okolici in zaledju večjih naselij ter v turistično zanimivih predelih (zdravilišča, vinske ceste, slikoviti gradovi, vasi), počitniško-potovalno kolesarjenje ali enodnevne zaključene vožnje z vrnitvijo na izhodišče;
- mednarodno turistično usmerjeno kolesarjenje in priključitev nacionalnega kolesarskega omrežja na omrežje evropskih kolesarskih poti (European Cycle Routes)."

V Zasnovi so določili tudi osnovne ukrepe, s katerimi bodo to dosegli (Andrejčič Mušič, 2005):

- predvidene novogradnje samostojnih kolesarskih poti;
- gradnja kolesarskih stez in pasov ob rekonstrukciji obstoječih cest;
- ureditev cest skozi naselja;
- posodobitev kolovozov, gozdnih in poljskih poti in označitev kolesarskih povezav;
- redno vzdrževanje in obnove obstoječih kolesarskih površin."

Osnovni cilji, ki so bili pomembni predvsem za daljinsko kolesarjenje, je bila izgradnja vsaj 25 km samostojnih kolesarskih površin letno, s poudarkom na izbiri racionalnih projektnih rešitev (Andrejčič Mušič, 2005). Predvsem pa prednostna izbira odsekov, ki zagotavljajo zaključenost posameznih smiselni delov državnih kolesarskih povezav ter zagotavljanje povezav z že obstoječimi kolesarskimi sistemi v sosednjih državah. (prav tam). Država je tudi določila glavne koridorje in kategorizacijo kolesarskih povezav (slika 5) in jih razdelila na daljinske (rdeča

Slika 5: Predlog kategorizacija državnih kolesarskih povezav iz leta 2004 (Andrejčič Mušič, 2005).



barva), glavne (modra barva) in regionalne (zelena barva) kolesarske povezave, ki jih lahko vidimo tudi na sliki 5.

Zasnova državnega kolesarskega omrežja iz leta 2004 ni bila sprejeta oz. potrjena, zato so 5 let kasneje, leta 2009, na DRSC pripravili nov zemljevid s prikazom predloga DKO (slika 6). Zasnova je predvidevala 13 daljinskih kolesarskih povezav, 20 glavnih in 26 regionalnih kolesarskih povezav (Andrejčič Mušič, 2009). Spremenjeni zemljevid ni prenesel bistvenih izboljšav, saj turistično najzanimivejše kolesarske povezave niso imele enotne označitve in kolesarske povezave v večjem delu niso bile umeščene v optimalne koridorje, ampak so koridorji predstavljali trase ob obstoječih in prometnih državnih cestah (Rozman, 2014).

Obema predlogoma oz. zasnova državnega kolesarskega omrežja v Sloveniji se lahko očita predvsem neupoštevanje evropskih trendov ter neupoštevanje realnih potreb predvsem z vidika turizma, udobnosti in varnosti kolesarskega prometa in stanja na terenu (Rozman, 2014). Obrečne kolesarske povezave se tako iz obeh zasnov ne prepoznajo kot enega ključnih gradnikov in gonilo kolesarskega turizma v Sloveniji, čeprav nam študije, primeri in praksa iz tujine kažejo ravno obratno sliko (prav tam). Na podlagi primerjave različnih konceptov kategorizacije in razvoja državnega kolesarskega omrežja se kaže, da različne delitve in klasifikacije kolesarskih povezav niso pripomogle k boljšemu pregledu nad kolesarskimi povezavami v Sloveniji in izgradnjo primerne kolesarske infrastrukture (Žura idr., 2017). Kot je ugotavljal A. Klemenc gradnja slovenskega državnega kolesarskega omrežja "napreduje po polžje in brez pravega koncepta" (Deffner idr., 2014: 7).

V letih 2015–2017 je v okviru projekta MGRT in ARRS na UL FGG v sodelovanju z institutom IPOP potekal projekt CRP V2-1513: Izdelava modela povezanosti celotne Slovenije s kolesarskimi

Slika 6: Predlog kategorizacije državnih kolesarskih povezav iz leta 2009 (Willenpart, 2013).



potmi (Žura idr., 2017). Namen naloge je bil podati predlog državnega kolesarskega omrežja, ki bi predstavljal jedro kolesarske infrastrukture v Sloveniji. Nanj bi se potem vezale regionalne in lokalne kolesarske povezave ter poti kot tudi kolesarski turistični produkti. Nekaj splošnih ugotovitev iz poročila (Žura idr., 2017):

- Razvoj kolesarskega omrežja je zaradi nedefinirane organizacijske strukture na nacionalni in regionalni ravni nejasen in ni strateško načrtovan.
- Obstajajo zelo velika so neskladja med Zasnovo državnega kolesarskega omrežja in dejansko realizacijo na terenu, saj zasnova ni temeljila na jasnih in realnih ciljih ter na dejanskih potrebah ciljnih skupin uporabnikov.
- V Sloveniji do leta 2017 nismo imeli niti ene daljše daljinske povezave, ki bi jo lahko primerjali s tujino, saj se je gradnja nekaterih šele začela ali pa je še v fazi načrtovanja.
- V Sloveniji imamo večje število kolesarskih povezav, vendar so le-te umeščene na lokalnih in državnih cestah, kjer praviloma ni kolesarskih stez, saj jih država v preteklosti ni gradila.
- Načrtovanje, vzpostavitev, upravljanje in promoviranje kolesarskih povezav do sedaj ni bilo dovolj zadovoljivo in učinkovito, kar se odraža v primerih parcialno izvedenih kolesarskih poti, ki na posameznih odsekih niso v celoti izgrajene, prav tako pa med seboj niso povezane v celovito kolesarsko omrežje.
- Slovenija nima razvite mreže osnovne kolesarske infrastrukture.

V sklopu projekta so avtorji poskušali pridobiti vse podatke o kolesarski infrastrukturi in o kolesarskih povezavah v Sloveniji. Čeprav je iz slike 7 videti, kot da je Slovenija prepletena z kolesarsko infrastrukturo, pa je potrebno opozoriti, da so v večini primerov to zgolj kolesarske oznake, ki so označene ob obstoječih prometnih cestah in v večini primerov ne zagotavljajo varnega kolesarjenja (Žura idr., 2017).

Da se je tudi v Sloveniji v zadnjih letih pričelo razmišljati o izboljšanju kolesarske infrastrukture nam kažejo različni dokumenti, ki obravnavajo tematiko urejanja kolesarskega prometa: Direkcija za ceste z Navodili za projektiranje kolesarskih površin - novelacija maj 2012 (Lipar & Kostanjšek, 2012), Ministrstvo za infrastrukturo z Kolesarjem prijazna - smernice za umeščanje kolesarske infrastrukture v urbanih območjih iz leta 2017 (Steklačič, 2017), Priročnik za vključujoče načrtovanje in promocijo kolesarstva (Deffner idr., 2014) ...

Slika 7: Prikaz vseh podatkov o kolesarskih infrastrukturi in kolesarskih povezavah ter turističnih kolesarskih poteh v Sloveniji (vir: Žura idr., 2017: 66).



V letu 2018 je bil sprejet nov pravilnik o kolesarskih povezavah v Sloveniji, kjer so bili opredeljeni tudi glavni cilji vzpostavitve povezav (Pravilnik o kolesarskih povezavah, 2018), kot je spodbujanje področja kolesarstva in vzpostavitev atraktivnih kolesarskih povezav ter izboljšanje prometne varnosti kolesarjev ter zmanjšanje škodljivih vplivov motornega prometa na okolje. Med pogoji pri vpostavitvi kolesarskih povezav so med drugim tudi povezovanje z mednarodnim kolesarskim omrežjem, povezovanje različnih središč v Sloveniji, zveznost povezav, potek povezav ob vodotokih, kjer je to mogoče, vzpostavljane trajnostnih prometnih alternativ ... ipd., kar kaže na razumevanje družbe in politike pomembnosti pravilnega pristopa pri zasnovi kolesarskega omrežja v Sloveniji. V prilogi pravilnika so navedeni glavni koridorji kolesarskih povezav (državnih, glavnih in regionalnih) ter povezovanje različnih nacionalnih, regionalnih ali turističnih središč, ki so bili predlagani kot rezultat projekta CRP V2-1513: Izdelava modela povezanosti celotne Slovenije s kolesarskimi potmi (Žura idr., 2017) (slika 8).

Slika 8: Prikaz zasnove državnega kolesarskega omrežja z koridorji poteka državnih, glavnih in regionalnih povezav. (vir: Žura idr., 2017: 94)



4. SKLEP

Čeprav primeri iz tujine kažejo, da je urejena kolesarska infrastruktura predpogoj za vzpodbujanje uporabe koles in večanju deleža potovanja opravljenih s kolesom, v Sloveniji le s težavo usklajujemo različne interese za pripravo in izvedbo atraktivnih in varnih kolesarskih poti. Pogosto se zgodi, da izgradnja kolesarskih stez zgolj sledi rekonstrukciji posamezne prometnice in sama izvedba ne predstavlja privlačno rešitev za kolesarje, ki se ji posledično raje izogibajo. Pri snovanju ustrezne kolesarske mreže je potrebna predhodna analiza smeri ali tokov uporabnikov in priprava take zasnove omrežja, ki služi tako različnim vrstam uporabnikov - vsakodnevnim delovnim migracijam s kolesom kot tudi rekreativnim kolesarjem (Dufour, 2010). Primeri iz tujine kažejo, da so za npr. daljinsko kolesarjenje najbolj zaželenje direktne poti med glavnimi mesti, ki potekajo ob rekah ali po nekdanjih železniških trasah, kar zagotavlja zanimivost vožnje in niso pogojene z preveliki fizičnimi naporji - vzponi. V mestih zahodne Evrope že nekaj let poteka spreminjanje obstoječe, motornemu prometu prilagojene/podrejen, infrastrukture v kolesarjem bolj prijazno, dostopno in varno, kar se posledično odraža v vedno večjem deležu uporabe koles. Prav nerazumevanje različnih načinov uporabe kolesa ... nerazumevanje širše slike dnevne mobilnosti ... nerazumevanje skrbi za varnost kolesarjev ... in kasneje zgolj tehnična izgradnja kolesarskih poti se lahko odraža v slabi izkoriščenosti zgrajene kolesarske infrastrukture (Oldenziel in Albert de la Bruhèze, 2011), kar tudi pogosto odraža na premnogih obstoječih na kolesarskih stezah ob slovenskih cestah, ki so slabše izrabljene. V končnem poročilu o državnem kolesarskem omrežju v Sloveniji so avtorji

(Žura idr., 2017) predlagali v prvi fazi usmerjati označevanje kolesarskih poti in povezav po že izgrajenih kolesarskih poteh ter po malo prometnih cestah ter zastavili končni cilj DKO, ki bo v celoti potekalo po kolesarskih poteh, ki so ločene od ostalega prometa, s čimer se zagotovi največja možna varnost in privlačnost takega omrežja. Da pa se tudi v Sloveniji kažejo pozitivni koraki v vzpostavitvi DKO lahko vidimo v ureditvah in vzpostavitvah varnih in atraktivnih kolesarskih poti: Jesenice – Mojstrana – Kranjska Gora – Trbiž; Milje – Poreč (t.i. Perenzane); Dravske kolesarske poti; Bohinjska Bistrica – Ribčev laz; pripravi projekta kolesarske poti Bled – Bohinj; rekreacijsko kolesarska pot ob Kamniški Bistrici med Kamnikom in Domžalami (t.i. Zelena pot) ..., ki so zelo obiskane in kažejo, da se število kolesarjev večja ob primerni, urejeni in varni kolesarski infrastrukturi.

Opomba:

Članek je nastal na podlagi rezultatov projekta CRP V2-1513: Izdelava modela povezanosti celotne Slovenije s kolesarskimi potmi, ki je potekal na UL FGG od 2015 do 2017, sofinancirana s strani MGRT in ARRS.

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Arbresha Ibrahimimi, Tadeja Zupančič, Ljubo Lah: ZAKON O MUZEJIH KOT PRISPEVEK K DEGRADACIJI MUZEJEV V REPUBLIKI SEVERNI MAKEDONIJI

THE LAW ON MUSEUMS AS A CONTRIBUTOR TO DEGRADATION OF MUSEUMS IN THE REPUBLIC OF NORTH MACEDONIA

DOI: <https://dx.doi.org/10.15292/IU-CG.2018.06.076-084> ■ UDK: 069(497.7) ■ SUBMITTED: September 2019 / REVISED: September 2019 / PUBLISHED: October 2019

1.02 Pregledni znanstveni članek / Review Article

IZVLEČEK

Republika Severna Makedonija se sooča s problemi identitete. Država želi ustvariti državno identiteto, ki bi temeljila na makedonski nacionalni identiteti. Da bi dokazala makedonsko nacionalno identiteto, je Vlada (2006–2017) delovala v smeri ustvarjanja jasno opredeljene zgodovine makedonske nacionalnosti. Iskanje in dokazovanje zgodovine Makedoncev in državnih »korenin« kot čiste, etnične makedonske države predstavlja nacionalno patologijo. Muzeji delujejo kot varuhi nacionalne identitete in s tem podpirajo državno ideologijo. Toda Republika Severna Makedonija je v resnici večetnična država z mešano zgodovino, ki je za seboj pustila različne družbene in kulturne sledi. Navkljub temu pa je bil Zakon o muzejih v Republiki Severni Makedoniji spremenjen v skladu z nacionalistično ideologijo, in to v škodo primarne vrednosti in vloge muzejev. ICOM-ov kodeks muzejske etike je mednarodni kodeks, ki muzeje in kulturo umešča v regionalni in globalni kontekst, pri čemer ne daje prednosti kateremu koli elementu muzejske kompleksnosti, v pomoč pa je tudi pri opredelitvi področij, ki jih je treba izboljšati. Analiza ustreznih makedonskih pravnih dokumentov in njihovih sprememb skozi prizmo ICOM-ovega kodeksa muzejske etike pokaže vzroke za izgubo tradicionalne vloge muzejev v Severni Makedoniji. V sklepnem delu članka opredelimo izhodišča za pravne spremembe ter potrebo po ponovni vzpostavitvi vrednosti muzejev v Republiki Severna Makedonija in po vzpostavitvi družbeno-prostorske trajnosti prek muzejev.

KLJUČNE BESEDE

ICOM-ov kodeks muzejske etike, muzeji, zakon o muzejih Republike Severne Makedonije, družbeno-prostorska trajnost

ABSTRACT

The North Republic of Macedonia faces state identity problems. The state's concern is to create a state identity based on the Macedonian national identity. To prove the Macedonian national identity as a state identity, the government (2006-2017) works to create a clear cut history of the Macedonian nationality. The search for and proving of the history of the Macedonians and state "roots" as a clean, ethnically Macedonian state, presents a national pathology. Museums are used as curators of national identity in order to prove this state ideology. But the truth is that the Republic of North Macedonia is a multi-ethnic state with a mixed history that has left social and cultural traces. Despite this, the Law on Museums in the Republic of North Macedonia has been changed to conform to the nationalistic ideology, which has damaged the first value and role of museums. The ICOM Code of Ethics for Museums is an international code for integrating any museum and culture into the regional and global context, without discriminating against any element of the museum's complexity, and it can be used to find areas for improvement. Through the optics of the ICOM Code of Ethics for Museums, an analysis of the relevant Macedonian legal documents and their changes indicates the reasons for the loss of the traditional role of museums in North Macedonia. In the article's conclusion, we define the starting points for legal changes, the need to restore the value of museums in the Republic of North Macedonia, and to create socio-spatial-sustainability through museums.

KEY-WORDS

ICOM Code of Ethics, museums, the Law on Museums of the Republic of North Macedonia, museum socio-spatial-sustainability

UVODNIK
EDITORIAL
ČLANEK
ARTICLE

RAZPRAVA
DISCUSSION
RECENZIJA
REVIEW
PROJEKT
PROJECT
DELAVNICA
WORKSHOP
NATEČAJ
COMPETITION
PREDSTAVITEV
PRESENTATION
DIPLOMA
MASTER THESIS

1. INTRODUCTION

Museums as cultural buildings intertwine theory and practice into space, emotion, and experience, they combine architecture and other media to bring the past into the present and thus improve the future. For this reason, interpretations and definitions of museums can be identified in different contexts and levels. According to the International Council of Museums (ICOM) in 1974 "a museum is a non-profit making, permanent institution in the service of society and of its development, open to the public, which acquires, conserves, researches, communicates and exhibits the tangible and intangible heritage of humanity and its environment, for the purposes of education, study and enjoyment" (Sandahl 2018). The Museum Service Act of 1977 likewise defined a museum as: "a public or private non-profit agency or institution organized on a permanent basis for essentially educational or aesthetic purposes which, utilizing a professional staff, owns or utilizes tangible objects, cares for them, and exhibits them to the public on a regular basis" (Hein 2000, p. 3).

"Museums are at once very antique and very new" (Hein 2000, p. 3), and the development of museums goes along in mutual relation with the political, economic, social, cultural, educational and technological events of the country they are located in. Depending on the museums choice of priorities, this builds up their purpose, function and behaviours as an institution. The economic, political and social crisis in the Republic of North Macedonia from 2001 to 2017 has degraded the functioning of social institutions and the livelihood of the population. This crisis most seriously affected the education, medical and cultural systems. More specifically, the lack of government investment significantly reduced the number of museum activities and research projects. Funding was also lacking for the maintenance of museum buildings, which were constructed in the period from 1942 to 1970. The primary issue facing the population of the Republic of North Macedonia from 2006 to 2017 was having to survive on an average monthly salary of €150. However, the government's neglect of this primary need was evidenced by the realization of the "Skopje 2014" project. Over €684 million were spent on this, where, among other things, museum buildings, memorial houses, and galleries were built. The construction of museums (from 2014-2017) further deepened the political and social crisis, primarily because:

- It was not the right time to give money for the construction of cultural buildings,
- The money could have been invested in renovating existing museum buildings,
- New museums were built in inappropriate places and those prohibited by law,
- The museums did not meet the standards for museum design,
- Some of the museums' buildings were in the style of "post-modern classicism" (Vasilievski 2012) and made of Styrofoam,
- Some museums were built illegally.

Breaking the law to build museum institutions, getting building permits that should not have been issued, not registering museum buildings as national institutions undertaking museum activities, and using unregistered museum funds all helped to reduce the value of such museums as institutions. The failure to meet museum design standards was met with criticism by professionals within the state, who argued over what should be the criteria and conditions for an institution to be called a museum. The way in which exhibits were treated and presented

upset the constituent communities of the Republic of North Macedonia (Albanians, Turks, and Roma), due to misinterpreting the origins of the items. Meanwhile, misrepresentation of origin of the architectural elements appears on the façades of buildings built during the "Skopje 2014" (Скопје 2014 под лупа 2018) project, including those of museums, further aggravated relations with Greece. The conflict with Greece was due to using the name "Macedonia", which is also used by a northern Greek region. The two countries share parts of the territory of Alexander the Great's legendary kingdom, and a number of conflicts have arisen over this ancient heritage, including the name. The ancient Macedonian heritage is treated as "Macedonian" heritage, and this forces museums to be curators of Macedonian identity, and ignore the multicultural values of the Republic of North Macedonia.

2. RESEARCH PROBLEM

The data obtained from the State Statistical Office of the Republic of North Macedonia (Office 2018) show that the law and standards for museums have created problems for how museums function. The total number of exhibits at the level of the Republic of North Macedonia, registered until 2018, is 598,887. Of these, 428,447 are non-inventoried, while 170,440 are inventoried, of which only 26,615 (1.6%) are on display. Looking at the total number of exhibitions organized within the Republic of North Macedonia, it turns out that an exhibition is made up of an average of 125 exhibits. The total area of exhibition space in North Macedonia is 29,570 m², from the total number of exhibition halls is 107. From this information we can conclude that, on average, 125 exhibits are presented in an area of 280 m² and visited by 292 people (0.9 m² / person). Another major problem is the small site of storage depots, at just 6,815 m² at the state level, and this holds 42,8447 non-inventoried exhibits, or 4,819 items in just 76m².

One of the major causes of the decline of such institutions in North Macedonia is the Law on Museums. The legal framework dealt with in this paper consists of that set out by ICOM and the North Macedonian documents: The Law on Museums (LM), the Law on Amending and Supplementing the Law on Museums (LASLM), the Law on Culture (LC), the Law on Protection of Cultural Heritage (LPCH), the Regulations on Nature Protection (RNP) and the Rulebook on the standards for determining the types of museums, their work, accommodation and storage of museum objects and museum documentation (RSM).

3. REASON FOR COMPILING ETHICAL CODES OF MUSEUMS

Museums as cultural buildings have a mission, policy, and duty to their employees, along with the heavy responsibilities of the board of directors. Respect is essential at several levels due to the complexity inherent in museums as institutions.

The staff and managers' aims and missions are to carry out research and collect information with regard to various elements that are processed in the museum at the same level and at the same time, such as analysis made of the collections, visitors, visitor attractions, exhibit care, care for the employees and visitors, social philosophy, space, architecture, interior installations, and so on. "The western philosophical tradition, for the most part, ascribes ethical behaviour, its prescription, meaning, and judgment, only to human beings. The object has no direct moral status. Moral obligation is a human institution predominantly owed by persons to one another" (Hein 2000, p. 89). Professional ethics represents a moral obligation in the institutional context, which "prescribes behaviour to the individual practitioners of

specific professions. The codes of ethics are drawn appropriately to fit particular circumstances, allow access to confidential or sensitive information, provide security, the opportunity to cause injury or to give and withhold care, control over valuable property or the means of expression and the ability to regulate certain types of activity” (Hein 2000, p. 91).

The code of ethics adopts and updates the obligations based on social changes, whether due to demographic, technological, cultural, economic, or catastrophic events, such as warfare. Ethical codes for museums have changed significantly, especially after the 20th century, and museums have gained a new audience with a new lifestyle. Internationally accepted and practiced codes for museum functionality include a code of ethics for curators, a code of ethics of practice for conservators, a code of

ethics for registers, a code of ethics for museum stores, a code of ethics for public relations, and a code of ethics for museum education. A museum is thus defined as having a moral role in preserving social life.

4. THE AIM OF THE LAW ON MUSEUMS IN THE REPUBLIC OF NORTH MACEDONIA

The Republic of North Macedonia is a parliamentary democracy with an executive government composed of a coalition of parties from the unicameral legislature (Собрание, Sobranie) and an independent judicial branch with a Constitutional Court. The Government of the Republic of North Macedonia consists of sixteen ministries, one of which is the Ministry of Culture. This performs activities related to:

Museums in the Republic of North Macedonia, 2018							
	Type of museum						
	Total	by establissher			Total	by subject	
		public national	public local	private		general	specialized
	Museums						
Total	26	18	8	-	26	15	11
Visitors	427,493	394,228	33,265	-	427,493	215,898	211,595
	Exhibits by types of collections						
Inventoried exhibits - total	170,440	129,529	40,911	-	170,440	106,199	64,241
Archaeological	51,693	32,256	19,437	-	51,693	33,002	18,691
Ethnological	44,184	30,915	13,269	-	44,184	34,949	9,235
Historical	23,075	16,612	6,463	-	23,075	18,241	4,834
Artistic	14,067	12,694	1,373	-	14,067	5,345	8,722
Technical	11	-	11	-	11	11	-
Palaeontological	40	40	-	-	40	-	40
Geological	1,762	1,762	-	-	1,762	-	1,762
Zoological	29,476	29,476	-	-	29,476	12,043	17,433
Botanical	2,881	2,881	-	-	2,881	380	2,501
Other	3,251	2,893	358	-	3,251	2,228	1,023
Exhibits on display	26,615	21,300	5,315	-	26,615	20,593	6,022
Non-inventoried exhibits	428,447	421,849	6,598	-	428,447	87,220	341,227
	Exhibitions and visitors at the exhibitions						
In the museums:							
museums' own exhibitions	117	77	40	-	117	39	78
visitors	49,937	32,179	17,758	-	49,937	17,241	32,696
quest appearances in the museums	96	55	41	-	96	56	40
visitors	31,932	23,770	8,162	-	31,932	9,464	22,468
Outside the museums:							
in the Republic of North Macedonia	17	8	9	-	17	3	14
visitors	18,680	16,760	1,920	-	18,680	1,160	17,520
	Halls						
Total	559	436	123	-	559	290	269
Exhibition halls	107	84	23	-	107	48	59
Storage depots	89	53	36	-	89	48	41
Conservation and restoration laboratories	32	28	4	-	32	12	20
Other halls	331	271	60	-	331	182	149
	Surface in m²						
Total	57,425	48,373	9,052	-	57,425	26,287	31,138
Exhibition halls	29,570	25,651	3,919	-	29,570	12,567	17,003
Storage depots	6,815	5,700	1,115	-	6,815	2,885	3,930
Conservation and restoration laboratories	1,023	902	121	-	1,023	351	672
Other halls	20,017	16,120	3,897	-	20,017	10,484	9,533
	Number of museums that contain:						
Photography library	15	10	5	-	15	10	5
Archives	18	11	7	-	18	13	5
Libraries	21	14	7	-	21	13	8
Books in the libraries - number	141.834	124.555	17.279	-	141.834	62.083	79.751

Table 1. Statistical data for museums in the Republic of North Macedonia.

- Monitoring, analysing and proposing acts and measures for development and promotion of culture;
- Organization, financing, and the development of the network of national institutions and the financing of programs and projects of national interest in this field;
- Protection of cultural wealth;
- Publishing, music, scenic-artistic, film, gallery, library, archival, museum and cinema activities, the activities of cultural centres and of mediation in culture;
- Protection of copyright and related rights;
- Monumental celebrations of events and prominent figures of national interest;
- Supervision of its own competence and doing other activities determined by law.

The regulations that serve the organization and functioning of museums in the Republic of North Macedonia are the Law on Museums, Law on Museum Activity (which ceased to be valid in 2004), Law on Amending and Supplementing the Law on Museums, Law on Culture, Law on Protection of Cultural Heritage, Regulations on Nature Protection and Rulebook on the standards for determining the types of museums, their work, accommodation and storage of museum objects and museum documentation. The above-mentioned laws derive from the active laws of the former Yugoslavia.

After the statehood of the Republic of Macedonia in 1991, the government adopted the Law on Museums in 2004 as part of the Law on Culture established in 1998 (LC, no 31/ 1998). The Law on Museum consists of 11 chapters, which are undergoing changes according to the Law on Amending and Supplementing the Law on Museums, which was passed in 2017.

The Law on Museums is a combination of the ethical code of museums and standards of museums. This law, in general, complicates the rules with regard to the establishment of museums, does not detail the functions of museums and creates the possibility for manipulation. Starting from the first part of the Law on Museums, which is the General Order, the conditions and the way of operation of museums are noted (performing the activity, establishment, types of museums, organization, coordination, competences, supervision and other issues) (LM, s1). The museum materials and the museum items constitute the museum fund, as defined in Article 2 paragraph 3 of the Law on Museums. In the same article, paragraphs 1 and 2 provide details of what a museum material is and what is the definition of a museum object:

(1) The museum material is an archaeological, ethnological, historical, artistic and technical object, as well as the paleontological, geological, zoological and botanical samples acquired by the museum for their research, arrangement, expert and scientific processing, study and presentation, until they (the samples) are recorded in the inventory book of the museum.

(2) A museum object is the museum material referred to in paragraph (1) of this Article, which due to its value, properties, contents or functions is an item of cultural, scientific, historical and natural significance, and it is recorded in the inventory book of the museum, because its use and protection is under the legal regime in accordance with the law.

In the second chapter of the Law on Museums, the conditions for the types of museums, their establishment, and the termination of work are determined. According to Article 3, a

museum is a non-profit institution in the field of culture (LM, s 3 (1)). The purpose of a museum is to acquire, arrange, research, protect, store, publish and present museum objects (LM, s 3 (2)). The registered museums and independent museum collections, galleries and independent gallery collections, and other legal entities have the right to do museum activities (LM, s 4 (2)). It follows that observance of the manuals of museum design is not a legal requirement for a museum to function. This legal flexibility allows enacting of museums in any space and within each institution. In the Republic of North Macedonia, museums can be public (national and local) and private (LM, s 6 (1)). The act determines the type of the museum based on its foundation, where under paragraph 5 of Article 6 it is established that museums are general and specialized according to the type of the museum objects they have. A museum can begin to work if it meets the conditions for providing the primary funds, has financial resources, provides details for the museum's arrangement, including suitable premises and equipment for storing and presenting the museum's collection, as well as the right professional staff (LM, s 7 (1)). A museum can be closed if it does not meet the special conditions set out by the Law on Museums, or if the founder decides on the termination of the museum activity (LM, s 8 (1) (2)).

The third chapter of the Law on Museums specifies and publishes the policy of establishing, managing and funding local and private museums. A proposal for the creation of local museums, for their management and funding, is made by the related municipality (LM, s 10). The Republic of North Macedonia is a multi-party state, and the governing structure of each municipality is decided by the winning political party. Meanwhile, the leaders of the Ministry of Culture are elected by the governing parties. There are often clashes between the parties and institutional leaders with regard to abusing the allocation of funds to museums. For example, financial investments are often only given to museums with directors belonging to the same political party as the Minister of Culture. As such, private museums are directly subordinated to the political party which governs the Ministry of Culture. A private museum has the right to set up a domestic and foreign legal entity (LM, s 14 (1)). The museum fund of a private museum may join a foreign legal entity only with regard to museum material (LM, s 14 (2)); the same fund takes the status of a protected fund if it meets the conditions of the Law on Protection of Cultural Heritage (LM, s 14 (3)). The primary tasks of museums are as follows (LM, s 15):

(1) To explore, collect, organize, professionally and scientifically process and study, protect, publish and present the museum materials and the museum objects;

(2) Through permanent exhibitions, occasional and movable exhibitions, lectures, seminars, workshops, presenting films and other forms of activity, citizens can familiarize themselves with the museum objects and the objects' educational potential with regard to the significance of the cultural heritage and the nature of the Republic of Macedonia;

(3) To provide conditions for the scientific and professional study of the museum objects;

(4) To make initiatives for the adoption of regulations and measures for the promotion of the museum activity and professional development of museum staff;

(5) To publish scientific and professional publications, catalogues, guides and other promotional materials;

(6) *To keep an entry book, an inventory book, an outlet book, a library of museum objects, a catalogue of museum objects and other types of museum records and documentation, and*

(7) *To perform other activities in the field of museum activity based on the law.*

The Law on Museums provides for the formation of a “state museum” (museums that have legitimate rights to give building licenses for new museums with the same aim), to promote and coordinate the work of museums on the territory of the Republic of North Macedonia (LM, s 16(1)). In 2004 the Museum of Macedonia and the Natural-Scientific Museum of Macedonia, both in Skopje, were named as state museums (LM, s 16 (2)). Apart from the primary tasks of the institutions, national museums have to organize and coordinate cooperation among museums, to help with professional teamwork, to participate in the procedures for restitution of the movable cultural heritage managed by the Republic of North Macedonia, and to give an opinion to the Minister of Culture for fulfilling the conditions referred to in Articles 7 and 9 of this law (LM, s 17).

The activities of the museums (the fifth chapter) include: acquisition of museum materials and objects, preservation of museum objects, keeping museum records and documentation (written in the Macedonian language and an official language spoken by 20% of the citizens in the Republic of North Macedonia (Albanians, Turks, Roma)), presentations, revision and un-registration of museum objects and materials from the records (LM, s 20).

The purpose of museums for scientific research and education is clarified in Articles 23 to 30. Over history, the territory of Macedonia has been under the rule of the Dardanians, Romans, Byzantines, Bulgarians, Serbs, Ottomans, the Kingdom of Serbia, and Yugoslavia until the formation of the Republic of Macedonia in 1991 (Gazevic & Maudus 1974, p. 653). The generalization of these provisions creates space for unprofessional unilateral access to the research, documentation, and presentation of the museums’ collections. However, a disrespect for museums and their work means that they have become “curators of national Macedonian identity”. In order to improve marketing efforts, it is allowed by law to make copies of museum objects, including the production of commercial copies and reproduction of museum objects, as well as the usage of museum expenses for commercial purposes by paying for the insurance of the same objects (LM, s 26, s 27, s 28, and s 29). Neglect of the multi-faceted nature of museum objects and materials, and allowing the copying of such items, creates a risk with regard to the involvement of organized crime in cultural heritage.

The insurance of exhibits is a guarantee by the state that there will be compensation if any damage or loss occurs, and that exhibitions will be organized on the territory of the Republic of North Macedonia by public museums (LM, s 31). This is relevant for exhibitions from abroad that have a unique scientific, cultural, natural, artistic and historical value (LM, s 32 (1)). The exhibitions organized for commercial purposes do not have the right for such insurance (LM, s 32 (2)). An insurance decision, based on the sixth chapter of the Law on Museums, is adopted by the government of the Republic of North Macedonia based upon a proposal by the Ministry of Culture. In order to analyse the situation and determine measures for the promotion and long-term development of the activity of museums, the State Council for Museums was established as an advisory and expert body under the Minister of Culture (LM, s 34, s 35, s36). The conditions for obtaining the titles of “senior curator” and “curatorial advisor”, and the method of monitoring by the Ministry of Culture, are explained in the eighth (expert report) and the ninth chapters (supervision). From the chapter about the penal provisions (chapter ten) we can understand that a legal entity is punished with a fine if it does not obey the orders written in the Law on Museums, the Law on Culture and the Law on Cultural Heritage. The assessment of the work of the existing museums is done every third year by the Ministry of Culture, in cooperation with the competent state museum, following the conditions stipulated in the eleventh chapter. Having the same legal institute (the Ministry of Culture) responsible for permitting museum establishment, controlling their function from the design, administrative, financial and developmental aspects, as well as defining their punishment in cases of disobedience, has caused a loss of value and seriousness with regard to museums in North Macedonia.

4.1 The purpose of the changes of the Law on Museums from 2008 to 2016 in the Republic of North Macedonia

The 11-year political crisis in the Republic of North Macedonia, from 2006 until 2017, resulted from the dictatorial rule of the state through both legal constraints and private institutional control by the VMRO political party, which held a parliamentary majority during this period.

The Law for the Change and Supplement of the Law on Museums (LASLM), from 2008 to 2016, resulted in a number of changes, mostly to these chapters:

- Chapter 2: Types of museums, establishment, and termination of work
- Chapter 5: The activities of museums
- Chapter 7: National Council for Museums
- Chapter 10: Punitive provisions

In July 2008 the decision was made to increase the monetary fines for criminal offenses undertaken by legal, binding, physical entities or businesses (LASLM, 2008, s 2). The same article was changed in September 2010, reducing the value of the fines set (LASLM, 2010, s 1, s 2), with August 2015 (LASLM, 2015, s 1, s 2, and s 3) seeing further changes and 90% reduction in the penalties levied. The additional Article 45a (offense body) and Article 45b (domicile) specify who leads and who decides on the sanctions for any offenses (LASLM, 2008, s 3). According to the decision made in September 2010, Article 45b was changed so that it set out a reminder for the defendant (for a criminal procedure) with a set of educational lessons (LASLM, 2010, s 45 b). The same decision set out that the competence for deciding on any misdemeanours in the field of culture shall be granted to the cultural inspector, the Ministry of Culture and the state administration in the field of culture in Articles 45b, 45d and 45g.

Chapter two is on the “Types of museums, establishment, and termination of work”, and this was changed on 13 April 2011. In Article 7, 18 paragraphs were added after the second paragraph (LASLM, 2011, s 1). The new parts say that the Minister of Culture will approve the opening of a new museum with the consent of the State Museum’s expert opinion (LASLM, 2011, s 1 (3)). If the Ministry delays its response to the approval of the museum’s opening, the applicant is also allowed to receive consent through the archives of the Ministry (LASLM, 2011, s 1 (4)), the archives of the state administration body responsible for the affairs of the area of culture (LASLM, 2011, s 1 (6)), the state central inspectorate or the state court (LASLM, 2011, s 1 (8)). Paragraphs 4 to 21

of Article 7 (LM, 2004) were not used after 29 February 2016 after the enactment of the Law on Amending and Supplementing the Law on Museums. In the fifth chapter both the titles and articles are changed, allowing the Minister of Culture to be a signatory and to decide on the type of objects, materials, and conditions for museum fund protection, records and documentation, audit and expert assessment (LASLM, 2015, s 4, s 5, s 6, s 7, and s 8). The State Council for Museums (the seventh chapter), with Articles 34 (National Council of Museums), 35 (competence of the Council) and 36 (administrative affairs of the Council), was removed from the Law on Museums on 28 May 2015 (LASLM, 2015, s 10). By easing the punishment for entities that misuse items from a museum's collection (copying them, selling them, removing them and so on), the level of protection for exhibits was reduced. These changes together with the economic crisis in the country and the political ideology that calls for the creation of a Macedonian national culture, risk the disappearance of cultural heritage that is not of Macedonian origin.

4.2 Simplification of museum standards in the Republic of North Macedonia

The compilation of museum standards in the Republic of North Macedonia focuses mainly on the numbers, such as the number of exhibits and employees, the surface areas and number and overall scope of spaces available.

The National Museum, General National Museum, Special Museum, General Local Museum, Specialized Local Museum and Private Museum are the six types of museums established by the standards (RSM, s 1). The National Museum has three museum collections designated as cultural heritage under the Cultural Heritage Protection Act (RSM, s 2 (1)). If the National Museum has three museum collections of paleontological, geological, zoological and botanical samples, it must have the status of natural heritage according to the Law on Nature Protection (RSM, s 2 (2)). The professional staff of the National Museum consists of three curators, three conservators, and three documentarians (RSM, s 2 (3)). The facilities of the National Museum should have the proper conditions for conducting research, arranging expert and scientific processing as well as studying, preserving, protecting, and presenting museum objects (RSM, s 3 (1)). The architectural space of the museum consists of a minimum of 30 m² for the storage depot (first depository depot, central depots for each collection and safes for precious objects), a minimum of 20 m² for conservation laboratory preparations, and a total exhibition space with a minimum of 200 m² (RSM, s 3 (2)). Appropriate premises for education, documentation, administration, sanitation, access to the museum and for people with special needs, as well as security services, are all mandatory elements of a museum's facilities (RSM, s 3). According to Article 4 of the Rulebook on the standards of museums, the National Museum must provide adequate microclimate conditions, alarms for protection against fire and theft, and the technical devices needed for exhibitions on the premises. The adequate microclimate conditions for the storage depots and exhibition spaces are a temperature of 18°C to 20°C, humidity of 50% to 60% and light of 60 lux. The General National Museum and Specialized National Museum need to meet the same criteria, although in comparison with the National Museum the number of museum collections and professional staff can be reduced (RSM, s 5, s 6).

The provisions on space and equipment are as defined in Article 3, paragraphs 1 to 3 and Article 4, shall apply to the General Local Museum, Specialized Local Museum and Private Museums. The General Local Museum needs at least two museum collecti-

ons declared as meaningful cultural heritage under the Law on Protection of Cultural Heritage, and professional staff formed by one curator, one conservator, and one documentarian (RSM, s 7). The regulations for the General Local Museum also apply to the Specialized Local Museum, although they can have only one museum collection (RSM, s 8). The Private Museums must have museum items or materials systematized in a museum collection (RSM, s 9), with one curator employed. Museum collectors carry out museum activities with various or only a specific type of museum objects (RSM, s 10 (1)). Independent museum collections are organizational units within another legal entity in which museum activities are carried out with various or a particular kind of museum objects (RSM, s 10 (2)). Galleries and independent gallery collections offer museum activities with art objects (RSM, s 10 (3)). Article 11 regulates the conditions for declaring a national museum collection, an independent museum collection, a gallery and an autonomous gallery collection; they should have at least one museum collection declared as cultural heritage under the Law on Protection of Cultural Heritage. These organizational units have one curator and one conservator and a total space of at least 50 m². The same conditions apply to the proclamation and functioning of local museum collections, independent museum collections, galleries and personal gallery collections, either general or specialized (RSM, s 12). Local self-contained museum collections and independent gallery collections meet the status of national collections, upon the decision of the competent state body, if the collection they hold is declared cultural heritage of particular importance according to the Law on Protection of Cultural Heritage (RSM, s 13).

The museum documentation is kept on the ground floor premises with an adequate microclimate, security, and technical conditions (RSM, s 14). The museum premises are accessible to the public, through the organization of permanent and occasional exhibitions, with various thematic goals in Macedonia and abroad (RSM, s 15 (1) (2)). The museum objects can be made available to the public through ethnic-museums, eco-museums, the settings of the sites 'in situ' and archaeological parks (RSM, s 15 (3)). Museums must give at least 40 hours of weekly access to exhibitions to the public, and six hours a week they should provide public access to materials that are not on display (RSM, s 17).

The generalization of standards to all types of museum (The National Museum, General National Museum, Special Museum, General Local Museum, the Specialized Local Museum and Private Museum) has meant that there is inadequate space for accommodation, research and display of the museum's collections.

5. POTENTIAL BENEFITS OF IMPLEMENTATION OF "ICOM CODE OF ETHICS FOR MUSEUMS IN THE REPUBLIC OF NORTH MACEDONIA"

An essential condition for restoring trust in and the value of museums in the Republic of North Macedonia is to respect and not-discriminate against the multi-ethnic history of this state. The Law on Museums must be fundamentally based on equality and international standards. The ICOM code offers new opportunities for the integration and internationalization of museums, it cares about the value of each exhibit, the importance of the museum as a building, and for the institution itself and its purpose.

The International Council of Museums established the ICOM Code of Ethics, which presents a minimal standard of professional practice and performance for museums. Following the international acceptance of the code in 2006, they were revised

in, 2013 and 2017. The ICOM Code of Ethics from 2017 consists of eight chapters that set rules for collection, preservation, and research, as well as offering opportunities for the appreciation of museum collections; they also set out standards for the management of natural and cultural heritage, in terms of the required resources, cooperation, legal and professional functioning.

According to the first chapter of the Code of Ethics (ICOM, 2017), "Museums preserve, interpret and promote the natural and cultural inheritance of humanity", the governing body of the museum has a constitution, status, and documents which define its legal status, mission, sustainability and non-profit nature. By publishing a mission statement, goals, policies, roles, and composition of the constituent body, the regulations governing a museum are legally established. The governing body gives the space needed, along with a suitable environment to apply the principles of architectural design to the museum and provide accessibility for people with special needs. The protection of the public and staff, along with the security of the exhibits from theft, damage and natural disasters, should be the guiding moral principles of the institution. The task of the governing body is also to create a strategy to provide financial resources from both domestic activities and capital investment funds. The institutions' directors or managers should have the professional skills, professional knowledge, work experience, and abilities needed to do their work, as well as the professionalism, morals, ethics, and respect needed to be an effective leader. The chapter "A museum that maintains collections holds them in trust for the benefit of society, and its development" lists the basic principles for the operation and written approval of the process of purchasing, caring for, collecting and using the museum funds. The collections should be accompanied by detailed information on their history, discovery, presentation, and so on. For any material that is part of a museum collection there should be enough information about the place where it should or should not be catalogued, and the conditions for storage or exhibition should be clarified. Museums must not obtain funds for use without a work permit, and must be able to show details of how biological or geological specimens have been collected, sold or transferred and if they have complied with local, national, regional and international laws for the protection of cultural items. Human remains or materials of particular spiritual importance should be taken only if the museum can respect the origin of the objects, and safely house them based on professional standards along with the interests and beliefs of the group that the objects originated from. Buying, selling, or donating items requires special attention. First, the geo-atmospheric conditions of the purchased item must be met, the full story of the item according to scientific-cultural research rules must be given, and any legislation in force for the sale of the item must be respected. Items can be accepted or sent as a gift only on behalf of the institution. Employees, directors, close associates, and family members of museum staff should not be involved in the sales process in relation to the museum collection, either directly or indirectly. The purchase of objects or samples outside the stated policy of the museum should be made only in extraordinary conditions. The ethics code for museums does not prevent the museum from being an authorized depositor for cultural objects. Removal of an object from the collection should be based on facts that support its removal. The method used for removing an item from the collection should be determined according to the policy of each museum. All information on the status of items in the collection should be secured, corrected, and detailed, used by employees and researchers (with permission), and left to future generations in the best condition possible. The responsibility for this process falls on the authorized person. The

museum management body should pay particular attention to political developments with regard to the collection and protection of items during armed conflicts, natural or human disasters. According to Articles 2.24 and 2.25 (ICOM, 2017):

The museum should carefully monitor the condition of collections to determine when an object or specimen may require conservation-restoration work and the services of a qualified conservator-restorer. The main goal should be the stabilization of the object or specimen. All conservation procedures should be documented and as reversible as possible, and all alterations should be clearly distinguishable from the original object or specimen.

A museum that maintains living animals should assume full responsibility for their health and well-being. It should prepare and implement a safety code for the protection of its personnel and visitors, as well as of the animals, which has been approved by an expert in the veterinary field. Any genetic modification should be clearly identifiable.

According to the third chapter of the ICOM (2017) Code of Ethics, the leading body has the responsibility for the care of, access to, and interpretation of the primary evidence that is collected and kept in their collections. The museums have exclusive responsibility for the unfettered access to relevant collection information, based on the academic standards and the applicability of national and international law and treaty obligations. In the absence of a framework or to establish a more professional approach to the collection, museums should collaborate with academic, research institutions or relevant other institutions with the adequate profile and objectivity. Fieldwork should only be undertaken with respect and consideration for the views of the local communities, their environmental resources, and cultural practices, as well as efforts to keep the cultural and natural heritage. The museum's duty to develop its educational role and attract a broad audience from local communities is laid out in the chapter of ICOM (2017) "Museums for the appreciation, understanding, and management of the natural and cultural heritage" and in the section "Museums work in close collaboration with the communities from which their collections originate as well as those they serve". Collaboration with communities and the promotion of their heritage is a part of the museums' educational role. The use of certain items, human remains, and sensitive materials should comply with the museum standards, taking into account the interests and beliefs of the community members, ethnic or religious groups from which the objects originate. The information disclosed about these exhibits should be the result of honest and transparent research by individuals from appropriate academic, social, or religious disciplines. The reliability of the information presented in an exhibition expresses the seriousness of the museum as an institute, and the use of materials of dubious origin or any lack of data on the source of an object are not tolerated, as such things contribute to the illicit trafficking of cultural property. Museums must respect the original identity of an item when making copies of an object, and the copies must be identified as such. The character of exhibits that have strong links to national, regional, local, ethnic, religious or political identities must be accepted by the museum's policies, which is bound to be general in this situation. The exchange of knowledge, documentation, and information about museum collections with relevant academic, cultural and religious institutions should be part of the museum's development strategy to protect the cultural values of minorities. In this regard, in order to promote the preservation of the cultural values of minorities the inter-institutional cooperation that occurs among national or international museums should be rea-

dy to engage in dialogue on the return of cultural property to its country or people of origin, respecting all legal, institutional and international rules for the exchange of cultural property. Creating a favourable environment for community support, and contributing to the promotion of harmonious relationships that promote human well-being, social development, institutional, transnational, and multi-lingual respect, requires human dignity, and if not carefully done can easily change an entire culture.

According to the principles of chapter five from the ICOM (2017) Code of Ethics:

Museums utilize a wide variety of specialisms, skills and physical resources that have a far broader application than in the museum. This may lead to shared resources or the provision of services as an extension of the museum's activities. These should be organized in such a way that they do not compromise the museum's stated mission.

The monetary valuation or museum identification service should not be used in such a way as to be regarded as benefiting from such activity in a related or indirect means. All such museum services must be in full compliance with international, national, regional, local legislations. The last chapter of the ICOM Code for Ethics outlines a professional approach to museum operation. Museum employees, in addition to knowing and adhering to the standards, laws, and conventions that are in force, must also bear moral and ethical responsibility for the dissemination, preservation, and use of information about the museum's activities and collections. Data can be used to tell the public about the purpose and aspirations of the museum profession in order to develop a better understanding of the museum's contribution to society, always based on the related regulations. It is also the responsibility of employees to work both directly and indirectly against the trafficking and illegal possession of natural and cultural property. According to Article 8.18 (ICOM, 2017):

In any conflict of interest develops between an individual and the museum, the interests of the museum should prevail.

6. CONCLUSION

In a multi-ethnic state, documenting, displaying and presenting objects only in relation to a Macedonian identity, whether by a museum worker or academic research institution, and without the incorporation of researchers or academic-cultural institutions of Albanians, Turks, Vlachs and so on, or without representatives of religious groups such as Muslims, Christians, and Eastern Orthodox, cannot be accepted. Due to the actions of recent years, museums in the Republic of North Macedonia have no social credibility. While the law and standards on museums within the Republic of North Macedonia do not require museums to incorporate multiculturalism into their research and display of their collections, museums in the Republic of North Macedonia will always act as headquarters for the creation of a Macedonian national identity. Considering the delicate situation of North Macedonia with regard to the acceptance of the multi-ethnic character of the state, the Law on Museums should be elaborated as a development strategy including the following three phases:

1. Strategic planning
2. Museum master planning
3. Architectural and exhibition master planning

For this reason, we suggest that the development of museums be based on the ICOM Code of Ethics (2017).

In these, the primary aims are the democratization of museums as an institution, universal integration, respect for cultural heritages, respect for the principles of collection presentation, and moral and ethical leadership. Working towards transparency, free access, responsibility for the museum itself as an institution, and respect for national and international laws and codes, all help gain public trust and integrate professional qualifications with the aim of social sustainability. To restore trust, value, and the primary principles of museums, the Republic of North Macedonia should:

- Denationalize and depoliticize museum institutes;
- Democratize museums as institutions;
- Accept the ICOM Code of Ethics as a primary code, and then adapt the entire law and standards of museums in the Republic of North Macedonia, as needed;
- Oblige museums in North Macedonia to draft documentation and operating conditions based on the ICOM Code of Ethics;
- Reorganize and reallocate cultural funds based on multicultural research expertise;
- Support the main social-sustainability principle, forcing museums to work for the improvement of inter-ethnic relations; and
- Respect the principles of museum architecture and environmental design.

The next research step is to uncover these relevant practices and to demonstrate the potential of their translation into a different socio-cultural context. Thus the problem of an artificially created architectural identity, that literally reflects the degradation of museums in the Republic of North Macedonia, will be addressed.

Acknowledgement

This research paper is elaborated as a reflection on the author's Ph.D. progress entitled: "Museums as generators of identity in Skopje", at the University of Ljubljana- Faculty of Architecture, Ljubljana, Slovenia. Supervised by: prof. dr Tadeja Zupančič.

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Table 1. Statistical data for museums in the Republic of North Macedonia, viewed 5 May 2019, http://www.stat.gov.mk/PrikaziSopstenie_en.aspx?rbtxt=30

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UVODNIK

EDITORIAL

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RAZPRAVA

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RECENZIJA

REVIEW

PROJEKT

PROJECT

DELAVNICA

WORKSHOP

NATEČAJ

COMPETITION

PREDSTAVITEV

PRESENTATION

DIPLOMA

MASTER THESIS

Naja Marot, María-José Prados: PROJEKT COST RELY – OBNOVLJIVI VIRI ENERGIJE IN KAKOVOST KRAJINE

PROJECT COST RELY – RENEWABLE ENERGY AND LANDSCAPE QUALITY

UDK: 620.91:712.25 ■ 1.03 Kratki znanstveni prispevek / Short Scientific Article ■ SUBMITTED: August 2019 / REVISED: September 2019 / PUBLISHED: October 2019

IZVLEČEK

Prispevek govori o razmerju med proizvodnjo energije (elektrike, toplote) in kakovostjo krajine, na katero umestitev proizvodnih objektov vpliva. Na začetku avtorici vpeljeta termin energetska krajina, opredeljen v okviru transnacionalnega evropskega projekta COST RELY, katerega rezultati služijo kot glavni vir prispevka. Kot izhodišče je predstavljena statistika proizvodnje energije iz OVE v Evropi in Sloveniji, izpostavljeni so problemi, s katerimi se soočajo razvojniki pri umeščanju proizvodnih objektov, ki koristijo OVE, v prostor, natančneje v krajino. Opisani so participativni in analitični pristopi, na primer strateška presoja vplivov na okolje, vizualna presoja, presoja vplivov na družbo, participativno načrtovanje, s katerimi lahko regije, lokalne skupnosti in energetska podjetja poskrbijo za legitimnost načrtovanih umestitev in njihovo sprejemljivost s strani prebivalcev in drugih relevantnih deležnikov. Predstavljeni so tudi drugi rezultati projekta, kot sta na primer glosar in monografija.

KLJUČNE BESEDE

krajina, energetska krajina, obnovljivi viri energije, kakovost krajine, sončna energija, vetrna energija

ABSTRACT

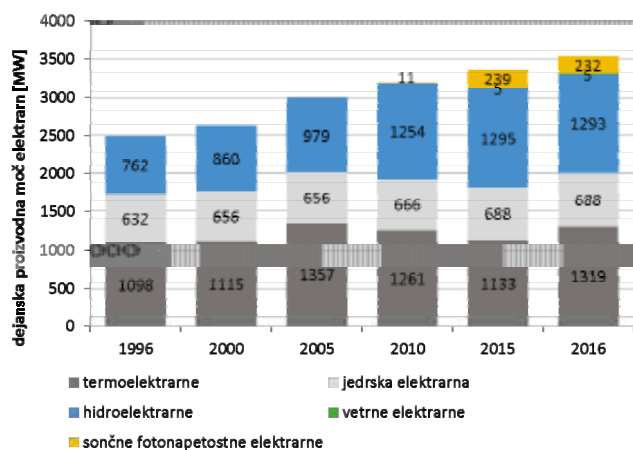
Contribution talks about the energy production (electricity, heat) and the landscape quality which is significantly by construction of the production units. In the beginning, the authors represent the term energy landscape, defined in the frame of the transnational European project COST RELY, of which results serve as a major source for the contribution. As the basic ground the core statistics of the energy production from renewable energy source in Europe and in Slovenia is presented. Further on, readers learn about the problems developers are facing while locating and designing the production units like wind power plants and/or solar power plans into the landscape. Participative and analytical approaches are described, as for example Strategic Environmental Assessment, Visual Impact Assessment, Social Impact Assessment, and participative planning which all can help regions, local communities and energy companies to plan legitimately and to ensure acceptance of the production units by the inhabitants and other relevant stakeholders. Other results of the project such as glossary and monograph are presented in the article as well.

KEY-WORDS

landscape, energy landscape, renewable energy sources, landscape quality, solar energy, wind energy

1. UVOD

Cilj držav Evropske unije je do leta 2020 doseči 20 % končne rabe energije iz obnovljivih virov (v nadaljevanju OVE). Za doseg tega cilja so si države članice zastavile svoje nacionalne cilje. Najmanj ambiciozen cilj ima Malta z 10 % in najbolj ambicioznega Švedska z 49 %. Slovenija je s 25 % nekje v zlati sredini. Po zadnjih dostopnih podatkih EUROSTAT-a (2018) za leto 2016 je 11 od 28 držav Evropske unije doseglo ali preseгло svoj zastavljeni cilj, Slovenija je leta 2016 z 21,3 % za njim še vedno krepko zaostajala. Pri doseganju ciljev se večina držav zanaša na kombinacijo vetrne, sončne in vodne energije, Slovenija zlasti na slednjo. Medtem ko je izkoriščanje hidroenergetskega potenciala v Evropi že dobro uveljavljeno (leta 2015 so hidroelektrarne k skupni proizvodnji električne energije iz OVE prispevale 38 %) in z razmeroma skromnim potencialom za nadaljnjo rast, sta sektorja izrabe vetrne in sončne energije mlajša in še vedno hitro rasteta. Med letoma 2005 in 2015 je proizvodnja električne energije v sončnih elektrarnah narasla z 1,5 TWh na kar 107,9 TWh, kar v Evropski uniji pomeni 11 % od vse proizvedene elektrike. Po svetovnih napovedih naj bi sončna in vetrna energija do leta 2060 zagotavljali kar dve petini proizvodnje električne energije (Davies 2016). Delež obnovljivih virov pri proizvodnji toplote in hlajenju se je od leta 2007 (20,4 %) skoraj podvojil in je leta 2016 dosegel 34,0 %, medtem ko delež v transportu ostaja bolj ali manj enak (1,6 %).



Slika 1: Dejanska proizvodna moč elektrarn v Sloveniji v letih 1996, 2000, 2005, 2010, 2015 in 2016 (vir: SURS 2018).

2. O PROJEKTU

Numerični podatki pa ne povedo, kako doseganje zastavljenih ciljev vpliva na družbo in prostor. Od časa do časa zasledimo novico o skupini ljudi, ki preprečuje transport in/ali postavitev vetrnih turbin ali protestira proti gradnji hidroelektrarn zaradi okoljske škode ter potencialnih škodljivih vplivov na krajino in gospodarstvo. Cilj projekta COST RELY (Renewable Energy and Landscape quality, v prevodu Obnovljivi viri energije in kakovost krajine) je zato preučitev stanja stroke na tem področju, opredelitev pojma energetske krajine, pregled tehnik in metod, ki se uporabljajo za napovedovanje, presoje in ocenjevanje vplivov proizvodnje elektrike iz OVE na kakovost krajine in pregled dobrih praks umeščanja teh objektov v prostor.

COST RELY Action je projekt v okviru COST-a, podprograma Obzorje 2020, primarno namenjen mreženju. Štiriletni projekt se je zaključil oktobra 2018, v njegovih aktivnostih je sodelovalo prek 200 oseb – raziskovalcev, akademikov, strokovnjakov, predstavnikov uprave in drugih zainteresiranih – iz 35-ih evropskih držav, kot pridruženi člani ali opazovalci pa še predstavniki iz Albanije,

Kanade in Združenih držav Amerike. Kot nakazuje okrajšava RELY, projekt obravnava razmerje med obnovljivo energijo in kakovostjo krajine. Skladno z naravo programa financiranja projekt skrbi za diseminacijo in nadgradnjo obstoječega znanja sodelujočih, vključujoč relevantne metode raziskovanja, koncepte, terminologije, in razvija usmeritve za vključevanje javnosti v prostorsko in okoljsko načrtovanje energetskih sistemov OVE. Rezultati prinašajo boljše razumevanje razmerja med varstvom in upravljanjem krajine ter razporejanjem proizvodnih sistemov, ki izkoriščajo OVE, kar je pomemben prispevek k vzdržni transformaciji energetske oskrbe družbe in racionalnemu upravljanju prostora (European Cooperation 2014).



Slika 2: Shema projektnih aktivnosti posameznih delovnih skupin.

Iz Slovenije so bili v projekt vključeni trije sodelavci Oddelka za krajinsko arhitekturo Biotehniške Fakultete Univerze v Ljubljani: Mojca Golobič je s svojimi izkušnjami na področju presoj vplivov na okolje in vizualnih presoj sodelovala v delovni skupini 2 (glej sliko 2), Naja Marot je v delovni skupini 4 prispevala k pripravi glosarja in diseminaciji, Tadej Bevk pa je sodeloval kot doktorski študent, čigar tema obravnava vprašanje dojemanja (kakovosti) krajine na primeru sončnih fotonapetostnih elektrarn v Sloveniji.

3. REZULTATI PROJEKTA

Ena od pomembnejših nalog projekta je bila terminološke narave. Za začetek smo opredelili pojem energetska krajina: "krajina, za katero je značilna prisotnost enega ali več elementov energetske verige (na primer pridobivanje, zbiranje, pretvorba, shranjevanje, transport ali prenos energije). Rezultat je večplastna energetska krajina, sestavljena iz kombinacije tehničnih in naravnih virov energije znotraj krajine" (Kruse in Marot 2018).

Poleg osnovnega izraza so bili podrobneje opredeljeni in opisani naslednji tipi: krajina vetrnih elektrarn (na kopnem in na morju), krajina hidroelektrarn, krajina sončnih elektrarn (fotonapetostne elektrarne, sončne termalne naprave in sončna termoelektrika), krajina, namenjena izrabi biomase (biomasa, biogorivo in bioplin) in krajina geotermalnih elektrarn.

Najobsežnejša aktivnost na področju terminologije je priprava večjezikovnega glosarja, ki vsebuje 48 terminov/izrazov, razdeljenih v tri tematske skupine: 1. krajina (povezano s kakovostjo in značilnostmi krajine), 2. tipi OVE ter 3. prostorsko-načrtovalski postopki, metode in tehnike. Na voljo je na spletni strani COST RELY in je v prostem dostopu objavljen v madžarski znanstveni reviji Hungarian Journal of Landscape Ecology. Vsako geslo je opisano s šestimi elementi: 1. angleški izraz, 2. opredelitev, 3.

Sliki 3a in 3b: Primeri krajins sončnih fotonapetostnih elektrarn: Mala fotonapetostna elektrarna v Bučah na Kozjanskem (471 kW) in v kraju Ceste pri Rogaški Slatini (702 kW). (foto: Tadej Bevk)

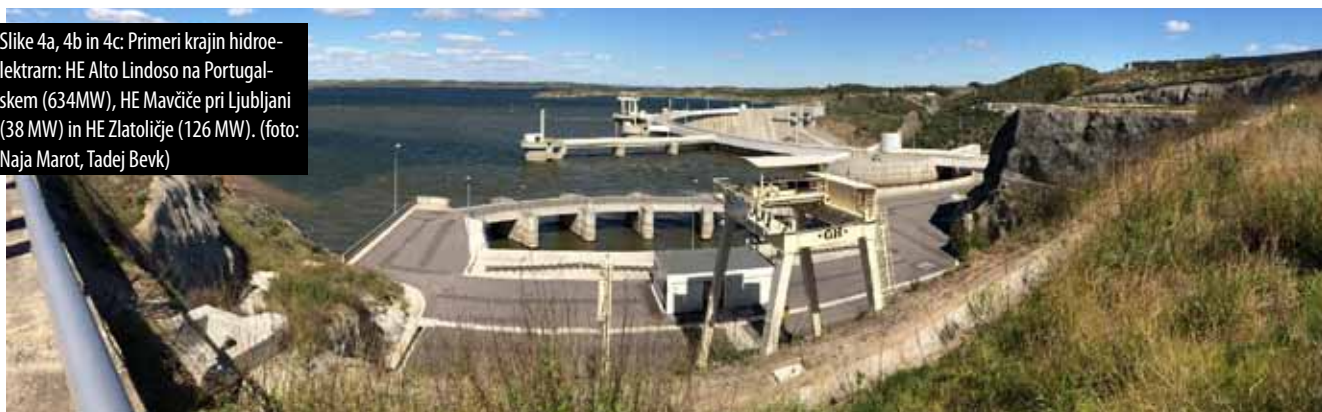


sorodni izrazi, 4. ključne besede, 5. grafični prikaz(i) in 6. viri. Izrazi v glosarju so prevedeni v 28 evropskih jezikov, vključno z esperantom. Opredelitve v glosarju so rezultat dela in razprav interdisciplinarne skupine 31 strokovnjakov različnih prostorskih ved (krajinska arhitektura, geografija, sociologija, arhitektura itd.). Priprava glosarja je pokazala, da izrazi s področij krajine in načrtovanja niso bili problematični, da pa so bili strokovnjakom s prostorskega področja najbolj nepoznani tehnološki izrazi, vezani na tipe OVE, na primer vsi tipi in možne instalacije fotonapetostnih in sončnih termalnih elektrarn (Marot in Kruse 2018). Poleg glosarja je v projektu nastala tudi obsežna javna zbirka fotografij, posnetih med različnimi projektnimi aktivnostmi, kot so obiski proizvodnih lokacij, ali zbranih v okviru projektnih partnerjev. Te fotografije predstavljajo novo realnost evropskih krajin in omogočajo primerjavo ter dokumentiranje regionalne

raznolikosti in vključevanja teh energetskega sistemov v prostor. Poleg tega je bila zbirka fotografij uporabljena kot vir ilustracij za glosar in je del potujoče razstave, ki poteka skozi celotno obdobje trajanja projekta.

Sodelovanje predstavnikov večjega števila držav zagotavlja idealne razmere za izdelavo primerjalnih analiz. Prva delovna skupina se je posvečala zlati analizi obstoječega stanja. Zbirka podatkov o trenutnem stanju rabe OVE v evropskih državah je bila dopolnjena z zemljevidi proizvodnje energije iz OVE v Evropi, za posamezne države so bili pripravljani profili proizvodnje iz OVE in pa aktualnih vprašanj preučevanja razmerij med krajino in proizvodnimi enotami, ki so objavljeni v monografiji Renewable Energy and Landscape (Buchecker s sodelavci 2018). Zbrani in analizirani so bili članki, študije in drugi viri, ki opisujejo pozitivne/negativne vplive instalacij na značaj in kakovost krajine ter

Slike 4a, 4b in 4c: Primeri krajins hidroelektrarn: HE Alto Lindoso na Portugalskem (634MW), HE Mavčiče pri Ljubljani (38 MW) in HE Zlatoličje (126 MW). (foto: Naja Marot, Tadej Bevk)



trenutni podatki o proizvodnji energije s pomočjo OVE v Evropi (cilji, politike). Ena od preučevanih metod je bila vrednotenje (značaja) krajine, ki se uporablja pri krajinskem načrtovanju za prepoznavanje krajinskih vrednot, razvojnih priložnosti in možnosti upravljanja. Prav tako pomembna je presoja vplivov na vidne kakovosti – sistematična analiza možnih vplivov na okolje, do katerih pride zaradi predlaganega razvoja, ki vključuje tudi ugotavljanje možnih omilitvenih ukrepov za blaženje učinkov takšnih razvojnih pobud pred njihovo izvedbo.

Osnovni analizi statusa proizvodnje energije s pomočjo OVE v Evropi sta sledila pregled in presoja funkcij, kakovosti in občutljivosti krajine ter potencialov za izkoriščanje posameznih tipov OVE. Izbranih je bilo več kot 50 primerov "dobrih praks" načrtovanja in razvoja iz 20-ih evropskih držav z namenom ugotovitve skupnih značilnosti in priprave tipologije projektov dobrih praks (več si lahko preberete v Frantal s sodelavci 2018). Na podlagi ekspertnega mnenja je bilo ugotovljeno, kako se posamezni krajinski tipi in funkcije skladajo z različnimi sistemi rabe OVE. V okviru aktivnosti je bila leta 2016 na Irskem organizirana (študentska) delavnica mladih strokovnjakov, magistrskih in doktorskih študentov, s tematiko vizualne presoje učinkov, leta 2017 pa na Islandiji s tematiko prostorskega načrtovanja in umeščanja objektov. Namen je bil oceniti potencial in ranljivost specifičnih krajinskih tipov za razvoj sistemov za rabo OVE. Rezultati so objavljeni v članku Iterative Digital Photo-based Assessment for Rural Landscape Perception (Ponovna presoja dojemanja agrarne krajine na podlagi digitalnih fotografij (Bevk s sodelavci 2017)).

Poleg analize stanja in metod presojanja je projekt obravnaval tudi družbeno-kulturne vidike lociranja, gradnje in delovanja sistemov za rabo OVE, ki se v največji meri nanašajo na doje-manje in odnos javnosti do projektov za rabo OVE. Zbrani so bili obstoječa orodja za načrtovanje sistemov za rabo OVE in primeri inovativne prakse pri participativnem načrtovanju v različnih evropskih regijah. Inovativna načrtovalska orodja so bila ocenjena z vidika pričakovanih koristi in njihove usklajenosti s prostorsko-načrtovalsko kulturo in postopki v posameznih državah. Na podlagi teh ugotovitev je bila izdelana zbirka orodij za učinkovito prostorsko načrtovanje sistemov za rabo OVE, ki poleg opisa vsebuje tudi odločitveno drevo za izbor optimalnih orodij. Primer orodja je participativno kartiranje pomenov kraji-ne za identifikacijo optimalnih lokacij za rabo OVE.

4. ZAKLJUČEK

Izmenjava znanj je razkrila, da je položaj na področju razvoja sistemov za rabo OVE po državah in regijah zelo raznolik. Evropske države se soočajo z izzivi na področju povečevanja proizvodnje energije iz OVE ter hkratnega trajnostnega upravljanja krajin, v Sloveniji je največ takšnih izzivov na področju povečevanja rabe vetrne in sončne energije. Projekti rabe prve so bili ustavljeni prav zaradi predvidenih vplivov na krajino, medtem ko pri drugih zaenkrat lahko govorimo le o posameznih elektrarnah manjše velikosti, ki so del že obstoječih pozidanih objektov in tako v večjem merilu ne posegajo v krajino. V kolikor bi si želeli elektrarn z večjo inštalirano močjo, je treba pripraviti ustrezno nacionalno strategijo, v katere tipe krajin, na primer na degradirana območja, je takšne objekte smiselno umeščati in v kakšni velikosti.

Primerjalna analiza je kot glavne dejavnike legitimnega in sprejemljivega prostorskega razvoja rabe OVE izpostavila prostorsko-načrtovalsko kulturo in odprtost načrtovalskega procesa za sodelovanje javnosti, doje-manje kakovosti različnih krajin ter strategijo in odnos investitorjev do razreševanja konfliktov. Boljšo sprejemljivost prihodnjih projektov se lahko na primer za-

gotovi, če se javnost in/ali deležnike pelje na konkretno lokacijo, kjer se načrtuje izvedba projekta, da se tako vzpostavi neposreden stik s prostorom. Mentalni zemljevidi in druge raziskovalne tehnike, uporabljene v realnem okolju, lahko načrtovalcem pri-nesejo več kakovostnejših informacij kot "laboratorijske" metode s statičnimi fotografijami in fotografskimi vizualizacijami. Več informacij o projektu je dostopnih na spletni strani (www.cost-rely.eu).

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Gregor Čok: SUPREME: PILOTNI PROJEKT ZA PRIPRAVO OSNUTKA POMORSKEGA PROSTORSKEGA NAČRTA (PPN) ZA OBMOČJE SLOVENIJE

SUPREME: A PILOT PROJECT FOR PREPARING A MARITIME SPATIAL PLAN (MSP) FOR SLOVENIAN TERRITORY

UDK: 711.4 ■ 1.03 Kratki znanstveni prispevek / Short Scientific Article ■ SUBMITTED: August 2019 / REVISED: September 2019 / PUBLISHED: October 2019

IZVLEČEK

Skladno z Direktivo o pomorskem prostorskem načrtovanju (PPN, 2014/89/EU) morajo evropske obmorske države v naslednjih letih izdelati nove pomorske prostorske načrte. Med ključne prioritete PPN sodijo: okoljski vidiki, medsektorsko in mednarodno usklajevanje interesov ter integralno načrtovanje obalnega pasu. V prispevku so predstavljeni rezultati projekta SUPREME, katerega cilj je bil podpora državam pri vzpostavitvi PPN v vzhodnem Sredozemlju. Za slovensko morje je bil pod njegovim okriljem izdelan pilotni projekt, ki je obsegal: valorizacijo stanja na področju obstoječih rab, režimov in upravnih pristojnosti, izdelavo potencialnih prostorskih razvojnih scenarijev, sinteznega scenarija in ukrepov za izvajanje PPN. Pri tem smo prepoznali štiri skupine pretežnih interesov: a) pomorski promet, b) ribolov in akvakultura, c) turizem, d) varovanje naravne in kulturne dediščine. Kljub obstoječi upravni dihotomiji kopno-morje, so posamezne dejavnosti in rabe že sedaj relativno usklajene, vendar je slovensko morje zaradi znanih omejitev in velikega števila interesov v bodoče potrebno predvsem sistemsko varovati in ohranjati njegov nacionalni pomen.

KLJUČNE BESEDE

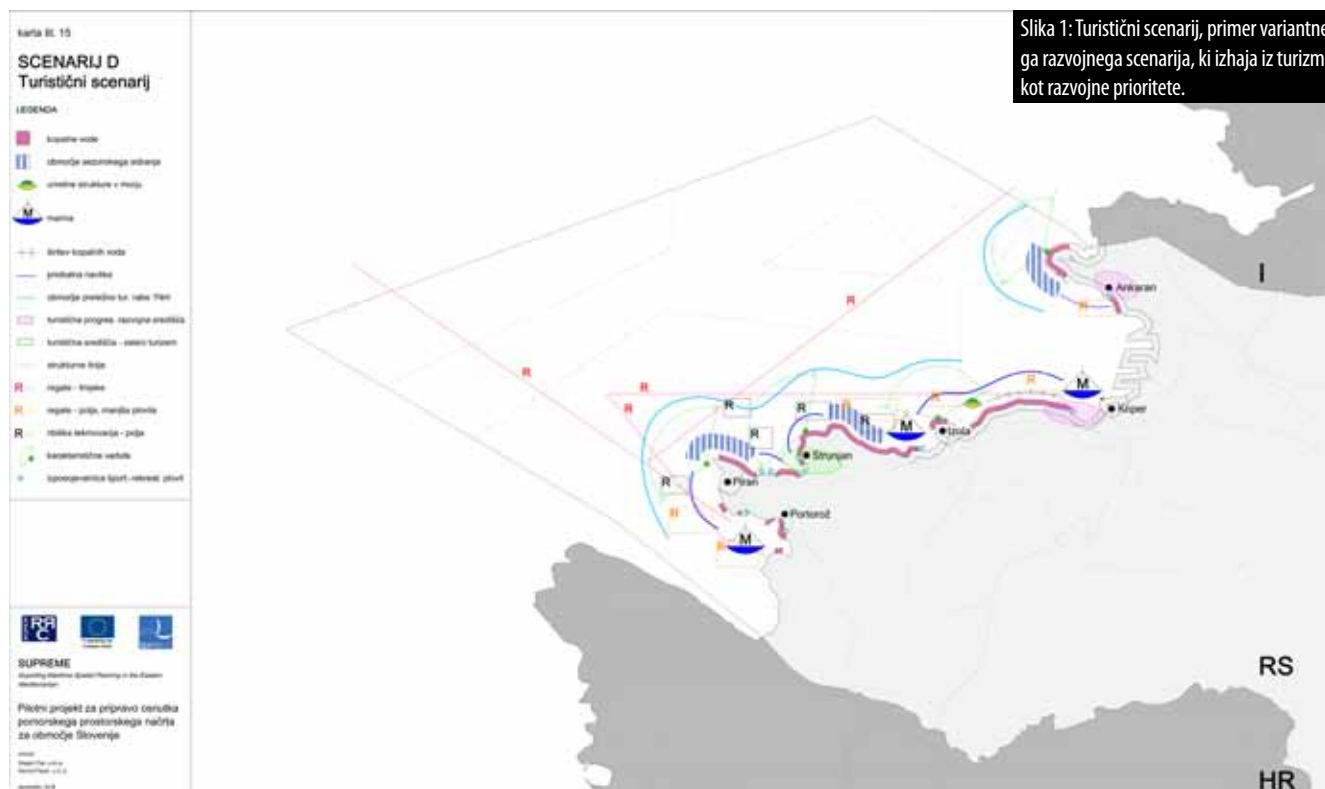
pomorsko prostorsko načrtovanje, pomorski prostorski načrt, implementacija, deležniki, pilotni projekt

ABSTRACT

In line with the Directive establishing a framework for maritime spatial planning (2014/89/EU, i.e. MSP Directive), European maritime countries have to establish a maritime planning process, resulting in a maritime spatial plan. The key priorities of MSP are the following: environmental aspects, cross-sectoral and international alignment of interests, and integrated planning of the coastal zone. In this paper we present the results of the SUPREME project whose goal was to support Eastern Mediterranean countries in establishing MSP. For the Slovenian Sea, we carried out a pilot project, which consisted of: situation evaluation in relation to existing land uses, regimes, and administrative competences, drawing up of potential development scenarios, a synthesis scenario, and the measures to implement MSP. In doing so, we identified four groups of prevailing interests: a) maritime transport, b) fishing and aquaculture, c) tourism, and d) natural and cultural heritage protection. Despite the existing administrative land-sea dichotomy, some activities and uses are relatively coordinated as it is; however, because of the known limitations it will be necessary to systematically protect the Slovenian Sea in the future and preserve its national significance.

KEY-WORDS

maritime spatial planning, maritime spatial plan, implementation, stakeholders, pilot project



Slika 1: Turistični scenarij, primer variantnega razvojnega scenarija, ki izhaja iz turizma kot razvojne prioritete.

1. UVOD

S sprejetjem Direktive o pomorskem prostorskem načrtovanju (PPN, 2014/89/EU) so evropske države pričele s formalnimi postopki priprave prostorskih aktov, ki določajo upravljanje morskih vodnih in priobalnih zemljišč. Tovrstno načrtovanje se je že predhodno razvijalo v okviru nacionalnih sektorskih zakonodaj in delno pod okriljem različnih mednarodnih projektov, ki so bili usmerjenih v določeno varstveno ali razvojno prioriteto morskega okolja. Posamezni metodološki elementi PPN so v teoriji prostorskega načrtovanja že dolgo prisotni (Peel et al., 2004), pri čemer stroka meni, da gre predvsem pri razvoju upravljaljskih procesov v morskem okolju za relativno novo področje (Tyldesley et al., 2003). Pojavljajo se različni diskurzi o prioritetah, namenu in učinkovitosti PPN (Giebels et al., 2013). Prevladuje stališče, da je pri pripravi PPN treba izvajati t. i. ekosistemski pristop (Douvere, 2008; Giebels et al., 2013), ki temelji na robnih pogojih ekosistemske vzdržnosti okolja in se razlikuje od konvencionalnega, sektorskega pristopa, ki načeloma usklajuje zgolj potrebe posameznih sektorjev. Poseben pomen ima tudi mednarodni vidik načrtovanja (Backer, 2011; Jay et al., 2016) in nabor deležnikov, ki participirajo v pripravi PPN (Douvre et al., 2008; Bolčič, 2016). Pri njegovi implementaciji v nacionalne zakonodaje je potrebno upoštevati tudi obstoječe razlike in posebnosti posameznih držav (Bieda et al., 2019). V tem smislu direktiva PPN prepušča formalno vzpostavitev procesa, metodologijo priprave in obliko prostorskih dokumentov posamezni državi in njeni zakonodaji. Določa pa enotna področja rab in režimov vodnih zemljišč (11 področij), uvaža kompatibilno informacijsko platformo in zavezuje članice k medsebojnemu sodelovanju.

Slovensko morje je relativno omejena prostorska entiteta vendar izjemnega pomena tako v simbolnem, kot gospodarskem, kulturološkem in ekološkem smislu. Pri razvoju metodoloških instrumentov za umeščanje in regulacijo posameznih dejavnosti in rab je potrebno slediti ciljem tajnostnega razvoja in učinkovito usklajevati interese, ki gravitirajo v to okolje.

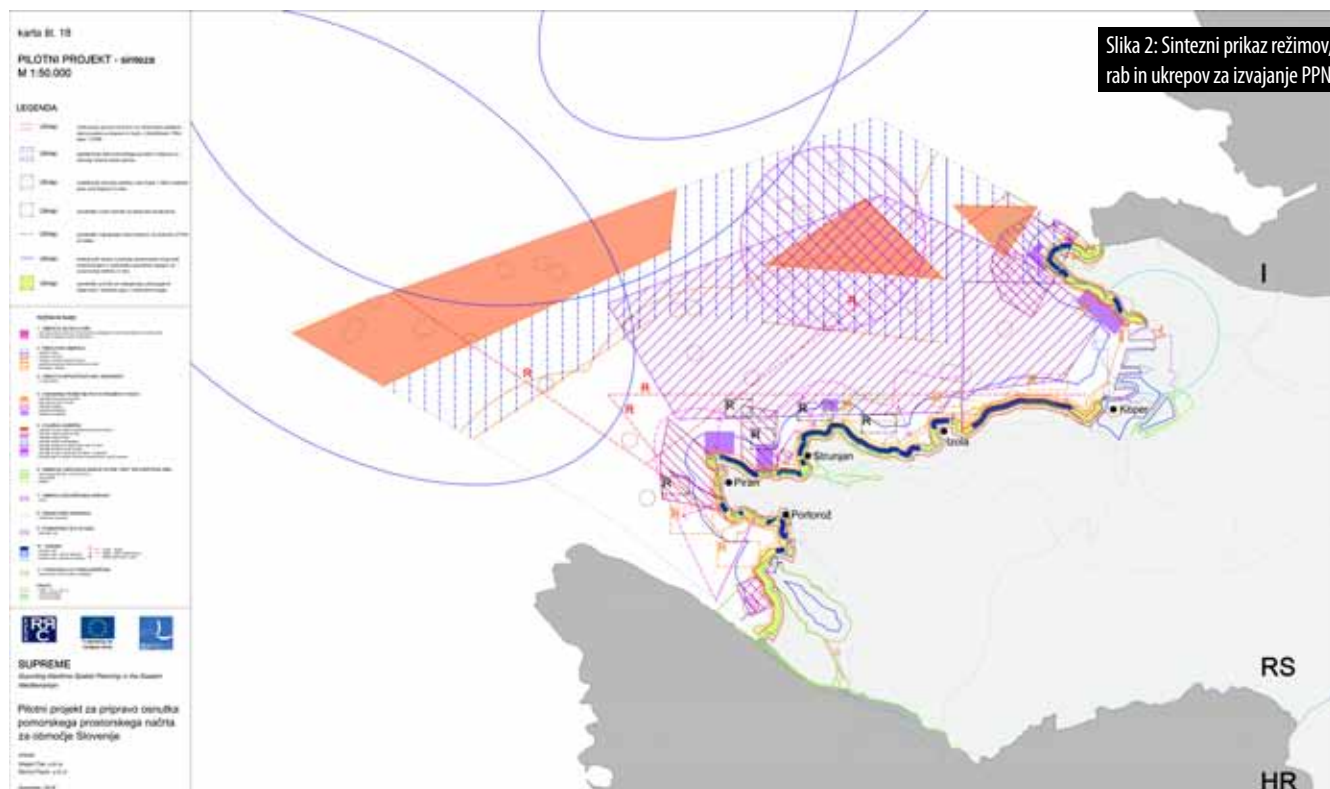
2. O PROJEKTU

Projekt SUPREME se je izvaja v okviru evropskega programa Sklada za pomorstvo in ribištvo 2015 / ukrep 1.2.1.3. Pomorsko prostorsko načrtovanje (PPN). Cilj projekta je podpora državam članicam EU pri vzpostavitvi pomorskega prostorskega načrtovanja v vzhodnem Sredozemlju in vzpostavitve čezmejnega sodelovanja. Projekt vključuje deležnike iz štirih držav EU (Slovenije, Italije, Grčije in Hrvaške) ter predstavnike Sekretariata Barcelonske konvencije in njenih protokolov zadolženih za izvajanje Programa Združenih narodov za okolje in Akcijskega načrta za Sredozemlje (UNEP / MAP). Vodilni partner je Konzorcij za vodenje raziskovalnih aktivnosti na območju Beneške lagune (CORILA), slovenska partnerja pa sta in Regionalni razvojni center Koper, kot projektni partner in RS Ministrstvo za okolje in prostor, kot pridruženi partner. Izdelovalca pilotnega projekta za območje Slovenije sta bila Gregor Čok in Manca Plazar. Projekt je razkril obstoječe stanje na področju upravnih pristojnosti, pretežnih interesov v prostoru ter ključnih deležnikov, ki so povezani z morskim okoljem (Plazar, Čok 2019).

3. METODOLOGIJA IN REZULTATI

Izdelava projekta je potekala v treh fazah. V prvi, analitični fazi smo z deskriptivno metodo valorizirali stanje na področju mednarodnih zavez (obstoječe pogodbe, direktive, memorandum itd.) ter sektorskih razvojnih strategij in ciljev. Izvedli smo intervjuje s posameznimi deležniki in valorizirali stanje na področju upravnih pristojnosti. V drugi, aplikativni fazi smo izdelali potencialne razvojne scenarije in izvedli simultana medsektorska usklajevanja. V tretji fazi smo oblikovali sintezni scenarij (osnutek PPN) in opredelili nabor ukrepov za izvajanje PPN.

Ugotovili smo, da so obstoječe dejavnosti, rabe in režimi na območju slovenskega morja že v sedanjih oblikah relativno



usklajeni na podlagi obstoječih nacionalnih in mednarodnih pravnih dokumentov. Med njimi je ključnega pomena Načrt upravljanja morskega okolja (NUMO), ki temelji na številnih varstvenih direktivah in podrobno opredeljuje ukrepe za upravljanje in varovanje posameznih področij. V analizi obstoječih »pretežnih« interesov smo ugotovili štiri osnovne skupine: a) pomorski promet, b) ribolov in akvakultura, c) turizem (navtika, šport, rekreacija) in d) interesi varstva naravne in kulturne dediščine. Med ključne mednarodne zaveze sodi meddržavni memorandum (SLO-IT-HR) o ločeni plovbi v severnem Jadranu, katerega režim obsega cca. 50% slovenskega morja. Njegova prednost se zrcali v trajnem zagotavljanju učinkovite plovbe v tovarno pristanišče Koper, hkrati pa predstavlja velike omejitve za izvajanje dejavnosti ribolova, akvakulture in športno-turistične navtike.

Med omejitvene elemente pri vzpostavljanju PPN, kot novega upravljaljskega instituta sodi tudi obstoječa dihotomija pristojnosti pri upravljanju in načrtovanju posegov na vodnih in kopenskih zemljišč, saj je imela država po dosedanji prostorski zakonodaji izključno pristojnost za upravljanje vodnih, občine pa kopenskih zemljišč. Ta situacija je generirala številne konflikte v prostoru, ker se je načrtovanje rabe morje-kopno izvajalo parcialno, brez potrebnega usklajevanja interesov.

Pri izdelavi osnutka sinteznega scenarija smo na podlagi razpoložljivih podatkov (obstoječe stanje in prognoze) izdelali načrt dejavnosti in rab za enajst področij, kot jih določa detektiva PPN (1. območja akvakulture, 2. ribolovna območja, 3. infrastruktura/energenti, 4. pomorski promet, 5. vojaška območja, 6. območja varovanja naravne dediščine, 7. območja izkoriščanja surovin, 8. območja/znanstvene raziskave, 9. podvodni kabli in cevovodi, 10. turizem, 11. podvodna kulturna dediščina) ter predlagali posamezne ukrepe za izvajanje PPN (vzpostavitev mednarodnega sodelovanja, oblikovanje protokolov za usklajevanje dejavnosti na kopnem in morju, itd.).

4. ZAKLJUČEK

Pilotni projekt je razkril številne potrebe po nadgradnji obstoječega sistema upravljanja slovenskega morja in obale, ter opredelil osnovne interese ter deležnike, ki bodo v bodoče vplivali na njun prostorski razvoj. V tem okviru vidimo ključno prednost pri vzpostavljanju PPN v sistemskem usklajevanju sektorskih interesov, ki so bili v dosedanji praksi podvrženi domeni posameznega resorja in njegovi področni zakonodaji. Glede na omejene prostorske in ekološke potenciale slovenskega morja ugotavljamo, da so možnosti za umeščanje novih rab ali občutno širitev obstoječih, praktično zelo omejene. Smatramo, da bo prvi PPN, ki naj bi se za slovensko morje izdelal v naslednjih letih, predvsem formalizacija obstoječega stanja režimov in rab pod okriljem enega sinteznega upravnega dokumenta oz. prostorskega akta. Slovensko morje ima kljub svojim znanim omejitvam vseeno zelo velik nacionalni pomen v gospodarskem, kulturološkem in simbolnem smislu. PPN je priložnost, da se občutljivo morsko okolje predvsem trajnostno upravlja, varuje in tako zagotavlja njegov eksistencialni obstoj.

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UVODNIK

EDITORIAL

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REVIEW

PROJEKT

PROJECT

DELAVNICA

WORKSHOP

NATEČAJ

COMPETITION

PREDSTAVITEV

PRESENTATION

DIPLOMA

MASTER THESIS

Špela Verovšek:

RAZVOJ METOD ZA VREDNOTENJE KAKOVOSTI URBANIH PROSTOROV

DEVELOPMENT OF METHODS FOR THE ASSESSMENT OF QUALITY IN URBAN PLACES

UDK: 711.22 ■ 1.03 Kratki znanstveni prispevek / Short Scientific Article ■ SUBMITTED: June 2019 / REVISED: August 2019 / PUBLISHED: October 2019

IZVLEČEK

Pričujoči prispevek obravnava bilateralno sodelovanje slovenskih in ameriških raziskovalcev in strokovnjakov na področju razvoja metod za vrednotenje kakovosti mestnih prostorov. Sodelovanje temelji na različnih izkušnjah in prenosu znanja na področju urbanih kvalitet in povezanih metrik oziroma rabe podatkov, njihove predelave in integracije. Raziskava nadgrajuje pristope k vrednotenju odprtih javnih prostorov z raziskovanjem vplivov posameznih urbanih elementov in prostorskih značilnosti na uporabnike ter njihovo dožemanje kakovosti. Koncept povezuje urbane prostore in z njimi povezano prostorsko identiteto, ki vključuje tako družbeno, kulturno, zgodovinsko kot ekonomsko razsežnost, vse kot pomemben dejavnik v usmerjanju prostorskega razvoja. Kompleksnost takšnega pristopa zahteva znatno zalogo znanja na širšem področju urbanizma, še zlasti pa vključuje nenehno potrebo po množici informacij in podatkov, ki lahko opišejo situacijo oziroma stanje v prostoru in napovedujejo ali modelirajo njegov razvoj.

KLJUČNE BESEDE

urbani prostor, kakovost, vrednotenje, prenos znanja, mesto

ABSTRACT

The research bilateral project proposes cooperation of the Slovene and American researchers and professionals on the theme: Development of methods for the assessment of quality in urban places. The collaboration builds upon the different experiences and knowledge transfer concerning the urban qualities and indicators related to them. It expands the approaches to assessing the quality of open urban places by exploring the impacts of individual urban elements, spatial characteristics, and urban settings on users and their perception of quality. The concept connects urban places and related spatial identity with their uses as well as incorporates places' social, cultural, historical, and, ultimately, economic dimensions, which steer their development. The complexity of such approach requires a considerable stock of knowledge and particularly involves the ever-present need for a multitude of information and data, which can describe a situation/conditions/state and predict or model its evolution.

KEY-WORDS

urban place, quality, assessment, knowledge transfer, city.

1 UVOD

Uporabnikom prijazni urbani prostori predstavljajo pomemben del splošne kakovosti bivanja. So nosilci kvalitet. Njihova vrednost ni zgolj neopredmeten, izmuzljiv potencial, pač pa jasn zbir lastnosti, ki predstavljajo okvir prostorske prosperitete. Ta se napaja skozi človeški kapital, prostorske investicije in nenazadnje zadovoljstvo uporabnikov. Vprašanje je, katere so tiste značilnosti prostorov, ki najmočneje vplivajo na uporabnikovo doživljanje. In dalje, »kako«, »v kolikšni meri« in »koliko, v primerjavi z drugimi« prispevajo k potencialu prostora za uporabnika. Reševanje te problematike na sistematičen in metodološko dorečen način narekuje zanesljive metrike za vrednotenje prostorskih lastnosti, obenem pa tudi konsistentno in jasno definirane ciljne kvalitete, ki so ključni nosilci pomena za obiskovalca in uporabnika prostora. Takšen okvir prinaša možnosti za vrednotenje tako v smislu naravnih in grajenih lastnosti, videza in uporabe, kot tudi aktivnosti in demografsko-socialne strukture uporabnikov.

Projekt bilateralnega sodelovanja v danem obdobju se ukvarja z aktualno tematiko razvoja metod za vrednotenje urbanih prostorov, njihovih značilnosti in kvalitet, ki vplivajo na uporabniško izkušnjo. Sodelovanje ameriških in slovenskih raziskovalcev ter strokovnjakov gradi na različnih izkušnjah in prenosu znanja o obravnavi in presojanju prostorov na primerljiv način.

Tematika je aktualna tako v slovenskem oziroma evropskem okviru, kot v okviru severno ameriškim mest, obenem pa zahteva interdisciplinarno delo in spodbuja prenos znanja predvsem na področju vrednotenja prostora, novih metrik, rabe podatkov, njihove predelave in integracije.

Sodelovanje omogoča izmenjavo izkušenj med slovensko in ameriško strokovno in raziskovalno srenjo, obenem pa tudi povezovanje s strokovnjaki in raziskovalci drugih držav in mest, ki so posredno vključeni v aktivnosti projekta zaradi svojih znanj in izkušenj na področju sistemov vrednotenja in razvoja kazalcev v mestih. Sodelovanje zato prinaša izziv tako v smislu raziskovalno/strokovne izmenjave znanj in iskanja rešitev (metodološko in aplikativno), krepitve akademskega povezovanja, kot tudi dejanski prispevek v smislu analitike in načrtovanja prostora mest.

2 IZZIVI IN METODE DELA

Kljub obsežni zalogi znanja na področju razvoja metod vrednotenja urbanih prostorov v teoretsko-metodoloških okvirih, pa uporaba različnih kazalcev kakovosti in implementacija vrednotenja v posameznem, lokalno ali regionalno specifičnem primeru, zahteva prilagojen in vedno znova premišljen pristop. Obravnava urbanega prostora v večjih merilih (raven ulice, trga ali drugega izkustvenega prostora), ki so relevantne za uporabnika prostora in njegovo izkušnjo v njem oziroma so bližje njegovi zaznavi, je z vidika empirične analitike problematična. Zahteva namreč večjo geografsko resolucijo podatkov in temu prilagojene kazalce, ki lahko omogočijo obravnavo dovolj podrobnih in drobnoznatih značilnosti mestnih prostorov in njihovega vpliva na zaznavanje uporabnika. S tega vidika se predlagano sodelovanje v določeni meri osredotoča tudi na potencial zajema podatkov, ki ga omogočajo množično dostopne sodobne tehnologije (GPS-tehnologija, mobilne lokacijske storitve, geo-referencirani podatki ter povezane aplikacije), kar predstavlja dragocen vir časovno-prostorskih informacij. Z združevanjem podatkov uradnih evidenc in podatkov pridobljenih s strani uporabnikov (npr. znotraj konceptov »collective sensing« in »citizens science«) se lahko omogoči večja geografska reso-

lucija podatkov, gostejši časovni interval zajema, večja pestrost vrst in oblik podatkov itd. Seveda pa tovrstne težnje odpirajo tudi nova vprašanja, kot so vprašanje zasebnosti podatkov, varstvo osebnih podatkov, zanesljivost in kakovost takih podatkov, količinski »overload«, do bolj tehničnih, kot so vzpostavitev potrebnih računalniških protokolov, aplikacij, platform, shranjevanje podatkov, prenosi itd.

Eden od preliminarne izzivov zagotovo ostaja tudi že znana problematika neenotnega opredeljevanja pglavitnih kriterijev prostorske kakovosti. Kot ugotavljata Ewing in Clement (2013) so na voljo številni kriteriji, ki določajo prostorsko kakovost, vendar jih le malo temelji na empirično jasnih postavkah in zato pogosto niso združljivi z obstoječo raziskovalno prakso. Velik del kazalcev prostorskih kvalitet tudi stežka štejemo k orodjem za vrednotenje, saj bolj kot instrument za ponovljivo merjenje različnih prostorov, predstavljajo zgolj lokalno informacijo o njem.

V aplikativnem smislu se dana problematika nanaša na opredeljevanje predmeta vrednotenja in definicije ciljnih karakteristik, ki omogočajo merljive postavke. Med drugim sem štejemo prenos kvalitativnih oblik podatkov v kvantificirano obliko, določanje enot indikatorjev, določanje skrajnih vrednosti na intervalih vrednosti spremenljivk ter relativizacija merskega sistema. V vsebinskem smislu prostor presojamo z vidika: 1) urbanistično-oblikovnih elementov prostora; 2) družbene komponente – uporabnik in interakcije 3) obstoječih dejavnosti v prostoru, njegove služnosti, programa in ponudbe.

3 ZAKLJUČEK

Obravnava izbrane problematike je odgovor na zaznano pomanjkanje instrumentov za zajem in vrednotenje mikro-prostorskih podatkov, in sicer na dosleden in primerljiv način, skozi enoten okvir ključnih kvalitet, kot so na primer dostopnost, prometna varnost, urejenost, opremljenost, ekonomska vitalnost, ipd. Gre za večplastnost problematike, ki je v svetovnem merilu sicer razmeroma pogosto obravnavana, vendar izrazito razpršena med raziskovalnimi disciplinami, kar prinaša zelo različne raziskovalne cilje, uporabo različnih metod dela in neprimerljive pogoje v smislu geografskega in kulturnega konteksta ter merila raziskovanih prostorov.

Slovenska in ameriška mesta so v svojih naravno-geografskih in družbeno-kontekstualnih značilnostih lahko daleč vsaksebi, pa vendarle v razvoju urbanih prostorov iščejo povsem podobne kvalitete in vitalne značilnosti (povezanost prostorov, funkcionalnost ulične opreme, stik z naravo in naravnimi elementi, ohranjanje predelov močne biotske raznovrstnosti, zagotavljanje potrebne infrastrukture in storitev itd.). Oblikovanje vitalnih, dobro vzdrževanih, ekonomsko vzdržnih in družbeno sprejetih prostorov, ki so dobro umeščeni v mrežo ostalih mestnih prostorov je tako srčika prizadevanj tako ameriških kot slovenskih strokovnjakov in raziskovalcev ter posredno udeleženih strokovnjakov.

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ŠT. PROJEKTA *PROJECT NO.*

BI-US/18-20-085

TIP PROJEKTA *TYPE OF PROJECT*Bilateralni projekt (ARRS) / *Bilateral project (SRA)*DELOVNA SKUPINA *WORKING GROUP*UL FA: znan. sod. dr. Špela Verovšek, doc. dr. Matevž Juvančič,
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(ARRS) Slovenian Research AgencyJAVNA AGENCIJA ZA RAZISKOVALNO DEJAVNOST
REPUBLIKE SLOVENIJE

Špela Verovšek: TRAJNOST IN KAKOVOST SLOVENSКИH SOSESK (2018)

SUSTAINABILITY AND QUALITY OF SLOVENIAN NEIGHBORHOODS (2018)

UDK: 728:711.22 ■ 1.03 Kratki znanstveni prispevek / Short Scientific Article ■ SUBMITTED: July 2019 / REVISED: August 2019 / PUBLISHED: October 2019

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IZVLEČEK

Anketna raziskava v štirih slovenskih soseskah je bila izvedena kot pilotni del projekta z naslovom »Sistemska podpora odločanju pri urbani prenovi slovenskih naselij z vidika uravnoteženja energetske učinkovitosti in upravljanja z lokalnimi viri v soseskah«. Raziskovalni projekt predlaga vzpostavitev podatkovno-osnovanega sistema za podporo odločanju pri modularni urbani prenovi slovenskih naselij na ravni sosesk z vidika njihove trajnostne učinkovitosti. Anketa je bila zasnovana v skladu z dvema ciljema in sicer: 1) pridobiti nekatere manj-kajke podatke o učinkovitosti in trajnosti pilotnih sosesk in 2) ugotoviti stopnjo odzivnosti prebivalcev sosesk, težave pri pridobivanju podatkov na tak način in pretres možnosti za sistemsko vključitev tako pridobljenih podatkov v predhodno osnovan model vrednotenja sosesk. Glavni problemi, ki so obravnavani v anketi, in s katerimi se obračamo na prebivalce izbranih sosesk so: zadovoljstvo z javnimi odprtimi prostori in opremljenostjo ter zadovoljstvo s prometno infrastrukturo, navade prebivalcev v zvezi z uporabo javnih odprtih površin, navade povezane z dnevnimi potovanji in uporabo prometnih sredstev, navade povezane s uporabo virov (energija, voda, čas...), stopnja pripadnosti in odnos prebivalstva do lokalnega okolja, aktivnost skupnosti in uporaba naprednih tehnologij.

KLJUČNE BESEDE

trajnostne soseske, anketna raziskava, vedenjski vzorci, revitalizacija

ABSTRACT

The paper outline and debate the approach, methodologies and nature of the results delivered through the questionnaire-based survey in four Slovenian neighbourhoods, which was carried out as a pilot part of the project *Urban renewal decision support system balancing energy efficiency and management of local resources in neighbourhoods in Slovenia*. The project aim was to establish the data-based system to support urban decisions targeting the urban renewal of Slovenian settlements. The research focuses to the spatial scale similar to neighbourhood's size and role, considering its sustainability, effectiveness and quality. The survey was designed in accordance with two objectives, namely: 1) to fill data gaps on the efficiency and sustainability in pilot neighbourhoods and 2) to determine the degree of responsiveness of the inhabitants of the neighbourhoods, difficulties in obtaining data with survey methodologies and to reconsider the possibilities to systemically integrate it into the pre-based model of neighbourhoods assessment. The main thematic scopes addressed in the survey are related to satisfaction with open public places, the habits associated with daily trips and the use of transport modes, habits related to the use of resources as well as residents' engagement in the community matters and their capability of using smart technologies for more efficiency..

KEY-WORDS

sustainable neighbourhoods, questionnaires query, behaviour patterns, revitalisation

1 INTRODUCTION

The survey in four Slovenian neighbourhoods was carried out as a pilot part of the project entitled “Urban renewal decision support system balancing energy efficiency and management of local resources in neighbourhoods in Slovenia». This project proposed the establishment of data-based system for decision support in urban renewal of Slovenian settlements at the neighbourhood level in terms of their sustainable effectiveness and quality. The survey was designed in accordance with two objectives, namely: 1) to obtain data gaps on the efficiency and sustainability of pilot neighbourhoods and 2) to determine the degree of responsiveness of the inhabitants of the neighbourhoods, difficulties in obtaining data with survey methodologies and to reconsider the possibilities to systemically integrate it into the pre-based model of neighbourhoods assessment. The main thematic scopes addressed in the survey are, e.g. the level of satisfaction with open spaces within the neighbourhoods, the level of satisfaction with mobility and transport infrastructure, the habits associated with daily trips and the use of transport modes, habits related to the use of resources (energy, water, time ...) etc.

In almost all respects, characteristics of built environment are very important factors or at least make an important contribution to users' sustainable or unsustainable responses and their changes (Williams & Dair, 2007; Shove, 2014). By the more sustainable environment we consider the environment that encourages more sustainable behavioural patterns, such as selection of the means of transport; patterns related to household provisioning and consumption; patterns related to the use of resources; attitude toward the natural and cultural living environment, and last but not least, attitude toward the neighbourhood community and participation in the broad range of its activities.

2 METHODOLOGY USED

The empirical study of assessing sustainability awareness and behaviour of the population in Slovene towns and villages has been devised as a survey conducted in four of Slovene neighbourhoods. The main goal was to gain insights against our hypotheses about sustainability awareness and behaviour of population in neighbourhoods in dependence of different types of living environments, geo-local context and demographic characteristics of individual researched population. We were interested to find whether there are statistically important differences in sustainability behaviour, beliefs and habits of populations in different neighbourhoods. The selection of pilot neighbourhoods was based on four key factors that ensured higher diversity of researched forms and consequently higher universality of the final instrument for evaluation of neighbourhoods (Verovšek et al., 2016). All neighbourhoods were selected on the basis of spatial districts. Due to restrictions posed by the Statistical Office of the Republic of Slovenia (SURS) to provide probability sampling, addresses and existing data, all neighbourhoods are groupings of spatial districts covering at least 500 permanent inhabitants. The target population of the survey were individuals older than 15 years with permanent residence in the selected settlements. Sampling was made on the basis of the Population Register by the SURS. Our application to obtain stratified probability sample and addresses of the target population was approved by the Data Protection Committee. The sample included 40% of randomly selected units of the target population in each neighbourhood.

We conducted the survey using two techniques, that is, by mail (printed copy) and online (application Enka) and kept a clear



Figure 1. Neighbourhood in Kamnik. Photo: Verovšek, Š.

separation line between the stage of contacting the sampling population and the data collection stage (Lyberg et al., 1997). Our sampling was conducted exclusively on the basis of address database in a specific geographical unit. Each physical copy of the questionnaire sent included an invitation to provide responses online (QR code or link) should the respondents wish to answer the questions in this way.

The questionnaire's theme was interdisciplinary, devised by the members of our project group in accordance with outcomes from a series of panel meetings. The questionnaire which includes 50 questions in five sections addresses the realisation of sustainability outcomes on different levels. Questions from individual sections were goal-oriented and directly or indirectly considered the realisation of a specific goal of sustainability development. Most questions were closed-ended with the ordinal scale of values that allowed for quantitative statistical analysis. To confirm the significance of differences among the groups we used relevant nonparametric tests, most frequently the statistical test for homogeneity of variance (Levene's test) and two-tailed dependent t-test (significance level $\alpha=0.05$).

3 RESPONSES GAINED

The final realized sample included 321 valid units of the population with the average age of 48 years. Out of 312 completed surveys, 261 were filled in via mail and 51 online. At the time of participation, completed high school was the level of education for 48% of the respondents, short cycle higher education for 15% and higher education or higher for 22% of the respondents. From the employment perspective, the majority of the population was employed (47%), followed by retirees (37%) and students (10%). There was a balance among the respondents in terms of gender. Demographic-social characteristics of the collected sample showed a fairly good balance in comparison with the values obtained in the target population (official statistical data by SURS, 2017). There were no statistically significant differences at the regular degree of risk or the limit of statistical characteristic between the population and the realised sample in terms of gender representation, the average age of respondents, the type of household and the average household size.

4 CONCLUSION

The question of behaviour of a specific community is very complex as it involves shared responsibility and action (Niedderer et al., 2017) that can be researched from the perspective of the individual, small communities, local authorities or different initiatives. All behaviours to some extent always reflect its socio-economic, regulative and geospatial context. This adds to the equation many variables that determine in greater or in lower extent the beneficial final outcomes for the individual or the community.

The results of this survey contribute to the repository of knowledge, enlightening current trends and tendencies regarding sustainable behaviour of the residents in selected settlements. From the perspective of the existing available data at the level of neighbourhoods (or similar spatial scales), the results, although thematically selective, represent a welcome contribution, not only for the evaluation of sustainable efficiency, but also in terms of the perceived quality of living by the residents of this region, their attitudes and opinions towards some of the contemporary issues in the local and temporal context.

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ŠT. PROJEKTA *PROJECT NO.*
J5-7295

TIP PROJEKTA *TYPE OF PROJECT*
nacionalni raziskovalni projekt national research project

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MASTER THESIS

Špela Verovšek:

SISTEM INTEGRACIJE PROSTORSKIH PODATKOV ZA VREDNOTENJE TRAJNOSTNE UČINKOVITOSTI SLOVENSКИH SOSESK IN NASELIJ

DATA INTEGRATION FRAMEWORK FOR THE ASSESSMENTS OF THE SUSTAINABLE EFFICIENCY IN SLOVENE NEIGHBOURHOODS AND SETTLEMENTS

UDK: 728:711.22 ■ 1.03 Kratki znanstveni prispevek / Short Scientific Article ■ SUBMITTED: July 2018 / REVISED: August 2019 / PUBLISHED: November 2018

IZVLEČEK

Raziskovalni projekt predlaga razvoj novih metodologij za integracijo, optimizacijo in analizo prostorskih podatkov, ki so pomembni kot podpora odločanju pri trajnostni prenovi in optimizacijskih ukrepih v slovenskih soseskah in naseljih. Predlagani projekt gradi na izsledkih in delu predhodnega raziskovalnega dela, v katerem smo zasnovali sistem vrednotenja trajnostne učinkovitosti sosesk na osnovi modularnega sistema kazalcev in kriterijev ter povezane metode interpretacije vrednosti. Medtem ko je predhodna raziskava pretres trajnostne učinkovitosti in kvalitete sosesk obravnavala predvsem sistemsko-holistično, pa v nadaljevanju fokus zožujemo na specifične vidike trajnosti in kakovosti, in sicer tiste, za katere se je izkazalo, da so ključni za vrednotenje kulturne, družbeno-prostorske in institucionalne (regulativne) dimenzije trajnosti grajenega okolja. Obenem se osredotočamo na tista področja, ki so se izkazala za najbolj problematična z vidika pridobivanja podatkov in njihove integracije v celotni sistem. Pri tem vzdržujemo kontinuiteto zasledovanja poglobljenega cilja, to je, izboljšanje pogojev za podatkovno-podprto odločanje pri ukrepih in intervencijah ob prenovi sosesk.

KLJUČNE BESEDE

integracija podatkov, prostorski podatki, soseska, vrednotenje kakovosti

ABSTRACT

The paper outline and debate the approach, methodologies and nature of the expected results within the ongoing project. The research proposes novel methodologies to support integrating, optimising, and capturing heterogeneous neighbourhood-scale data, with application to decision-making in renewal and sustainability improvements of Slovenian settlements. Following our previous research where relevant sustainability metrics were sought to be integrated into a common sustainability performance index, we continue with the most persistent issues encountered. While the previous research has built on the system-holistic approach, here we progress with the contracted focus to crucial social, cultural, historical, and, ultimately, economic dimensions, which steer the course of neighbourhoods' development. At the same time we dedicate our efforts to the areas that have proven to be the most problematic in terms of data acquisition, its accessibility and integration into common assessment system. In doing so, we maintain the pursuit and continuity

of the main objective, that is, to improve the potentials of the data-supported decision-making in renewal actions and interventions.

KEY-WORDS

data integration, geo-spatial data, neighbourhood, quality assessment

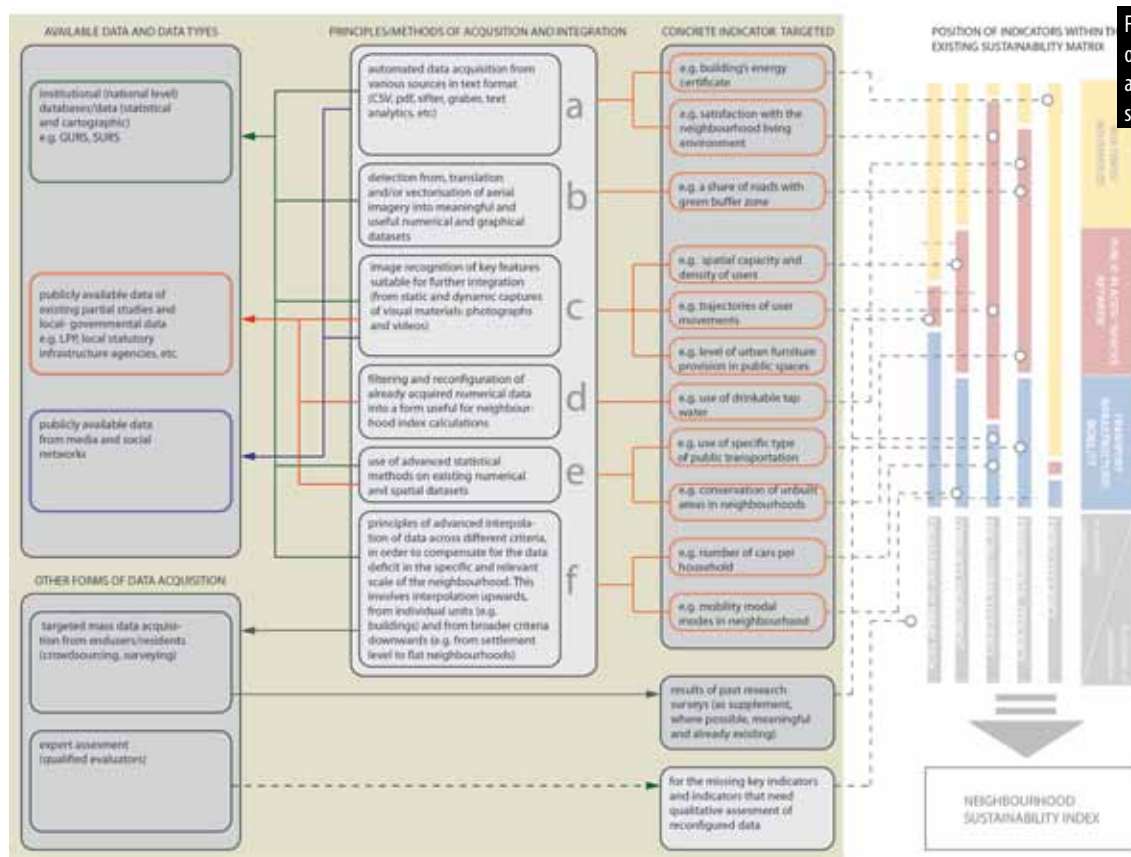


Figure 1: Interconnection of the current research approach with the pre-set sustainability matrix.

1 INTRODUCTION

The research project proposes novel methodologies to support integrating, optimising, and capturing heterogeneous neighbourhood-scale data, with application to decision-making in renewal and sustainability improvements of Slovenian neighbourhoods and settlements. Following our foregoing research where relevant sustainability metrics were sought to be integrated into a common sustainability performance index, we continue with the most persistent issues encountered while continuously pursuing data-supported decision making. At this juncture, we consider the collaboration between urban sciences and computer sciences as essential. In Slovenia particularly, the research that links architectural and urban subjects with advanced computer technologies has been so far rare. Linking is mostly limited to conventional IT support to certain tasks (GIS support, BIM design, 3D visualization, 2D rendering, and similar); however, there is little research that would present a mutual challenge – both in spatial and related sciences and in terms of information technology solutions and methodologies processes (artificial intelligence, machine learning, algorithmic design, etc.).

Therefore, the project progresses and builds on Slovenia's emerging research strength in urban analytics and IT support and makes a contribution towards research and professional infrastructure both for the urban research community, policy makers, and broader planning and design community to develop innovative, evidence-based urban strategies.

2 THE ROLE OF NEIGHBOURHOOD SCALE

With continuing expansion of urbanized areas the basic operating component of strategic planning, research and also assessment has become the scale of the neighbourhood or a local community, providing a manageable and at the same

time diverse unit with the ability to contribute a lion's share to attaining sustainability objectives and the quality living objectives. Existing research (e.g. Hemphill, 2014; Zheng et al., 2017 etc.) already established that the neighbourhood scale, when compared to the city scale on the one hand and to the single-building scale on the other, allows for more integrated actions, achieving sustainability goals directly or indirectly, through related issues.

Research on the relations between neighbourhood organization (form and community) and sustainability targets has therefore increased substantially, linking the broad interest among policymakers, research initiatives, and neighbourhood communities to assure more sustainable and liveable living environments. Analyses on the neighbourhood scale impose a significant influence on the issues such as traffic flows and mobility patterns, waste and water management, green areas management, liveable design of the streetscape and public space, awareness and consumers' behaviour, community engagement, the use of IC technology for mitigating negative environmental impacts, etc. The question of the quality and sustainability optimization of the existing neighbourhoods proved to be relevant particularly in combination with the data-driven decision making and related methodologies that enable benchmarking (Zheng et al., 2017), comparison between neighbourhoods' settings and strategic decisions on priorities in renewal.

3 DIVERSITY OF DATA

The diversity, availability and consistency of data sources for specific relevant domains and within certain spatial scales (district, neighbourhood, public space, street, etc.) are often very inconsistent and fluctuating. On the one hand we are facing an increasing amount of gathered data that reflect each urban system's performance as well as related characteristics and processes. On the other hand we are faced with significant

data scarcity, especially within the small-scale, micro-urban, and fine-grained records, by which we define and track the parameters such as street enclosure or transparency, light pollution, connectivity, human scale, etc. One of the critical remarks made by other authors (Bird, 2015; Lützkendorf & Balouktsi, 2017) is that assessment (monitoring) models do not offer evaluation of less tangible aspects of sustainability & quality, such as the experiential perception of place, users' dynamics and their activities taken in a place, place tidiness, its visibility, the diversity in space or its perceptual identity, etc. These variables are less defined and highly structured and thus difficult to measure; however, they have a significant impact on user experience and one's perception of a quality living environment. The perception of the latter is often largely due to either sustainable/prudent or weak design decisions.

National and municipality-related institutions create and operate on datasets based on specific purposes which are designed for problems at hand; resulting in discrete and incompatible databases, disconnected time series, reciprocally incompatible data queries characterized by diverse data models, and storage structures (Sharifi & Murayama, 2015; Liu et al, 2017). integration and processing of data queries (for the purpose of sustainability and quality assessments) are currently most often performed in a manual fashion, hence requiring great amounts of time and effort, while also increasing the risk of errors in the aggregation process.

4 METHODOLOGICAL APPROACHES

According to the background described and problems identified, the main objective of the proposed research is to promote new methods that support, extend, and upgrade the current monitoring and assessment protocols and further allow for: more integrated, further automated more modular structures of the data and parameters for assessing neighbourhoods' sustainability and quality rate.

According to our initial estimates, the lack of data interoperability disrupts, slows down and limits the chain of data connections because it requires the engagement of time, manual entries, transcriptions and the engagement of additional resources. The project not only seeks solutions solely in the interoperability and use of accessible, readily available tools for data mitigation, but also in their adaptation for the development of the sustainable index of neighbourhoods.

To bridge the mentioned gap, the following principles and solutions are targeted: automated data acquisition from various sources in text format (CSV, pdf, sifter, text analytics, pdf, EPUB, FB2 etc.); detection from, translation and/or vectorisation of aerial imagery into meaningful and useful numerical and graphical datasets; image recognition of key features suitable for further integration; filtering and reconfiguration of already acquired numerical data into a form useful for neighbourhood index calculations; use of advanced statistical methods on existing numerical and spatial datasets; principles of advanced interpolation of data across different criteria, in order to compensate for the data deficit in the specific and relevant scales, this involves interpolation upwards, from individual units (e.g. buildings) and from broader criteria downwards (e.g. from settlement level to flat neighbourhoods).

Due to the wide scope of the research framework and the accompanying wide range of potentially interesting databases and data types, the work programme was designed as a series of scenario testbeds in (initially) separate theoretical and appli-

ed assemblies. The proposed workflow allows us to study in detail selected data assemblies and actual IT-supported solutions.

The proposed scheme represents the course and focus of the work on the systematic elimination of interference barriers and different types of data, which at the same time lead to the acquisition of the final assessment of the sustainability of each testbed neighbourhood.

4 CONCLUSION

There are two main reasons why we consider targeting the objectives of this research important: (i) to offer urban decision-makers a supporting instrument that can inform and substantiate spatial interventions in the renovation process of different neighbourhoods through a consistent and standardized framework of key indicators/criteria; (ii) to enable spatial users and residents to have a clear insight into the state of the neighbourhood, its sustainability and quality, at the same time encouraging them to increase their commitment to improvements (in various ways: through changing non-sustainable habits, their own monitoring, their own contribution of data, etc.)

We believe that fine-grained urban sensing coupled with well-established remote sensing mechanisms and official data records greatly enhances our potentials in terms of increased geographical resolution of captured data, denser timescale, and finer eloquence. Consequently, the envisioned methods cope with the most critical issues in this domain and make it easier and more cost effective to identify segments of high and low sustainability performances, and thus, guide urban diagnostics, responsive policies as well as prioritize smart investments. Prudent reuse of the existing data besides is strongly in line with the current tendencies and EU policies towards rationalization in new data captursings.

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ŠT. PROJEKTA *PROJECT NO.*

J5-1798

TIP PROJEKTA *TYPE OF PROJECT*

nacionalni raziskovalni projekt *national research project*

DELOVNA SKUPINA *WORKING GROUP*

UL FA: prof. dr. Tadeja Zupančič, znan. sod. dr. Špela Verovšek,
doc. dr. Matevž Juvančič, doc. dr. Simon Petrovčič
UL FRI: doc. dr. Miha Moškon, izr. prof. dr. Iztok Lebar Bajec, asist.
dr. Miha Janež, asist. Žiga Pušnik
UL FF: prof. dr. Matija Svetina

VODILNI PARTNER *PROJECT LEADER*

Univerza v Ljubljani, Fakulteta za arhitekturo *University of Ljubljana, Faculty of Architecture*; prof. dr. Tadeja Zupančič

PROJEKTNI PARTNERJI *PROJECT PARTNERS*

Univerza v Ljubljani, Fakulteta za računalništvo in informatiko
University of Ljubljana, The Faculty of Computer and Information Science (UL FRI)
Univerza v Ljubljani, Filozofska fakulteta *University of Ljubljana, The Faculty of Arts (UL FF)*

INTERNET STRAN *WEB PAGE*

<http://www.fa.uni-lj.si/default.asp?id=3107>

GRADIVO PRIPRAVILA *MATERIALS PREPARED BY*

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Univerza v Ljubljani
Fakulteta za arhitekturo



Univerza v Ljubljani
Fakulteta za računalništvo
in informatiko



PROJEKT FINANCIRAN S STRANI *PROJECT CO-FUNDED BY*

Javna agencija za raziskovalno dejavnost Republike Slovenije
(ARRS) *Slovenian Research Agency*



JAVNA AGENCIJA ZA RAZISKOVALNO DEJAVNOST
REPUBLIKE SLOVENIJE

UVODNIK

EDITORIAL

ČLANEK

ARTICLE

RAZPRAVA

DISCUSSION

RECENZIJA

REVIEW

PROJEKT

PROJECT

DELAVNICA

WORKSHOP

NATEČAJ

COMPETITION

PREDSTAVITEV

PRESENTATION

DIPLOMA

MASTER THESIS

III.

INTERVJU

INTERVIEW

300.000 KM/S: CIUTAT VELLA'S LAND-USE PLAN

A conversation with Mar Santamaria Varas and Pablo Martínez

Author: Mateja Rot

Photo credits: Ars Electronica Robert Bauernhansl, 300.000 Km/s

The innovation office 300.000 Km/s from Barcelona, led by Mar Santamaria Varas and Pablo Martínez, is this year's recipient of STARTS Innovative Collaboration prize for the development and successful implementation of a new sustainable urban planning model. As stated by the STARTS prize jury, "300.000 Km/s represents a refreshing alternative path for smart city technologies. The Barcelona initiative wants to reverse top down, Big Tech-led smart city approach by putting citizens first, and using arts, technology, and data science to unleash the potential of human-centered urban planning and innovation."

Can you explain the main objective and mission behind the awarded project of Ciutat Vella's land-use plan? What is your urban planning innovation?

Pablo Martínez: I need to point out that this land-use plan is legally approved urban plan by municipalities and legal parties. The big novelty lies in the fact that we are working with big

data, predictive models and spatial analysis, together with citizens participation. The project is about the capacity of knowledge that we have from data which is informed by citizens. Together with citizens we give sense to data as they help us understand where we need to search inside these data.

Mar Santamaria Varas: The objective of the masterplan is to regulate the economic activity of the city. In European context, we have very active public establishment of economic activity, for instance, I am allowed to open a restaurant or a bar wherever I want. But there is an exception to the rule: when we are somehow attacking the quality of life, we enter the environmental quality of the city. Therefore we need to measure and demonstrate that this impact on the quality of life of people exists, and we use a lot of technology and citizen participation. To summarize, the main aim of the masterplan is to balance the economic activity with the quality of life of people.

You have been combining big data and qualitative citizens data, feeding into new ways of spatial analysis. Can you describe particular phases that project went through?

MSV: The first phase was the diagnosis. As urban planning office we collect a lot of data related to movement of citizens in public space. We use data from social networks, credit card transactions, we have access to all public data that has been open for the first time, complaints of citizens to the police in which areas they can't sleep, data of the economic activity, data that public administration is generating, and we are also using the public infrastructure of sound meters in the city centre to have more accuracy in the diagnosis. We were creating this approach and at the same time The Public Health Agency of Barcelona



was making another diagnosis to demonstrate the impact of nocturnal leisure on people's health. With the interviews they did with infants, young adults, elderly (saying I can't sleep at night, I can't take it anymore, I need to leave the neighborhood) and data related to noise that we were providing, we had this quantitative vs. qualitative approach, demonstrating that the impact exists in the district. Then we had the third diagnosis related to the economy of the visitor. Barcelona in the last 5 years has become overcrowded with tourism, this has really become a big challenge.

In what ways does this project contribute to greater well-being and life quality of inhabitants?

PM: To answer this we are developing another project because liveable city is very difficult to define. This is very individual, subjective topic, we have many particular opinions. What we try in this project starts with the idea of liveability and healthy city. We have rejected the behaviors that are not healthy. Understanding that the city should be healthy and liveable for citizens is essential. Because the city without citizens is not the city. So where is the limit of economical activity? Of course, we need economical activity to feed the inhabitants, but it should be such that helps citizens to grow and live. This is the limit, as we understand it. However, limited economical activity can be interpreted as a problem because we limit future economical activities. There are activities that remain, because we are not able to remove them as they serve really well in particular location, there are some good cases where activities cause less pressure and they are able to grow better. In the past we have observed that there is some good behavior. However, we need to take care of the inhabitants.

MSV: I think we need to understand that the city centre of Barcelona is really inhabited place. It's not like any other European city centres that have been emptied, or left like a commercial venue, touristic place or business city. We have the highest inhabited density in Raval neighborhood, which means that we are

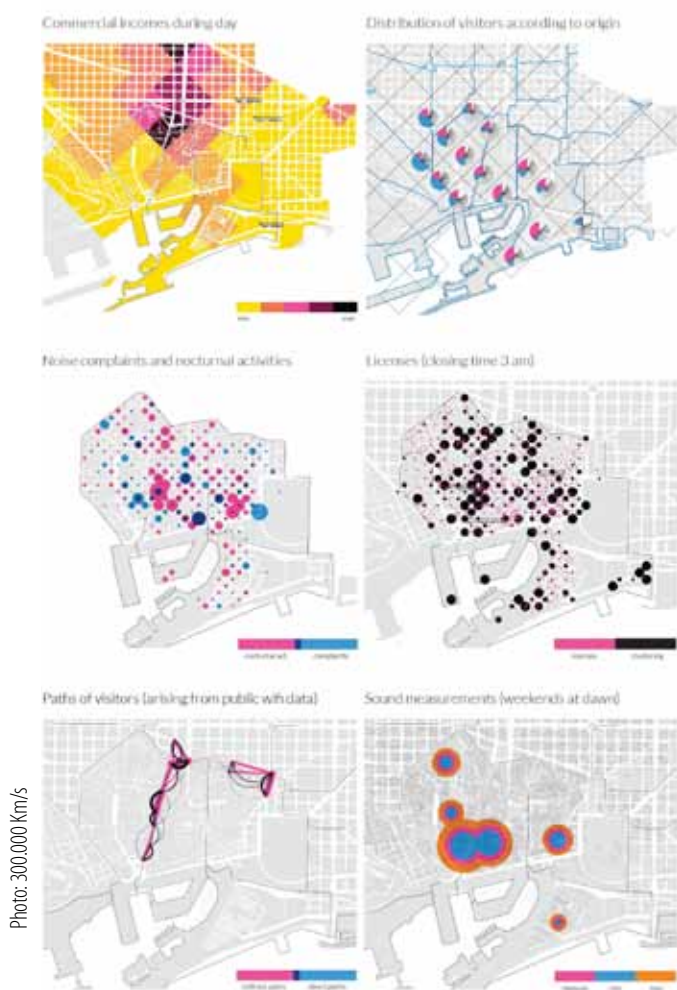
affecting a lot of people and we want people to still live in the city centre. It is beautiful there, you have this past history and access to cultural monuments.

PM: It's also probably the first immigrant neighborhood. It is good to have a central district that says welcome, I think this is a beautiful characteristic of the city which we need to preserve.

There are a lot of initiatives globally striving to capacitate communities, Barcelona Decidim, Bologna's Office of civic imagination, even Sidewalk labs has developed a digital tool to support communities in making more inclusive decisions. We are moving in the direction of inclusive digital participation. Could you explain your vision, your view on this and how did you incorporate this dimension into your project? What challenges did u encounter on the way?

MSV: In a scenario where more and more corporations like Google, Facebook, IBM, Cisco have data of cities, the only possible way we should do urban planning and survive is with citizens helping us provide data about the city. Pablo talked about another project we are developing, an AI algorithm which is trained by citizens telling us which is for them a liveable city. The scenario where data is provided by citizens with citizens is for us the only scenario.

PM: However, we need to have administration that is able to develop this infrastructure. We have understood that our administration, public policy has grown with our civilisation. Adding more responsibility to it is essential, for some time it was water, then electricity, now it's the data. If we don't have the infrastructure for data, we will build cities for Cisco, cities for Google, and we don't want to be Toronto (ie. what Sidewalk Labs by Alphabet is developing, author's note). We think that we have models where citizens and administrations build data and then we are free to decide our future and how to regulate it. If not, we are not able to decide about our future and public issues. This is the dangerous part right now in urban planning. In the case



of Barcelona Google has better quality of data than the public administration in many aspects. And this is really dangerous.

MSV: If we lose the sovereignty of our data, what happens then? What happens with our cities? But we are really positive and we are working on it.

Can you talk about the data atlas composed of 150 cartographies of the district which you have created? What kind of information do we get from these cartographies? And how can citizens operate with this kind of information?

MSV: Of course we need to make a translation. We try to make visual and simple documents, we explain the same thing with separate layers, maybe make another more complicated visualisation but the aim of 300.000 km/s is to produce documents that anyone can easily understand.

What technology has assisted you in rendering and what fields of expertise did you engage with? Are you collaborating with any institutions that are able to promote this research among broader public?

MSV: You need to build a culture of understanding. Architecture is already difficult, imagine urban planning. (laughter) We need to build understanding among citizens but also among public administration. We were allowed to make this project because we were surrounded with public servants who understood or were educated somehow with us to understand documents that matter. We made a simulation of all possible results that the plan had to be able to sit politicians, lawyers and decision makers together in order to decide which was the limit that we want to put to this economic activity. For that we needed to use a tool that was easy for them to understand and say, here we

see a clear picture, here we see a direction and we go for it. We need to create a culture of helping people understand urban planning documents.

PM: Sometimes people say: "Don't do a map because people are not going to understand it." And to this I respond: "I'm going to do a map because they need to learn to understand these things, otherwise we are not empowering people. The map is the document, it is what we need in order to understand this territory."

MSV: Actually, we are doing a project now which is promoted by Barcelona Activa, it is about economic promotion in a positive way. For example, if you want to open a business, they help you make your business plan. They have this line of research grants that is empowering certain initiatives in the city. We have won one of those grants and we are building a toolbox to be used by citizens, which collects all initiatives in the city to help people make maps, register their activity, build data, etc. With this project we are helping the foundation in Barcelona which counts homeless people during the night. We make the cartography of this process in order for them to digitize it. We are constructing citizens toolbox for urban identification, it is a collection of small mini tools that we have done to make maps, it's a huge depository of mapping initiatives that are happening in Europe and around the world. We have found some really good tools available and we provide tutorials for the most interesting ones so citizens can choose which one works best for them.

I noticed on your website that you are also involved in trans-media projects like PAM Data Visualisation for Barcelona Municipal Action Program 2016-2019, dataWar project and you have also designed an exhibition on Nocturnal landscapes: Urban flows of global metropolises. Can you briefly talk about this?

MSV: This exhibition has opened recently as partner program of the Chicago Architecture Biennial. It's a continuation of the first project of the office 300.000 km/s, the research of nocturnal landscapes. That's where we understood that we need to work with big data in order to understand the behavior of the city. The tools that we have as urban planners are not sufficient. We came to realization that the rhythms of the city and visual aspects during the day and during the night are not the same. Here, using data helps a lot, as there is a lot of things invisible, there are dark, hidden aspects that you cannot address with traditional tools.

PM: The idea of the exhibition is that we take Chicago as the main venue of this biennial and six other global cities (Berlin, Vancouver, Johannesburg, Barcelona, Madrid and Sao Paulo) to compare them with the same methodology and Knowledge Discovery in Databases (KDD) data and tools. We take aspects of the city by night, taking photos from International Space Station, which provides another layer that we can use. The photographs are not from satellites but from NASA astronauts taking them with a camera, and we overlay these with data we obtain from Google - from venues with different amount of activity. And then we observe that where we have the light is not where we have activity. And we see how each city has a layer of activity, another layer with light, and these do not match. Exhibition's message is very clear, how we need to deal with these two layers, we need to make them match or understand where they match or don't match. Of course, there is no one strategy over this. However, we have done a more in-depth analysis in Barcelona.

MSV: For us the important point is that public usage of social space is intense in Spain. It's visually darker and that means that we need to think how these spaces are going to be as there is a lot of activity going on. It is really a simple idea but we have seen that in all seven cities there is inherent mismatch.



If we return back to our discussion about the awarded project, do you intend to create experience transfer of Ciutat Vella's land-use plan in other locations? How transferable is such a project and is there a lot of adaptation involved?

PM: We would like to help cities understand that they need to empower themselves with data and this is a process that you need to build in teams. It's not about buying a super tool from Cisco, it's about talking with your colleagues, with people at the administration. This is a real experience that we need to transfer and then this process gets valued when we finally produce a document, the final plan. But we need to begin the process and empower the administration and citizens in this direction.

MSV: Now we have global datasets and this enables us to do something that is really nice for urban planners, which is to compare cities. We have made another project in Madrid related to touristification and p2p apartments. We made the first part by using Google Trends datasets to understand what were global searches that people were making. However, one of the goals of the analysis was to understand the Airbnb phenomena at European level. If we know that Paris has this problem, is there a need for other cities to arrive to the level Paris to be able to do something? Having these global datasets allows us to understand that most of the problems are happening in the same cities, and we are able to provide a more collaborative solution between them. That is also an important part, to establish collaboration between cities to share data, compare problems, etc.

PM: I think we need to decide, it's not only about comparing cities. Perhaps this is done by the UN, but when we say compare we mean compare streets, corners, fragments. Because we know that to compare cities is a big polygon with many elements inside. We want to make comparable neighborhoods, streets, corners, squares, this is the resolution of liveability. When people say this is a liveable city, we need to think how it is liveable, it's a polygon with a lot of offices, and so on. We need to understand the corner, the square and it's with these tools that we are able to discuss. In Spain we are beginning to make this tool to compare different places around Spain, and I hope that one day we will be able to compare at least on European level.

STARTS Prize

STARTS is an initiative of the European Commission to foster alliances of technology and artistic practice. One element of this initiative is the STARTS Prize. This prestigious award endowed with a total of €40,000 singles out for recognition innovative projects at the interface of science, technology and the arts—hence the acronym STARTS. It identifies and honors projects that demonstrate the successful interplay of science, technology and art, and have the potential to contribute to economic and social innovation. The two prizewinners each receive €20,000.

European Commission's STARTS Initiative

This competition is held in conjunction with the S+T+ARTS =STARTS Initiative – innovation at the nexus of Science, Technology, and the ARTS – of the European Commission, which sees the digital transformation of industry, culture and society as the primary force driving new forms of collaboration that advance innovation by transcending the boundaries of disciplines and genres. The fundamental principle: effectively linking up technology and artistic practice is a win-win situation for both European innovation policymaking as well as the world of art. This initiative spotlights projects and people that can make meaningful contributions to mastering the social, ecological and economic challenges that Europe now faces.

STARTS Prize 2019 – Grand Prize Innovative Collaboration

Awarded for innovative collaboration between industry or technology and the arts (and the cultural and creative sectors in general) that opens new pathways for innovation.

Winner: Ciutat Vella's Land-use Plan.

Big Data, KDD and Citizen Participation to Ensure Coexistence between Economic Activity and Citizens' Quality of Life / 300,000 Km/s

How important is cross-sectoral collaboration at 300.000 km/s?

MSV: We learn a lot from lawyers, from people at Public Health Agency, from citizens so it is really important to define the role of urban planner who is coordinating different actors. It is something that STARTS prize is promoting - collaboration between arts, technology and science.

What are your thoughts on Sidewalk Labs and Toronto Waterfront plan?

PM: What we are doing at 300.000 km/s is providing an alternative model. For us, we say that we empower citizens and administration. There may be administrations that need to buy data or commit to Amazon to help them manage their city, but we refuse to do this. We need to have data, knowledge, teams inside our area, collaborators within our ecosystem of different agents. What we are doing here is we are operating with data from city council, data we can provide, data from citizens, we are collaborating all together and in this way we are able to manage a piece of city. This is the other scenario, we have the top down approach by Sidewalk Labs and we have this other way. To build a platform you need to do something similar to urban place. It's not possible that now when we look for a supermarket we use Google Place. How come we don't have a database from city council, this data should be inside city council, so I think that we need to give people the choice and options. Little by little, by explaining and providing examples of success stories to public administrations, we are building alternatives. Sometimes administration doesn't talk about the future, they are dealing with the present, however it is important to discuss about real future, how to manage the city in 5 years, which infrastructures we need to build, etc.

What does STARTS prize mean for you?

PM: In the closest future nothing will change. If you work with public administration the difficulties remain the same. We have problems with capacity they have to contract us and whether they are courageous enough to do this.

MSV: This plan is made always the same way, with the same fights.

PM: So in the close future, nothing will change. We have issues to close this year, as well as problems to survive. I hope that in the future we are going to develop stronger direction towards changing urban planning and become the owners of our cities. What helps a lot is that sometimes Mar and me work in the office for months without knowing what will happen, and this award provided some proof that we are doing something good. This gives us energy to continue with our work. The direction is to use data, citizens need to be the owners of their cities, and we need to continue explaining that we need to do urban planning in Europe. We need to do more of that, it is not something dangerous, we need to talk about the future and what we want it to be and then do urban planning. When we do urban planning in some places, we don't talk about the future. If we don't talk about the future what kind of urban planning are we going to do?

MSV: There is this fear that urban planning can arrive to the court and we will have a judge who is going to suspend us. But we cannot live with this fear. We need to make regulations and if the regulations are suspended, then we need to find a new strategy.

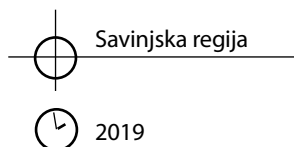
IV.

PROJEKTI

PROJECTS

PROSTORSKE REŠITVE ZA ORGANIZACIJO DELA NA DOMU V SAVINJSKI REGIJI

SPATIAL SOLUTIONS FOR ORGANIZING WORK AT HOME IN THE SAVINJA REGION



TIP PROJEKTA *TYPE OF PROJECT*

Študentski inovativni projekti za družbeno korist (ŠIPK) 2016 - 2020

DELOVNA SKUPINA *WORKING GROUP*

vodja delovne skupine: doc. dr. Gregor Čok (pedagoški mentor)
člani skupine: dr. Mojca Furman Oman (strokovni sodelavec)

ŠTUDENTI *STUDENTS*

študenti UL: Andraž Tufegdžić (štud. arh.), Anna Turina (štud. urb.), Tomaž Mlinarič (štud. urb.), Anja Judež (štud. prost. načrt.), Jernej Glavič (štud. geod.), Kristina Cerar (štud. geod.), Lenart Štut (štud. geograf.), Urban Križaj (štud. geograf.), Rebeka Juvan (štud. ekonom.)

NAROČNIK

Javni štipendijski, razvojni, invalidski in preživninski sklad Republike Slovenije,

PRIJAVITELJ IN NOSILEC

Univerza v Ljubljani, Fakulteta za arhitekturo

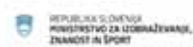
PROJEKTI PARTNERJI *PROJECT PARTNERS*

Metro SR, Zavod za prostor Savinjske regije

GRADIVO PRIPRAVIL *MATERIALS PREPARED BY*

doc. dr. Gregor Čok

PROJEKT FINANCIRAN S STRANI *PROJECT CO-FUNDED BY*



EU Evropski socialni sklad in RS Ministrstvo za izobraževanje, znanost in šport: Javni štipendijski, razvojni, invalidski in preživninski sklad Republike Slovenije

Javni razpis: Projektno delo z negospodarskim in neprofitnim sektorjem

VSEBINA

Delo na domu ima številne ekonomske, socialne in prostorsko-razvojne učinke, vendar njegova fizična materializacija sproža tudi negativne vplive na okolje. Posamezniki, ki začenejo svojo podjetniško pot se srečujejo z različnimi pogoji in omejitvami s področja prostorskih aktov, upravnih postopkov, administrativnih zahtev pri registraciji podjetja in z drugimi izzivi, ki spremljajo pridobivanje ustreznih dovoljenj. Projekt je bil usmerjen v regulacijo dela na domu kot prostorskega pojava, ki predstavlja v Sloveniji obsežen in tradicionalno utemeljen prostorski fenomen. Namenjen je bil oblikovanju upravno-tehničnih, arhitekturnih in urbanističnih pogojev za lažjo umestitev poslovne dejavnosti v kontekst bivalnega okolja.

Projekt je metodološko obsegal dve fazi. V prvi, raziskovalni fazi smo s terenskim delom in deskriptivno metodo izvedli valorizacijo stanja v prostoru: a) analizo pojavnih oblik dela na domu na območju obravnave, b) prepoznavanje socialno občutljivih in drugih interesnih skupin v Savinjski regiji ter prepoznavanje obstoječih institucionalnih spodbud pri prvi registraciji podjetja (samozaposlovanje), c) prepoznavanje administrativnih ovir glede regulacije dela na domu. V drugi, aplikativni fazi smo izoblikovali nabor ukrepov za izboljšanje obstoječega stanja: a) opredelitev potencialnih upravnih rešitev (predlog dopolnitve prostorskih izvedbenih aktov), b) zasnovo prostorskih modelov organizacije dela na domu (arhitekturne in urbanistične rešitve).

Na podlagi intervjujev z različnimi sogovorniki smo ugotovili, da med socialno ranljive skupine sodijo zlasti: a) mladi takoj po zaključku šolanja (njihov ključni problem je pomankanje samoiniciative in delovnih izkušenj), ter b) starejši t.i. »trajno brezposelni« nad 45 oz. 49 let (ta skupina ni deležna tolikšne družbeno-upravne pozornosti, kot jo imajo mladi). Iz vidika izvajanja različnih institucionalnih ukrepov za pomoč pri samozaposlovanju je problem tudi neinformiranost in/ali neznanje posameznikov za pridobivanje razpoložljivih finančnih ali organizacijskih pomoči.

Delo na domu se že danes pojavlja v različnih oblikah, ključni problemi so njegova vizualna podoba, vplivi na okolje in upravne omejitve (prostorski akti večinoma nimajo podrobneje opredeljenih pravil za arhitekturno in urbanistično regulacijo npr. dopustne dejavnosti, gabariti, oblika itd.).

Na podlagi vmesnih rezultatov smo predlagali naslednje rešitve za izboljšanje stanja:

- nabor sistemsko-upravnih ukrepov za izvedljivost dela na domu (a/1: ukrepi integrirani v prostorske akte (RPP, OPN, OPPN) in a/2: implementacija dobrih praks (usmeritve za kvalitetne prostorske rešitve, mobilizacija stavb in zemljišč v javni lasti, odzivnost v procesu upravnega postopka),
- nabor strukturnih ukrepov za regulacijo dela na domu: I. ukrepi za sanacijo vizualnega vpliva, II. ukrepi za zmanjševanje hrupa, III. ukrepi za izboljšanje poslovne učinkovitosti, IV. ukrepi za racionalizacijo projekta.

V sklepnem delu smo na podlagi aplikativnih projektov podali konkretne prostorske rešitve za 5 različnih prostorskih situacij: 1. primer gruče poslovnih stavb na robu naselja (Šentrupert), 2. primer poslovne stavbe na vstopu v naselje (Solčava), 3. primer dislocirane poslovno-stanovanjske enote (Liboje), 4. primer modifikacije stanovanjske stavbe (Hramše) in 5. primer dopolnilne dejavnosti (Kozje).

Izdelali smo tudi »Priročnik za delo na domu«, kot informativno

Slika 1: Funkcionalna in prostorska preureditev kmetije v Bučah (Kozje) za potrebe izvajanja glampinga, delitev na poslovni in zasebni del.



Slika 2: Idejna zasnova ureditve parkirišča, informacijskega platoja in campinga na območju turistične kmetije Kotečnik (Liboje), ukrep izboljšanja poslovne učinkovitosti kompleksa.



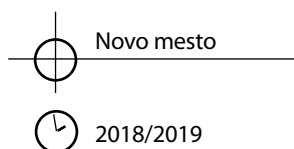
zloženko, ki je namenjena vsem, ki začenejo poslovno pot in se srečujejo s ključnimi vprašanji upravnega postopka in iskanjem institucionalne ali finančne pomoči.

ABSTRACT

Working at home positively affects social and spatial development, while it also has certain adverse impacts on the environment. Its regulation requires a particular professional approach as spatial planning documents mostly do not contain the appropriate mechanisms for its spatial and programmatic treatment. The focus of this project was to identify the existing forms of working at home in the Savinja region (Savinjska regija) and to develop more efficient measures for their regulation. In this framework we used field work, interviews, and application measures to design a set of systemic and structural measures to improve the existing situation. Their goal was to develop better spatial solutions and simplify the procedures of acquiring the documentation necessary for the implementation of working at home.

RAZVOJ KOLESARSKEGA OMREŽJA V OBČINI NOVO MESTO KOT PODPORA TRAJNOSTNI MOBILNOSTI

DEVELOPMENT OF THE CYCLING NETWORK IN NOVO MESTO AS A SUPPORT FOR SUSTAINABLE MOBILITY



TIP PROJEKTA TYPE OF PROJECT

Študentski projekt, PKP - po kreativni poti do praktičnega znanja

DELOVNA SKUPINA WORKING GROUP

vodja delovne skupine: dr. Alma Zavodnik Lamovšek, (vodja projekta), UL FGG in dr. Igor Ivaškovič, UL EF (pedagoški mentor), Radovan Nikič, Acer Novo mesto d.o.o. (delovni mentor) in Tomaž Praznik, MONM (delovni mentor)

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PRIJAVITELJ IN NOSILEC

Univerza v Ljubljani Fakulteta za gradbeništvo in geodezijo

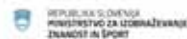
PROJEKTNI PARTNERJI PROJECT PARTNERS

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Mestna občina Novo mesto
Acer Novo mesto, d.o.o.

GRADIVO PRIPRAVIL MATERIALS PREPARED BY

doc. dr. Alma Zavodnik Lamovšek

PROJEKT FINANCIRAN S STRANI PROJECT CO-FUNDED BY



EU Evropski socialni sklad in RS Ministrstvo za izobraževanje, znanost in šport: Javni štipendijski, razvojni, invalidski in preživninski sklad Republike Slovenije

Javni razpis: Projektno delo z negospodarskim in neprofitnim sektorjem

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1. ZAVODNIK LAMOVŠEK, Alma, IVAŠKOVIČ, Igor, NIKIČ, Radovan, PRAZNIK, Tomaž, BLAŽ, Matej, KLUN, Matic, KOVAČIČ, Katja, KURNIK, Petra, LAMOVŠEK, Amadeja, MESTNIK, Ana, RAKOVEC, Karolina. Razvoj kolesarskega omrežja v občini Novo mesto kot podpora trajnostni mobilnosti : po kreativni poti do praktičnega znanja - končni elaborat. Ljubljana: UL FGG, 2019. 77 str., ilustr. [COBISS.SI-ID 8960609]

VSEBINA

V želji po povečanju trajnostne mobilnosti ter po vzpostavitvi prijetnejših in varnejših življenjskih pogojev, smo s projektom želeli odgovoriti na probleme in izzive, ki izhajajo iz potreb lokalnega prebivalstva za vzpostavitev lokalnih kolesarskih povezav v Mestni občini Novo mesto (v nadaljevanju MONM). Hkrati smo želeli v lokalno okolje prenesti nova, sveža znanja s področja umeščanja in vrednotenja kolesarskega omrežja z različnih vidikov, predvsem s prometno tehničnega, lastniškega in ekonomskega. Glavni cilji projekta so bili:

- oblikovati kriterije, na podlagi katerih smo predlagali zasnovo trajnostne in varne mreže kolesarskih poti,
- izboljšati, sanirati, predvsem pa povezati obstoječe lokalno kolesarsko omrežje z manjkajočimi kolesarskimi povezavami,
- predlagati celovito zasnovo povezanega lokalnega kolesarskega omrežja na območju MONM,
- povezati predlagano kolesarsko omrežje z ostalimi oblikami javnega potniškega prometa, še posebej navezavo na železniško omrežje,
- posebno pozornost nameniti skupinam kolesarjev s posebnimi potrebami (otroci, starejši, invalidi, ipd),
- v prostor podrobneje umestiti lokalno kolesarsko povezavo na relaciji Novo mesto – Stopiče – Dolž – Novo mesto.

Projekt je sledil zastavljenim ciljem in bil razdeljen v tri faze. V prvi fazi je bila izdelana analiza stanja s pomočjo pregleda obstoječih virov in terenskega dela. V drugi fazi so bili oblikovani kriteriji za načrtovanje lokalnega kolesarskega omrežja (kaj povezujemo, navezava na javni potniški promet, katere maloprometne ceste lahko vključujemo v kolesarsko omrežje, naklon kolesarskih poti, varnost, idr.) ter izdelana idejna zasnova lokalnega kolesarskega omrežja. V idejno zasnovo lokalnega kolesarskega omrežja na območju MONM so bile vključene obstoječe poti (javne poti, poljske in gozdne ceste, ceste, javno dobro). Nove kolesarske poti pa so bile predlagane le tam, kjer ni bilo druge možnosti za zagotovitev varnosti in sklenjenosti kolesarskega omrežja.

V zadnji, tretji fazi je bila predlagana podrobna umestitev izbranega odseka lokalne kolesarske povezave v prostor na relaciji Novo mesto – Stopiče – Dolž – Novo mesto in izvedena motivacijska delavnica z lokalnim prebivalstvom in ključnimi deležniki na lokalni ravni. Na podlagi ugotovitev z motivacijske delavnice je bil oblikovan končni predlog kolesarskih povezav na izbranem odseku ter izdelana analiza stroškov in koristi glede na veljavni Pravilnik o tehničnih elementih kolesarskih povezav in glede na dejanske možnosti izvedbe.

Rezultat projekta je predlog prostorske zasnove trajnostne in varne mreže kolesarskih poti v MONM, ki je bila oblikovana glede na analizo stanja, oblikovane kriterije ter smernice, predloge in ugotovitve z delavnice. Pri tem je bilo v ospredju tudi povezovanje predlagane mreže kolesarskih poti z ostalimi trajnostnimi oblikami mobilnosti, predvsem z železniškim omrežjem. Že pri določitvi sklenjene mreže kolesarskih poti so bili proučeni potencialno zanimivi elementi in dejavnosti ob poti, ki bodo kolesarjenje naredile privlačno predvsem za različne skupine lokalnega prebivalstva (tudi za skupino s posebnimi potrebami) in za obiskovalce.

Na podlagi rezultatov projekta je mogoče pričeti z nadaljnjimi koraki za realizacijo predlagane zasnove trajnostne in varne mreže lokalnih kolesarskih poti v MONM, kot so:

- podrobno umeščanje predlaganih tras zasnove mreže



Slika 1: Na motivacijski delavnici.



Slika 2: Variantne rešitve podrobnejše umestitve kolesarske povezave na relaciji Novo mesto – Stopiče – Dolž – Novo mesto.

kolesarskih poti v prostor,

- izvedba manjkajočih odsekov kolesarskih poti,
- označevanje kolesarskih poti ter nameščanje ustrezne prometne in svetlobne signalizacije,
- zagotovitev povezovanja z drugimi oblikami trajnostne mobilnosti.

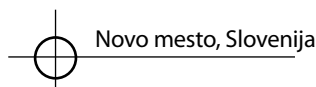
Pri tem je mogoče izkoristiti tudi velik potencial vključevanja javnosti v procese, povezane z urejanjem in načrtovanjem prostora za kakovostno bivalno okolje ter trajnostno mobilnost, kar je bilo v teku projekta pokazano z izvedbo motivacijske delavnice. Rezultati delavnice so namreč bistveno pripomogli k uspešno izvedenemu projektu ter družbeno sprejemljivemu končnemu predlogu lokalne kolesarske povezave na odseku Novo mesto – Stopiče – Dolž – Novo mesto.

ABSTRACT

In order to increase sustainable mobility and to create a more comfortable and safer living environment, the project aimed to address the problems and challenges arising from the needs of the local population for establishing local cycling links in the Novo mesto municipality. The result of the project is a proposed sustainable and safe network of cycling routes. The focus was also on linking the proposed network with other sustainable forms of mobility, in particular with the railway network. Potentially interesting elements and activities along the route have also been explored, aiming to increase attractiveness especially to different groups of the population and to visitors. A motivational workshop was also carried out during the project, the results of which greatly contributed to the socially acceptable final proposal of a local cycling trail on the section Novo mesto – Stopiče – Dolž – Novo mesto.

TRAJNOSTNI RAZVOJ PAMETNIH MEST

SUSTAINABLE DEVELOPMENT OF SMART CITIES



Novo mesto, Slovenija



2018/2019

TIP PROJEKTA *TYPE OF PROJECT*

projekt Po kreativni poti do znanja

DELOVNA SKUPINA *WORKING GROUP*

vodja delovne skupine: izr. prof. dr. Laura Južnik Rotar

mentorji skupine: izr. prof. dr. Franci Avsec, izr. prof. dr. Alenka

Fikfak, univ.dipl.inž.arh., izr. prof. dr. Laura Južnik Rotar, Petra Mittoni Vavtar, univ.dipl.inž.arh

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PRIJAVITELJ IN NOSILEC

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PROJEKTNI PARTNERJI *PROJECT PARTNERS*

Univerza v Ljubljani, Fakulteta za arhitekturo

GRADIVO PRIPRAVIL *MATERIALS PREPARED BY*

Jana Benedik

PROJEKT FINANCIRAN S STRANI *PROJECT CO-FUNDED BY*



Javni štipendijski, razvojni,
invalidski in preživninski
sklad Republike Slovenije



REPUBLIKA SLOVENIJA
MINISTRSTVO ZA IZOBRAŽEVANJE,
ZNANOST IN ŠPORT



EVROPSKA UNIJA
Evropski socialni sklad
inovacija, zaposlovanje
in rasti

EU Evropski socialni sklad in RS Ministrstvo za izobraževanje, znanost in šport: Javni štipendijski, razvojni, invalidski in preživninski sklad Republike Slovenije

Javni razpis: Projektno delo z negospodarskim in neprofitnim sektorjem

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PREDSTAVITEV

PRESENTATION

DIPLOMA

MASTER THESIS

VSEBINA

Projekt Trajnostni razvoj pametnih mest je rezultat sodelovanja Fakultete za arhitekturo Univerze v Ljubljani, Fakultete za ekonomijo in informatiko Univerze v Novem mestu ter podjetja Poetic Outline. Projekt je bil prijavljen na razpis Po kreativni poti do znanja 2019 in odobren za financiranje s strani Javnega štipendijskega, razvojnega, invalidskega in preživninskega sklada Republike Slovenije. Osrednji cilj projekta je bila umestitev nove kolesarsko - rekreacijske poti, ki bi prispevala k bolj trajnostnim migracijam znotraj mesta in spodbujala ljudi k zdravemu življenjskemu slogu ter omogočala prebivalcem mesta in drugim uporabnikom prostora varno prehajanje iz ene lokacije v drugo. Namen projekta je bila tudi vzpostavitev sodelovanja in povezovanja med visokošolskimi izobraževalnimi institucijami in gospodarstvom v lokalnem in regionalnem okolju. Študenti smo tako imeli priložnost pridobiti konkretne in praktične izkušnje že tekom izobraževanja. V postopku izdelave projekta smo evidenčinali trenutno stanje kolesarsko - rekreacijskih poti in pridobili informacije iz lokalnega okolja, ki bi bile v pomoč ob morebitni izvedbi projekta, poleg tega pa smo poiskali idejno rešitev lege in izgleda poti ter podali predlog spremljajočih programov.

Delo je potekalo v več fazah in nekoliko ločeno glede na področja dela. Študenti Fakultete za ekonomijo in informatiko so največ pozornosti namenili raziskovanju pravno - ekonomskih vidikov, preučevanju kazalcev kakovosti življenja, izdelavi vprašalnika o tem in zastavljanju vprašanj uporabnikom na lokaciji. Študenti Urbanizma na Fakulteti za arhitekturo pa smo se lotili problematike fizičnega umeščanja poti in opravili potrebno raziskovanje ključnih dejavnikov, povezanih z umestitvijo. V prvi fazi smo analizirali trenutno stanje naravnega in grajenega okolja ter se spoznali s priložnostmi in izzivi. Za prikaz stanja v prostoru smo si pomagali s podatki Geodetske uprave Republike Slovenije. S pomočjo pridobljene relevantne literature in referenčnih primerov, smo si ustvarili jasnejšo sliko zelenega rezultata projekta. Nadaljevali smo s pregledom trenutnega stanja kolesarskih poti in že prisotnih rekreacijskih dejavnosti v prostoru. Obiski terena so nam pomagali pri preveritvi naših spoznanj in pri sprejemanju končnih odločitev za umestitev trase in spremljajočih dejavnosti. Po podrobnem preučevanju trenutnega stanja, smo prišli do ugotovitve, da so v večjem merilu kolesarsko - rekreacijske poti ustrezno zastopane, v središču mesta pa so potrebne boljše povezave, zato smo natančnejše načrte izrisali za območje okoli strogega središča Novega mesta. Ukvarjali smo se tudi s tehničnimi možnostmi za širino poti, izbrali materiale pohodnih in vozniških površin ter materiale in izgled urbane opreme. Kot rezultat sta nastala dva podrobnejša urbanistična načrta kolesarsko - rekreacijske poti s pripadajočimi aktivnostmi. Umestili smo elemente za šport in rekreacijo, otroška igrala, knjižnico in kino na prostem ter druge površine, namenjene aktivnemu preživljanju prostega časa in uredili obrečni prostor za sprostitev in druženje. Vse skupaj je dopolnjevano s pripadajočo urbano opremo, javnimi kolesi za izposojeno in urejenimi zelenimi površinami.

Ko je bil večinski del projekta zaključen, smo vse ugotovitve združili in kot rezultat dobili zaokroženo celoto idejnega projekta kolesarsko - rekreacijske poti, ki združuje dognanja pravno - ekonomske in urbanistične smeri raziskovanja. Tekom izdelave naloge smo se srečevali s problemi, ki jih takšno delo v praksi prinaša in se naučili, kako pristopiti k njihovem reševanju. Ugotovili smo, da lahko že z manjšimi posegi v prostoru naredimo veliko spremembo za kolesarje in pešce v Novem mestu, z izboljšano povezanostjo rekreacijskih poti pa te naredimo bolj privlačne za potencialne uporabnike. Z rastjo števila uporab-



Slika 1: Sinteza analiz



Slika 2: Tloris ureditve lokacije med Cineplexx-om in reko Krko.



Slika 3: Vizualizacija lokacije ob Cineplexx-u.

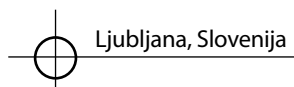
nikov poti bi se prispevalo k bolj trajnostnemu načinu življenja v mestu. Rezultate projekta bo mogoče uporabiti za izdelavo smernic razvoja trajnostne mobilnosti Mestne občine Novo mesto in kot osnovo za druge podobne projekte na tem področju.

ABSTRACT

The primary aim of the Sustainable Development of Smart Cities project was the placement of a new cycling and recreational trail in Novo mesto which would contribute to a more sustainable migration of people within the city, encouraging a healthier lifestyle and enabling the users of the space to move safely within it. We combined all the findings of the research work and created a conceptual design of the cycling - recreational trail, which incorporates the discoveries of the legal - economic and urban planning branches. With minor interventions in space, we can improve the connectivity of recreational trails for cyclists and pedestrians and attract potential new users, contributing to a more sustainable lifestyle in the city.

SVOBODA GIBANJA V ŽIVLJENJU LJUDI Z DEMENCO, Priporočila za ureditev prostorov

FREEDOM OF MOVEMENT IN THE LIFE OF PEOPLE WITH DEMENTIA, GUIDELINES FOR SPATIAL ADAPTATIONS



Ljubljana, Slovenija



2018/2019

TIP PROJEKTA TYPE OF PROJECT

projekt Po kreativni poti do znanja

DELOVNA SKUPINA WORKING GROUP

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delovni mentor: dr. Sabina Šegula, FlowerAcademy.si

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blike Slovenije,

PRIJAVITELJ IN NOSILEC

Univerza v Ljubljani, Fakulteta za socialno delo

PROJEKTNI PARTNERJI PROJECT PARTNERS

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Akademija cvetja FlowerAcademy.si Sabina Šegula S.P.

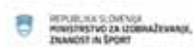
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Univerza v Ljubljani



PROJEKT FINANCIRAN S STRANI PROJECT CO-FUNDED BY



EU Evropski socialni sklad in RS Ministrstvo za izobraževanje,
znanost in šport: Javni študentski, razvojni, invalidski in preživ-
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Javni razpis: Projektno delo z gospodarskim in neprofitnim
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MASTER THESIS

VSEBINA

Demenca postaja vedno večji problem sodobne družbe. Z naraščanjem deleža starejšega prebivalstva, se posledični večja tudi delež ljudi z demenco, saj se bolezen pojavlja v večji meri pri ljudeh starejših od 65 let.

Ravnanje z ljudmi, ki jih je bolezen doletela je problematika, kateri moramo kot družba posvetiti več pozornosti, v kolikor želimo, da je za obolenje, dobro poskrbljeno. Potrebna je boljša ozaveščenost ljudi o sami bolezni in o spremembah vedenjskih vzorcev, ki jih povzroča.

K problematiki smo na projektu pristopili interdisciplinarno, tako iz socialnega kot tudi iz arhitekturnega vidika. Projektu so se pridružili tudi Akademija Cvetja - Floweracademy.si Sabina Šegula S.P., in Gerontološko društvo Slovenije. Udeleženci na projektu smo analizirali življenjske vzorce ljudi z demenco in določili parametre s pomočjo katerih smo izdelali priporočila za ureditev notranjega in zunanega bivalnega okolja, v katerem bivajo. Priporočila so namenjena vsem ljudem, ki se formalno ali neformalno ukvarjajo z oskrbo ljudi z demenco.

Trenutna situacija v Sloveniji kaže, da za ljudi z demenco ni dovolj dobro poskrbljeno. S projektom smo si prizadevali za večjo ozaveščenost ljudi o bolezni in pomoči, ki jo ljudje potrebujejo. Prepogosto se dogaja da okolica ne razume zakaj so se vzorci obnašanja določene osebe spremenili in ne vedo kako z osebo pravilno ravnati. Zaradi neznanja se ljudje pogosto prepričani, da starostnik ni več sposoben živeti v domačem okolju. Naša želja ob začetku projekta je bila ustvariti enostavna priporočila, ki bodo svojcem pomagala urediti domače okolje tako, da bo starostnik v njem varen. Ljudje z demenco so pogosto obsojeni na bivanje v enem prostoru, brez izhodov na prosto. S pomočjo manjših intervencij v domu starostnika in njegovi okolici lahko omogočimo varno in kvalitetno bivalno okolje v katerem se oseba svobodno giba tako v stanovanju kot na prostem.

RAZISKOVANJE

V začetku projekta smo sodelujoči študentje iz fakultete za arhitekturo in fakultete za socialno delo raziskovali kakšno je trenutno notranje in zunanje bivalno okolje starostnikov, ki živijo doma in starostnikov, ki živijo v domovih za starejše. Spoznali smo se z različnimi razsežnostmi demence in spremembami v načinu življenja ljudi, ki jih je bolezen doletela. V parih, po en študent iz fakultete za arhitekturo in en iz fakultete za socialno delo, smo obiskali domove ljudi z demenco in se z njimi in njihovimi svojci pogovarjali o bivalnem okolju in željah ter potrebah po spremembah, ki so jih opazili tekom napredovanja bolezni. Dobili smo konkreten vpogled v življenje in dnevno rutino njih in njihovih najbližjih. Vsak par je obiskal tudi enega izmed domov starejših, kjer smo bili preko Gerontološkega društva Slovenije dogovorjeni za ogled oddelkov za demenco. Pogovarjali smo se s starostniki, ki so nam zaupali svoj pogled na bivanje v domu. Spoznali smo se z različnimi aktivnostmi, ki jih organizira osebje za svoje stanovalce in opazovali kako poteka običajen dan na oddelku. Med opazovanjem prostorov smo se osredotočili na vsa človeška čutila in raziskovali, kako v prostor vpeljati različne dejavnike, ki bi pri ljudeh vzbudili pozitivne odzive in jih motivirali za nadaljnje udejstvovanje pri dnevnih aktivnostih tako doma kot v domu. Pri iskanju ustreznih rešitev za urejanje bivalnega okolja smo v sodelovanju z Akademijo Cvetja - floweracademy.si Sabina Šegula s.p. obiskali arboretum, kjer smo se spoznali z različnimi rastlinskimi vrstami, primernimi tako za zunanje kot tudi za notranje bivalno okolje.

IZDELAVA PRIPOROČIL

Slika 1: Sinteza analiz

Priporočila za opremo notranjega in zunanega bivalnega okolja smo razdelili na več poglavij glede na posamezne prostore v stanovanju. V uvodu poglavja so opisane glavne značilnosti izbranega prostora tako v domačem kot v institucionalnem okolju. Ljudje z demenco svojo okolico dojemajo drugače zato je zelo pomembno kako so prostori opremljeni.

V nadaljevanju smo opisali pomanjkljivosti pri opremitvi prostorov, ki smo jih opazili mi, svojci in zaposleni pri obisku domačih in institucionalnih okolij.

Osrednji del vsakega izmed poglavij predstavljajo priporočila za ureditev posameznega prostora. Pri pisanju smo se osredotočili na uporabljene barve in materiale pri talnih, stenskih in stropnih oblogah, ter stavbnem pohištvi. Predlogi notranje opreme opisujejo primerno postavitev pohištva za neomejeno gibanje. Glavno vodilo pri pisanju priporočil nam je bila poleg zagotavljanja varnosti tudi inkorporacija vseh čutov. Osredotočili smo se na uporabo barv, oznak, dišav, tekstur in rastlin, ki človeku z demenco omogočajo enostavno in varno orientacijo in mu sporočajo namembnost prostora v katerem se nahajajo. Pripravili smo tudi skice, ki grafično povzamejo bistvo napisanih smernic.

Za vsako poglavje smo izdelali pripadajoče slikovne pismenke, ki z enostavnimi ikonami prikazujejo elemente značilne za dani prostor in tako omogočajo enostavnejšo in varnejšo uporabo tega. Za lažjo orientacijo smo vsaki skupini pismenk, določili svojo barvo. Piktograme smo opremili tudi z besedami. Cilj izdelave kataloga slikovnih pismenk, ki je priložen smernicam, je omogočiti lažjo orientacijo ljudem z demenco ne glede na to, ali je posamezniku bližje prepoznavanje oblik, branje ali zgolj asociiranje določene barve s prostorom.

Tekom izdelave smernic smo spoznali, da je zelo pomembno izobraziti ljudi tudi o uporabi rastlin. Pripomorejo lahko k sproščanju okolju in spodbujajo ljudi k aktivnosti. Odločili smo se, da pripravimo poglavje namenjeno samo rastlinam. Pogosto imamo v domovih rastline, ki so strupene ali pa rastline, ki zaradi svojih bodic, trdih listov in trnjev drugače škodujejo ljudem. Opisali smo znane primerne in neprimerne sobne in zunanje rastline.

Glede na statistiko, ki kaže na staranje prebivalstva in dejstvo, da se demenca vedno pogostejše pojavlja tudi pri mlajših ljudeh, je nujno, da se naučimo sobivati z ljudmi, ki jih je bolezen prizadela. Pomembno je da ljudem pomagamo ohranjati njihove sposobnosti, ki jih bolezen še ni odvzela. S pomočjo priporočil lahko z majhnimi intervencijami v prostor ljudem z demenco omogočimo kakovostno in dostojno življenje brez velikih investicij.

ABSTRACT

In the project Freedom of Movement in the Life of People with Dementia, students of the Faculty of Social Work and the Faculty of Architecture, University of Ljubljana, explored the life world of people with dementia. Through the compilation of their life stories, habits, and the changes that life brings with dementia, they became aware of the different dimensions of dementia, and above all the changes that dementia brings to their life and life-living environment. The main result of the project is recommendations for safe movement in indoor and outdoor, natural environments, as people with dementia remain uncertain in the security of living outside the home, often confined in an apartment, house or even home for older people. The recommendations outlined how we can create spaces for safe movement and, with appropriate plants, create a comfortable stay for people with dementia.

Mojca Foški in Alma Zavodnik Lamovšek:

PREDSTAVITEV ZNANSTVENE MONOGRAFIJE – PROSTORSKI NAČRTOVALCI 21. STOLETJA

Nabiranje in podajanje znanja, kot eden od temeljev pedagoškega poslanstva pri izvajanju študijskega programa Prostorskega načrtovanja, se je odrazilo tudi ob 60. obletnici Katedre za prostorsko planiranje, katere člani so o tej priložnosti pripravili in uredili znanstveno monografijo z naslovom Prostorski načrtovalci 21. stoletja. Pri njenem nastanku je sodelovalo preko 50 domačih in tujih avtorjev z različnih institucij, od akademske sfere do posameznikov. Nastala je obsežna monografija, sestavljena iz dveh delov. Prvi del je namenjen predvsem predstavitvi Katedre za prostorsko planiranje ter ohranjanju zgodovinskega spomina na študij IP-ŠPUP. Vtisi nekaterih bivših predavateljev, sodelavcev in študentov dobro odsevajo njegov pomen pri razvoju planerskega kadra tudi v sedanjem času. V monografiji so zbrani tudi vsi razpoložljivi podatki o predavateljih ter vseh 358 vpisanih študentih. V prilogi je navedenih tudi vseh 99 magistratov ter 17 doktoratov tega študija.

Drugi del monografije, ki je posvečena stanju in razvoju stroke, je razdeljen v pet vsebinskih sklopov. V prvih dveh sklopih je najprej prikazan pogled na prehojeno pot prostorskega planiranja in izobraževanja. Pri tem so predstavljeni različni vidiki izobraževanja prostorskega planiranja v Sloveniji kot tudi izkušnje iz tujine. V dveh prispevkih je podan še pogled na prostorsko planiranje po osamosvojitvi Slovenije in vstopu v EU ter vpliv EU na izobraževanje, terminologijo in zakonodajo.

V tretjem poglavju strokovnjaki iz prakse opozorijo na pomen strokovnih podlag, sodelovanja in vključevanja javnosti ter različnih pristopov k prostorskemu planiranju. Opozarjajo na pomen strokovnosti, ki se pogosto izgublja pod krinko operiranja s številnimi razpoložljivimi prostorskimi podatki in uporabo računalniških orodij. Dodano vrednost bi morali dati tudi kartografskim prezentacijam, ki so prepogosto le enoznačno prikazovanje prostora. Avtorji pa opozarjajo tudi, da nam pogo- sto manjka dolgoročne vizije, ter se vse prepogosto usmerjamo le na kratkoročno reševanje malih prostorskih problemov, najpogosteje v domeni politike ali kapitala.

V četrtem poglavju je izpostavljeno regionalno prostorsko planiranje, ki v razvitih državah predstavlja temelj prostorskega načrtovanja. Avtorji upajo, da bo to področje z novim Zakonom o urejanju prostora, končno dobilo svoj epilog z regionalnimi prostorskimi plani tudi v Sloveniji. Kot poseben primer funkcionalne (urbane) regije pa je v tem poglavju izpostavljeno širše območje Mestne občine Ljubljana.

Zaključno poglavje je namenjeno različnim aktualnim temam prostorskega načrtovanja od urejanja podeželja, podnebnim spremembam in prostorskim evidencam. Avtorji v vseh prispevkih opozarjajo na pomen prostorskega načrtovanja in prostorskih načrtovalcev danes in v prihodnje, kar je tudi rdeča nit celotne monografije.



Prav iz vseh prispevkov v monografiji veje spoznanje, da je prostorsko načrtovanje zelo interdisciplinarna in kompleksna dejavnost v javnem interesu. Prav poudarjanje slednjega, torej javnega interesa, kaže na to, kot da smo na to temeljno poslanstvo skoraj pozabili? Če se zgodi to, ni samo konec prostorskega planiranja, temveč se slabo piše tudi človeku, ki je od prostora vseodvisen.

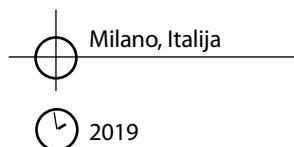
Zapisi v monografiji so zagotovo zaklad, ki bo svojo vrednost pridobival s časom. Predvsem pa vsi avtorji prispevkov, z bralci monografije delijo svoje znanje in izkušnje. Na ta način so na najboljši način počastili tudi 60. obletnico Katedre za prostorsko načrtovanje in 45. obletnico študija prostorskega načrtovanja, ki ga vsa ta leta v pretežni meri v okviru Fakultete za gradbeništvo in geodezijo Univerze v Ljubljani, vodi prav ta katedra.

V.

DELAVNICE
WORKSHOPS

UNIVERZA IN MESTO

UNIVERSITY AND THE CITY



Milano, Italija

2019

TIP DELAVNICE *TYPE OF WORKSHOP*
mednarodna urbanistično delavnica

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ORGANIZATORJI *ORGANISED BY*
MILAN, Dipartimento di Architettura e Studi Urbani, Politecnico
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DRUGE INSTITUCIJE *OTHER INSTITUTIONS*
HAMBURG, Department of Urban Planning, HafenCity Univer-
sity; LJUBLJANA, Department of Urban Planning, Faculty of
Architecture, University of Ljubljana; MALMÖ, Department of
Urban Studies, Malmö University; MILAN, Dipartimento di Archi-
tettura e Studi Urbani, Politecnico di Milano; PARIS, Paris School
of Planning, Université Paris Est Créteil

DATUM IN KRAJ RAZSTAVE *DATE OF THE EXHIBITION*
8.3.2019, Dipartimento di Architettura e Studi Urbani, Politecnico
di Milano

GRADIVO PRIPRAVIL *MATERIALS PREPARED BY*
asist. Janez P. Grom

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Slika 1: N načrtovan poseg ene od skupin. Ideja osmišljanja medprostorov.

VSEBINA

Vsakoletno medinstitucionalno sodelovanje v okviru International Week je bilo v letošnjem študijskem letu izpeljano v organizaciji Politecnico di Milano. Partnerske institucije MALMO/PARIZ/HAMBURG in UL, Fakulteta za arhitekturo so poskrbele za udeležbo široke palete tutorjev, kritikov in predavateljev ter velikega števila študentov iz različnih področij.

Tokratni cilj enotedenske eksperimentalne študentske delavnice je bil raziskati odnos med univerzami in mesti, s posebnim poudarkom na procesih urbanih sprememb, kjer ima ta odnos bistveno vlogo v materialnem / nematerialnem smislu. Študentje so se vključili v projektne aktivnosti na dveh študijah primerih: projekt urbane regeneracije, ki bi naj vplival na tradicionalni mestni kampus v centru mesta in projekt novega kampusa na novi lokaciji na obrobju mesta. V prvem primeru bo državna univerza zapustila obstoječi kampus, da bi se preselila v nov kampus (drugi primer). Isti akter, s pomembnimi in različnimi posledicami na ravni lokacije in na ravni mesta. Študenti so, razdeljeni v več interdisciplinarnih skupin morali v svojih konceptih predstaviti niz strategij za obvladovanje dveh različnih procesov transformacije.

Cilj kratke delavnice ni bilo najti konkretne rešitve zelo kompleksnega procesa prostorske transformacije univerze v Milanu, temveč najti igrive, morda provokativne rešitve, ki bi bazirale na kritični presoji mladih strokovnjakov iz različnih področij.

Študentje so svoje rešitve predstavili javno pred avditorijem. V procesu so se tako navajali na hitro reševanje zapletenih problemov, sodelovanje v nehomogeni ekipi, izboljševali so komunikacijske sposobnosti in predstavitvene tehnike, utrjevali

PARK IMPLEMENTATION



Slika 2: Prostorski prikaz opremljanja prostorov med stavbami univerze.

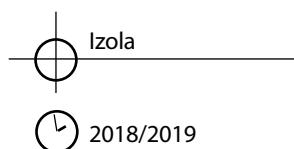
so znanje tujega strokovnega jezika ter se ob končni predstavitvi rezultatov urili v retoriki.

ABSTRACT

The goal of the international workshop was to discover fresh ideas on how to adjust the new relations between the university and the City by taking into consideration the planned relocation of par to the University programme to the outskirts of Milan.

»FREE-SPACE« IN PROMETNA ZASNOVA, POVEZANOST, PREPLETANJE

»FREE SPACE« AND TRAFFIC DESIGN, CONNECTIVITY, INTERWEAVING



TIP DELAVNICE *TYPE OF WORKSHOP*
urbanistično-arhitekturna delavnica/slovenska

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NAROČNIK *CLIENT*

Občina Izola

DATUM IN KRAJ RAZSTAVE

9.– 22. december 2019, Kulturni dom, Izola.

GRADIVO PRIPRAVILA *MATERIALS PREPARED BY*

dr. Matej Nikšič, dr. Luka Mladenovič

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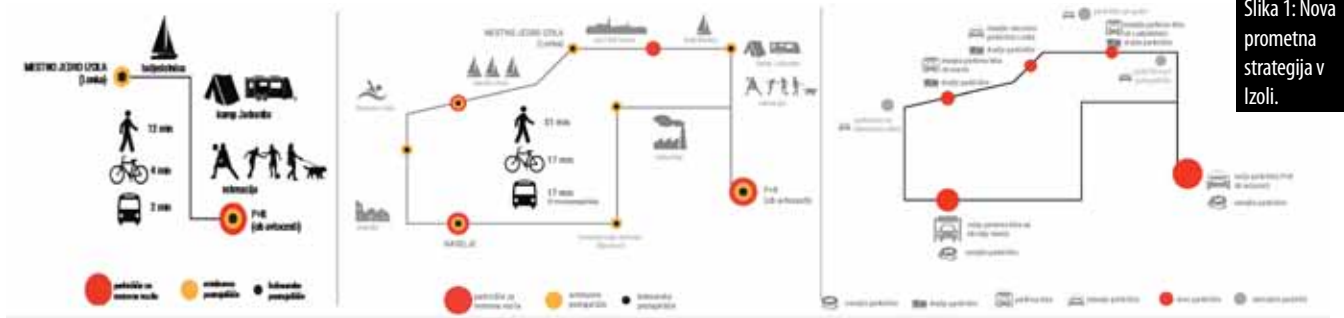
COMPETITION

PREDSTAVITEV

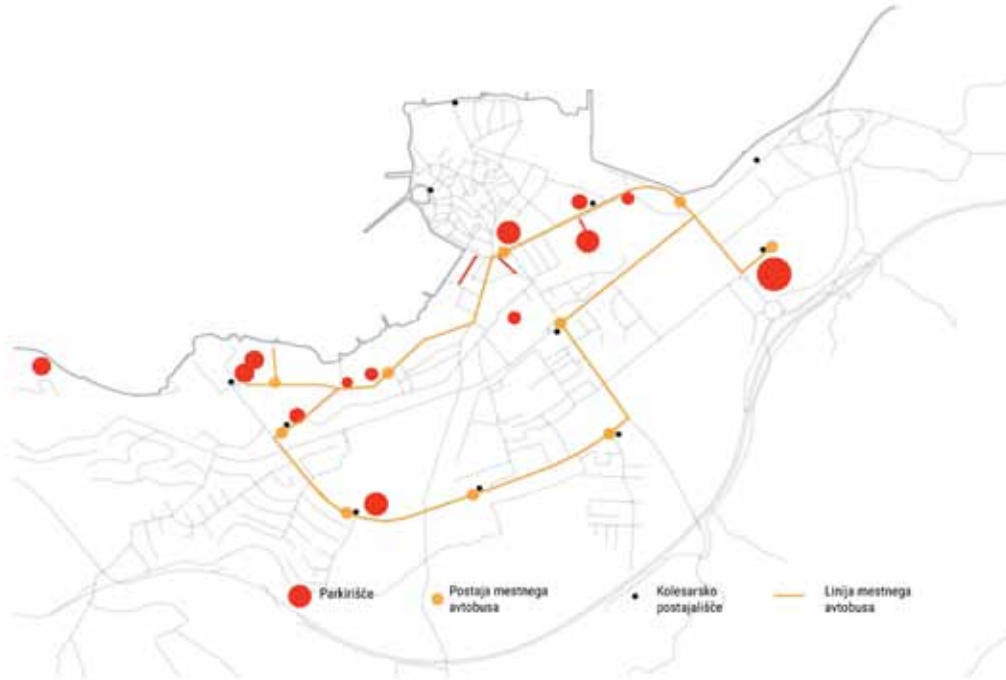
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MASTER THESIS



Slika 1: Nova prometna strategija v Izoli.



Slika 2: Razopažen bunker

VSEBINA

Delavnica je obravnavala razvojne priložnosti mestnega in zalednega prostora v občini Izola ter njuna medsebojna razmerja. V urbanem delu so bile poudarjene obravnavane tematike presnavljanja mesta skladno s sodobnimi potrebami prebivalcev in obiskovalcev, postopnega prometnega preurejanja v pešcem in kolesarjem prijaznejše mesto, revitalizacije degradiranih oz. zapuščenih urbanih prostorov, aktiviranjem obvodnega prostora in vzpostavljanjem morskih povezav, vključevanjem prebivalcev v procese mestne revitalizacije ipd. V zalednem delu občine je delavnica preverjala možnosti novih razvojnih modelov na področju kmetijstva z namenom ohranjanja poseljenosti in urejenosti podeželskega prostora. Na podlagi strateških razmislekov so bili predlagani konkretni projekti oz. posegi v prostor.

ABSTRACT

The workshop addressed the developmental opportunities of urban and hinterland areas in the Municipality of Izola and their inter-relations. In the urban part the emphasize was on the issues of urban regeneration in accordance with the contemporary needs of the population and visitors, the gradual transition to a more pedestrian- and cyclist-friendly city, the revitalization of degraded and abandoned urban areas, activation of the waterfront area and the establishment of the marine connections, the involvement of residents into the urban revitalization processes, etc. In the hinterland areas of the municipality, the workshop examined the possibilities of new development models in the field of agriculture in order to keep the rural area populated and maintained. On the basis of strategic considerations, concrete projects were proposed.



Slika 3: Raznolika ponudba koles in skirojev za izposajo, vir: David Alpert.

BUNKER R19

BUNKER R19



Žiri, Slovenija



januar - julij 2019

TIP DELAVNICE *TYPE OF WORKSHOP*

urbanistično-arhitekturna delavnica/slovenska

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ORGANIZATORJI *ORGANISED BY*

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PARTNERJI *PARTNERS*

Občina Žiri
Lafarge cementi

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Sanja Djurdjevič, Taja Fišter

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VSEBINA

Študentje Fakultete za arhitekturo, Univerza v Ljubljani, so v okviru udeležbe na delavnici »Bunker R19« spoznali pomemben del slovenske arhitekturno prostorske dediščine.

Skoraj štirideset študentov arhitekture, urbanizma in tujih študentov je odkrivalo sledi preteklosti iz medvojne dobe, ko smo Slovenci prvič kot narod v skupni državi, monarhiji SHS (Kraljevini Jugoslaviji). Rapalska meja s Kraljevino Italijo je bila takrat zaščitena z obsežnim obrambnim infrastrukturnim sistemom, ki je neprekinjeno potekal od tromeje na severu in do Reškega zaliva. Kompleksen sistem utrd, bunkerjev, utrjenih pozicij in infrastrukturnih posegov je bil izgrajen v tridesetih letih prejšnjega stoletja pod imenom Obrambna linija za zaščito zahodne meje in kasneje poljudno preimenovan v »Rupnikovo linijo« po generalu Leonu Rupniku, najbolj znanemu izmed graditeljev tega obrambnega sistema. Po kapitulaciji Kraljevine Jugoslavije aprila 1941 je nova meja med Nemčijo in Kraljevino Italijo potekala vse Žirov po trasi prejšnje Rapalske meje, nato pa je preko okupiranega Jugoslovanskega teritorija skrenila proti Ljubljanski kotlini. Italijanska vojska je vse utrjene pozicije »Rupnikove linije«, ki so se znašle pod njihovo administracijo z miniranjem uničila.

Cilj delavnice »Bunker R19« je bilo odkrivanje tega sistema z vsemi prostorskimi značilnostmi in vplivi na prostor. Preko analitičnega dela in s pomočjo simulacij izvedenimi z GIS orodji so bile določene značilnosti miniranih, danes neobstojećih, objektov o katerih nam le ruševine potrjujejo obstoj. Preko izvedbe študije je bil določen eden od objektov kot primeren kandidat za rekonstrukcijo na terenu. S pomočjo partnerjev Občine Žiri in podjetja Lafarge ter s podporo laboratorija na Fakulteti za gradbeništvo in geodezijo in lokalnega prebivalstva smo na izbranem objektu, v mesecu aprilu, tudi pričeli z prvo fazo rekonstrukcije. V tem terminu so bile izkopane ruševine objekta. Na podlagi izkopanin in ugotovljenih dejstev je bila potrjena pred določena tipologija. Študentje so po skupinah pripravili v lokacijo za pričetek fizične rekonstrukcije, urejali gozdne poti za dostop do lokacije iz doline ter pripravljali opazne elemente potrebne za betoniranje sten bunkerja. V prvem terminu so bili doseženi vsi zastavljeni cilji ter tako primerno pripravljeno izhodišče za nadaljevanje dela v mesecu juliju, ko je bila rekonstrukcija tudi izpeljana do konca.

Ekipa študentov arhitekture in urbanizma je v prvem tednu julija z intenzivnim delom postavila opazne plošče in ojačala opazno konstrukcijo. Za varno dostavo betona je bilo potrebno razširiti dovozno cesto in pripraviti traso za od lokacije črpanja betona iz tovarnjaka do lokacije, kjer se nahaja bunker.

Manjši zapleti so prvo betoniranje, ki je bilo predvideno v sredo dopoldan predstavili na sredo zvečer. Kljub vsemu pa je ostala betoniranja bila izvedena po načrtanem terminskem planu. Vgrajenih je bilo vsega skupaj 10,5 kubičnih metrov (okvirno 25 metričnih ton) betona pripravljenega po izvorni recepturi. Betonska receptura je bila pripravljena na podlagi izvedenih terenskih preiskav izvedenih v začetku leta s strani Fakultete za arhitekturo in Fakultete za Gradbeništvo in Geodezijo. Betonsko mešanico je pripravilo podjetje Lafarge.

V tednu izvajanja so študentje opravili dva pohoda po ostankih Rapalske meje in ohranjenih bunkerjih Alpskega zidu ter Rupnikove linije.

Uspeh delavnice je zagotovila izvrstna logistična podpora Občine Žiri, župana Janeza Žaklja in Gregorja Mlinarja. Ključ-



Slika 1: Del skupine študentov ob ogledu slemenske utrdbe na Žirovskem vrhu.



Slika 2: Razopažen bunker

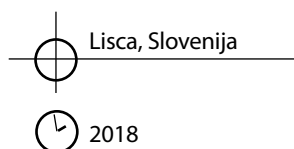
nega pomena je bila podpora in velika naklonjenost projektu lastnikov zemljišča Petra in Mihata Mlinarja.

ABSTRACT

The purpose of the workshop was to rediscover a forgotten part of the Slovenian history that had a major impact on the development of the space as a side-effect of international politics. The establishment of the Rapallo border in 1920 procured the political basis for the enormous built up of vast fortification systems on the Italian and the Yugoslavian side of the border. As the Italians built the Vallo Alpino system the Yugoslavs built the Rupnik defence line. After the capitulation of Yugoslavia in April of 1941, part of the Rupnik bunkers in the Žiri municipality came under the Italian jurisdiction. The Italian military demolished most of them. In combination with the post-war denunciation of general Leon Rupnik and the defence line bearing his name, the defence system went totally forgotten. The goal of the workshop was to rediscover one of the demolished bunkers and through investigation and analytical work define its shape and materiality. On the basis of these data, the bunker was reconstructed faithfully.

Raziskovalni tabor Lisca 2018 – vzpostavitev novega učnega okolja

Lisca Research Camp 2018 – Creating a New Learning Environment



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TIP PROJEKTA *TYPE OF PROJECT*

raziskovalni tabor; projekt sta sofinancirata Občina Sevnica in Center šolskih in obšolskih dejavnosti.

DELOVNA SKUPINA *WORKING GROUP*

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dr. Alma Zavodnik Lamovšek (pedagoški mentor)

ŠTUDENTI *STUDENTS*

Anja Judež, UL FGG, Andreja Beci UL BF, Annemarie Culetto UL FF, Urban Culetto UL FF, Iza Vrtačnik UL EF, Zala Mehonič UL PF, Gašper Krivic UL FS, Jure Zelič UL PF, Barbara Grešak, dijakinja, Mija Franko, dijakinja, Zara Kastelic, dijakinja.

VKLJUČENE INSTITUCIJE *INSTITUTIONS*

Občina Sevnica
Center šolskih in obšolskih dejavnosti
Univerza v Ljubljani Fakulteta za gradbeništvo in geodezijo

GRADIVO PRIPRAVILI *MATERIALS PREPARED BY*

Anja Judež, UL FGG

VSEBINA

Lisca se nahaja na 948 metrih nadmorske višine. Zaradi dobre dostopnosti, bogate vsebine in urejenosti je zelo priljubljena izletniška točka med lokalnim prebivalstvom in turističnimi gosti iz bližnje in širše okolice. Lisca je skozi zgodovino odigrala pomembno vlogo predvsem na področju razvoja planinstva. V zadnjih nekaj letih postaja tudi priljubljena lokacija za najrazličnejše tabore, ekskurzije, izlete in spoznavanje narave za vse generacije.

Glede na navedeno se je porodila ideja, da se na Lisci organizirajo dodatne vsebine, še posebej namenjene osnovnošolcem in mladini. Tako smo v okviru Raziskovalnega tabora Lisca z naslovom »Vzpostavitev novega učnega okolja«, ki je potekal julija 2018 preizkušali idejo, da bi dom na Lisci preuredili ter razširili za potrebe Centra za šolske in obšolske dejavnosti (CŠOD). Ker območje Lisce trenutno ne razpolaga z dovolj velikimi kapacitetami za vzpostavitev novega učnega okolja niti z vidika izvajanja različnih dejavnosti niti z vidika prenočišč, smo si zastavili naslednje cilje:

- predlagati idejno zasnovo prostorske ureditve območja na Lisci za potrebe CŠOD, ki bo vključevala tako predlog novih dejavnosti kot predlog prenove in razširitve obstoječih nočitvenih kapacitet na Lisci,
- predlagati izbor alternativnih rešitev za energetske samoskrbo in samočistilno sposobnost objektov, kot povezovalno temo med prostorskimi ureditvami in vzpostavitvijo novega učnega okolja za potrebe CŠOD,
- vključiti predstavitev alternativnih rešitev energetske samooskrbe v predvideno učno okolje CŠOD, ki bo mladim omogočalo spoznavanje in raziskovanje obnovljivih virov energije ter njihovo povezavo s skrbjo za okolje in možno samooskrbo celotnega območja.

V prvi fazi smo proučili ustrezno literaturo in zbrali potrebne podatke za izdelavo analize stanja obravnavnega območja na Lisci. Pri samem umeščanju dejavnosti na Lisci predstavlja veliko oviro lastništvo parcel, zato je bilo prednostno umeščanje dejavnosti in objektov na parcele, ki so v lasti Občine Sevnica.

Sledila je faza v kateri smo predloge oblikovali v štirih različnih sklopih: (a) urejanje prostora in energetska samooskrba, (b) šport in orientacija, (c) kmetijstvo, okoljevarstvo in druge naravovarstvene vsebine ter (d) kulturna in živa dediščina. Na podlagi izdelanih predlogov posameznih sklopov smo v zaključni fazi delavnice predloge mesebojno uskladili in umestili v prostor na Lisci.

Za vse štiri sklope smo izdelali skupne prostorske cilje, ki se jih je upoštevalo pri umeščanju dejavnosti v prostor:

- z ustreznimi prostorskimi ureditvami povezati grajeno in naravno okolje,
- v čim večji meri izkoristiti obstoječe objekte in že izgrajen prostor,
- v čim večji meri ohranjati naravno okolje,
- predvideti dejavnosti za različne ciljne skupine (npr. šoloobvezni otroci, mladina, drugi obiskovalci), ter
- omogočiti aktivnosti v vseh letnih časih (tudi v zaprtem prostoru).

Predlagana rešitev z novim učnim okoljem je trajnostno naravnana in vključuje posodobitev obstoječe infrastrukture in objektov z namenom energetske vzdržnosti. Zasnovali smo idejne predloge za nov učni center, posodobitev območja za šport in



Slika 1: Zaključna predstavitev.



Slika 2: Predvidena umestitev dejavnosti v prostor.

rekreacijo, predstavili inovativne rešitve za doživljanje začetnih korakov padalstva in drugih doživljajskih možnosti, predlagali nove rešitve za opazovanje naravnega okolja na območju Lisce kot so učne poti in druge oblike izkustvenega učenja v naravi. Pri tem smo upoštevali celotno okolico in premišljeno razporeditev objektov ter maksimalni izkoristek že izgrajenega območja.

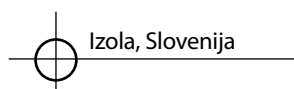
Predlogi so bili predstavljeni zadnji dan tabora v sklopu tradicionalne prireditve Košnja na Lisci 2018, in sicer v prenovljenih prostorih spodnjega dela Tončkovega doma. Odziv na predstavitev je bil velik, saj so se je udeležili predstavniki lokalnih skupnosti, lokalni prebivalci ter mediji. Predlogi in ideje so bili dobro sprejete, zato si želimo, da bi se v bodoče na Lisci dejansko razvilo učno okolje v sklopu CŠOD.

ABSTRACT

Lisca area is a popular hiking destination in the Municipality of Sevnica, which still has many unused opportunities to develop as a learning environment. The area dominates by a natural environment that needs to be preserved as much as possible, so the new activity projects in such a sensitive space placement is a challenging task. One of the goals of the workshop is to propose one of the possible ways of developing new content, with the help of which learning environment and tourism can be developed towards sustainability. We first explored various sources of renewable energy, serving on one hand for the energy self-sufficiency of facilities at Lisca and on the other as a new learning environment for integrated and experiential learning in nature.

KAŽETA

KAŽETA



Izola, Slovenija



2018/2019

TIP DELAVNICE TYPE OF WORKSHOP

urbanistično-arhitekturna delavnica/slovenska

MENTORJI MENTORS

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ORGANIZATORJI ORGANISED BY

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NAROČNIK PARTNERS

Občina Izola

DATUM IN KRAJ RAZSTAVE

Izola, 4.–17. november 2019

GRADIVO PRIPRAVILA MATERIALS PREPARED BY

prof. dr. Martina Zbašnik-Senegačnik

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Slika 1: Kažeta »Izolska lanterna«, s katero ustvarimo prostor, namenjen sprostitvi in stiku z naravo. Ustvari se identiteta nove skupnosti, s tem pa tudi ozaveščenost uporabnikov, ki znova odkrijejo ljubezen do podeželja (avtorja: Maja Kastelic, Matej Kolar; predmet: Ruralizem in ruralna arhitektura).

VSEBINA

Zaledje Izole predstavljajo kmetijske površine, ki si jih delijo kmetje in vrtičkarji. Za opravljanje gospodarske in priložnostne dejavnosti potrebujejo objekte za shranjevanje orodja, pripomočkov, pridelkov itd. in pokrit prostor za počitek. V polpretekli dobi so na kmetijskih površinah stale kažete, okrogle ali pravokotno zasnovane stavbe iz lokalnega kamna. Danes tovrstni tradicionalni objekti več ne zadoščajo potrebam. Stihijsko nastajajo novi, brez občutka za skupno dobro, s svojimi oblikami in nestrokovnim izborom materialov ter močno degradirajo prostor.

V okviru sodelovanja z občino Izola smo na Fakulteti za arhitekturo raziskovali KAŽETO in njeno možno transformacijo v sodobni arhitekturni in urbanistični model. V ta namen smo se povezovali preko predmetov na študiju urbanizma in arhitekture: Ruralno načrtovanje, Ekološka načela gradnje ter Ruralizem in ruralna arhitektura. Skupine študentov pod vodstvom mentorjev so pripravili urbanistične in arhitekturne rešitve za kažete velikosti do 50 m² za opravljanje kmetijske dejavnosti in do 20 m² za ljubiteljske vrtičkarje. Poudarek je bil na razvijanju kažete iz naravnih gradiv ter iskanju enostavnih, tehnično in tudi finančno sprejemljivih rešitev, primernih za urbani prostor tudi s stališča varovanja kulturne dediščine. Rezultat delavnice je razstava študentskih projektov v Kulturnem domu Izola, ki nagovarja uporabnike in jih postavlja pred nov izziv. Predstavljene rešitve so lahko podlaga za pripravo strokovnih smernic za načrtovanje kažet.

ABSTRACT

We have investigated the »Kažeta« - a small traditional agricultural utility building and its possible transformation into a contemporary architectural and urban model. Groups of have prepared urban and architectural solutions for Kažeta of up to 50 m² for agricultural activity and up to 20 m² for urban gardening. Emphasis was placed on adopting natural materials and finding simple, technically and financially acceptable solutions suitable for urban space also from the point of view of cultural heritage protection.



Slika 2: Koncept sloni na oblikovanju skupnosti s souporabo in deljenjem dobrin (avtorji: Mara Vogrinec, Iva Šegavac, Stine Ernst; predmet: Ruralno načrtovanje).



Slika 3: Kažeto sestavljajo stene iz opeke, zložene tako, da v notranjost pronica svetloba in zrak. Ena stena je iz lesenih zabojčkov za shranjevanje sadja in zelenjave (avtorja: Jasmina Filipova, Eva Pepovska, Dimitar Dimoski; predmet: Ekološka načela gradnje).

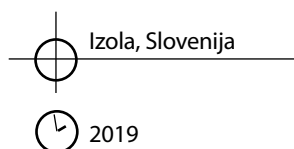


Slika 4: Kažeta je namenjena shrambi orodja in kmetijske mehanizacije ter osnovnim higienskim potrebam - enostaven kvader z dvokapno streho, kateremu se večji del južne fasade odpre, ter tako ustvari potrebno senco ob poletnih vročih dneh ali zavetje pred dežjem (avtorja: Žiga Adamčič, Ren Kaligarič; predmet: Ekološka načela gradnje).



KONCEPT SODOBNE KMETIJE

THE CONCEPT OF THE MODERN FARM



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TIP DELAVNICE *TYPE OF WORKSHOP*
arhitekturna-urbanistična delavnica/slovenska

MENTORJI *MENTORS*
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ORGANIZATORJI *ORGANISED BY*
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NAROČNIK *PARTNERS*
Občina Izola

DATUM IN KRAJ RAZSTAVE
Izola, Kulturni dom, 4.11.-17.11.2019

GRADIVO PRIPRAVILA *MATERIALS PREPARED BY*
Aleš Švigelj, Marko Lazič



Slika 1, 2 : Eko-life kmetija - novodobna kmetija, ki povezuje in vpeljuje turistično dejavnost v relativno neokrnjenem naravnem okolju in ga s tem ohranja.



VSEBINA

Študentska delavnica je obravnavala problematiko ruralnega okolja občine Izola znotraj katere se pojavlja veliko število starih, zapuščenih kmetijskih objektov in prostorov, ki so tekom časa izgubili svojo prvotno funkcijo. Istočasno je na območju vrsta novih potencialnih lokacij znotraj katerih bi s pomočjo program-ske revitalizacije kmetijskega programa in dejavnosti prostor obogatili ter doprinesli k izboljšanju kvalitete ne le v omenjeni občini, temveč tudi v širši regiji. Delavnica je na podlagi obstoječe problematike obravnavala tri različne koncepte sodobnih kmetij, katere s svojo raznolikostjo in prenovljenim konceptom privabljajo nove generacije ter skrbijo, da se razvoj podeželja odvija dalje. V prvem primeru gre za samotno turistično kmetijo, kjer se vsak posameznik zopet poveže z naravo, za popestritev doživetja pa so prisotni tudi osli, živali, ki že od starih časov veljajo za terapevtske. V primeru druge Eko-life kmetije se vzpostavlja povezovanje celotne vasi, saj se znotraj kmetije združujejo in ponujajo širšo izkušnjo kulinarike in turizma vsem obiskovalcem. V tretjem primeru kmetije gre za vzpostavitev sodobne pridelovalne kmetije vina, ki poleg sodobne industrijske dejavnosti vzpostavlja tudi reprezentativne prostore, v katerih je predstavljeno celotno območje in privablja ne le domače temveč tudi svetovne turiste.

ABSTRACT

The municipality of Izola has a large number of old, abandoned agricultural facilities and lands, which over time lost their original function. At the same time, they represent new potentials that could revitalize and activate the area. Based on the existing problems, the students in the workshop designed three different concepts of modern farms, which with their diversity and renewed concept attract new generations and keep the rural development going on. The first concept is a solitary tourist farm, where each individual reconnects with nature. A big help for doing that are donkeys, the main animals on the farm which have long been considered therapeutic. The second concept is Eco-life farm. It represents the connection for the whole village and offers a culinary and tourist experience for all visitors. In the third case, the concept is a new modern wine production farm that, in addition to modern industrial activity, also offers representative spaces.



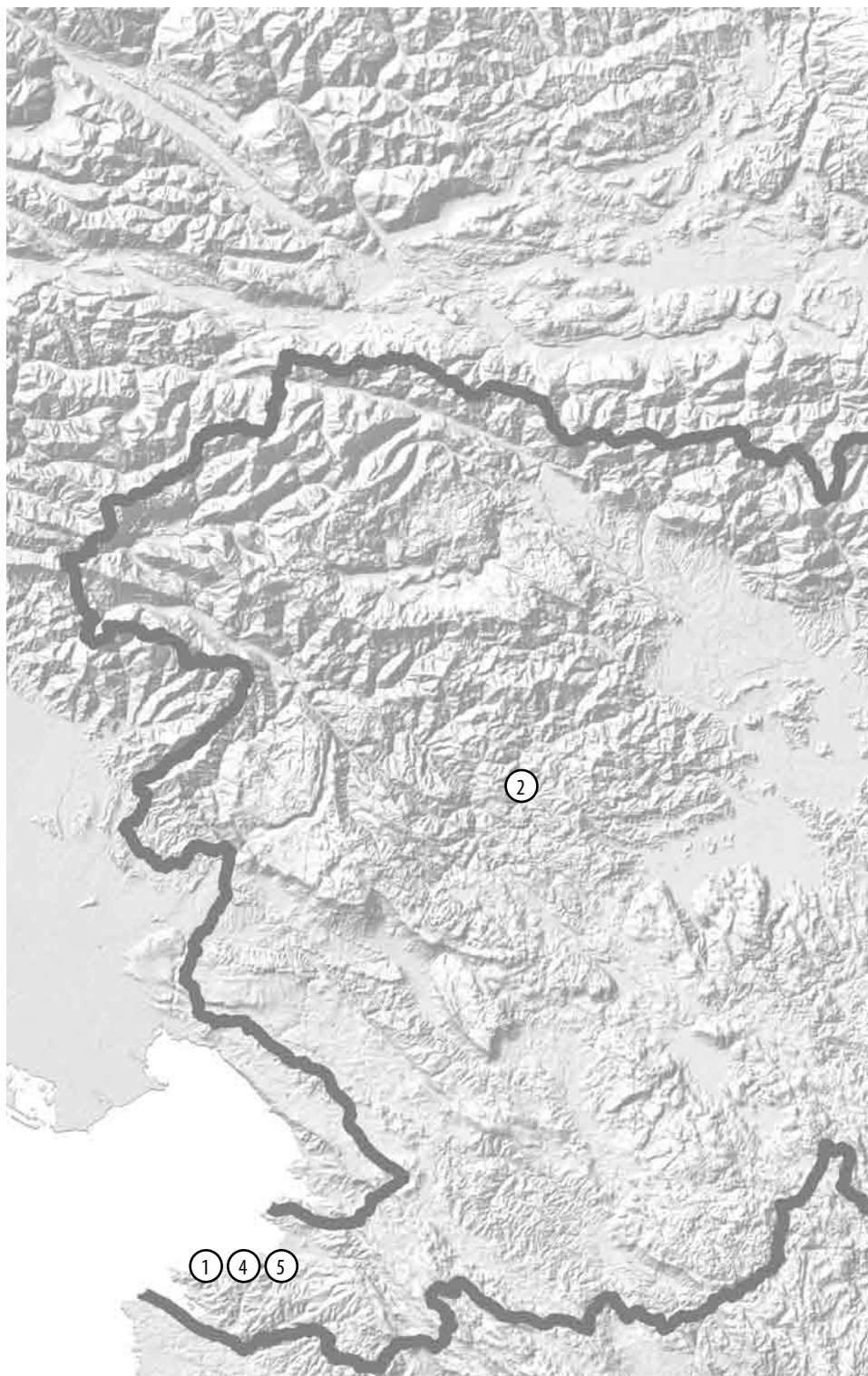
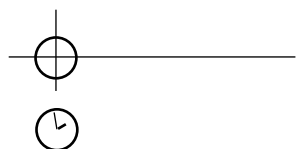
Slika 3 in 4: Sodobna pridelovalna kmetija vina, ki poleg industrijske dejavnosti vzpostavlja reprezentativne prostore, ki privabljajo tako domače kot tudi svetovne obiskovalce.



Slika 5: Samotna turistična kmetija, kjer se vsak posameznik zopet poveže z naravo, za popestritev doživetja pa so prisotni tudi osli.

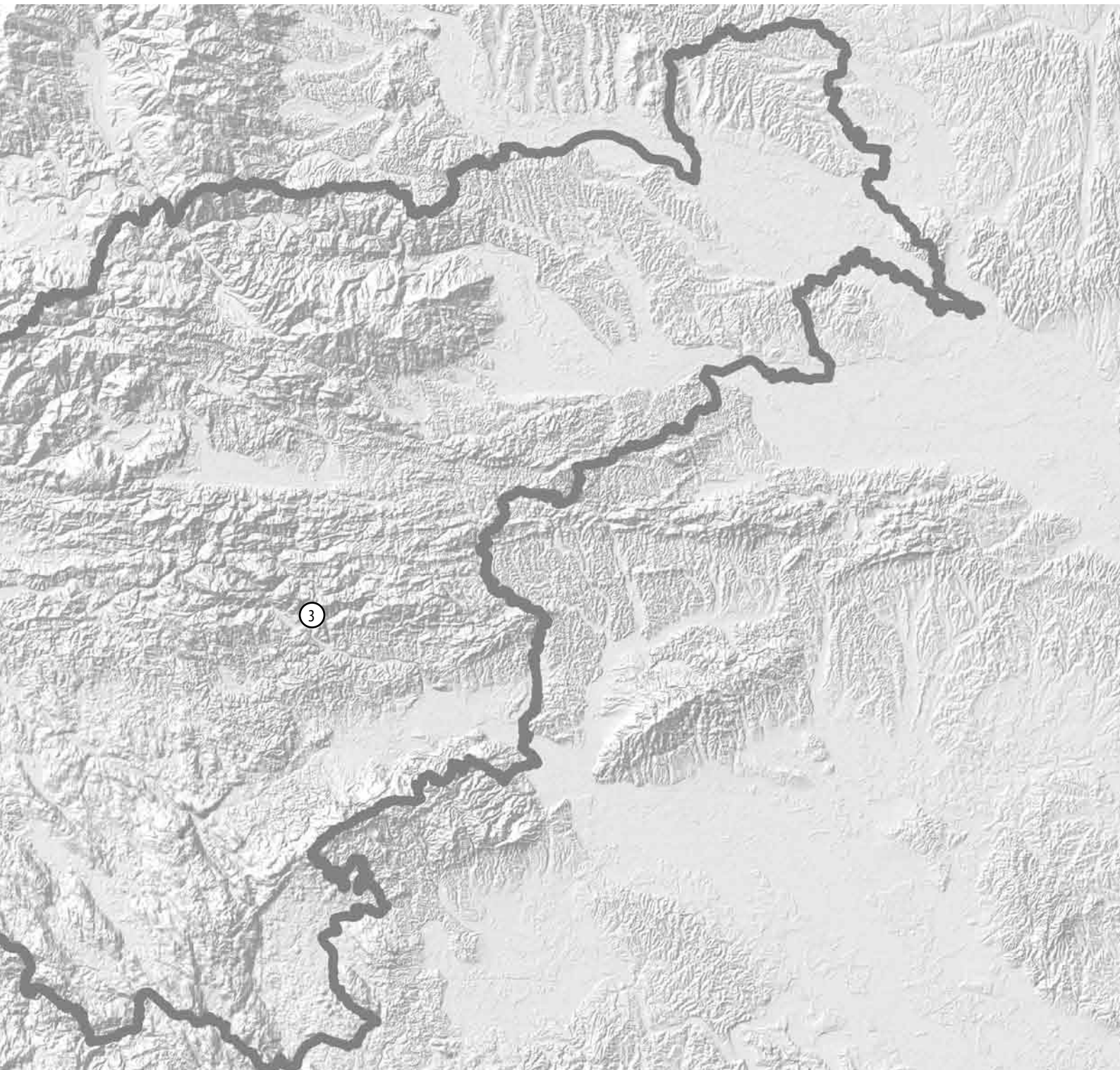


LOKACIJE DELAVNIC WORKSHOP LOCATIONS



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VI.

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MASTERTHESISVI.

Tamara Glavnik: ŠTUDIJA UMESTITVE IN IDEJNA ZASNOVA HIBRIDA OB LITIJSKI CESTI V LJUBLJANI URBAN STUDY AND DESIGN OF HYBRID LOCATED ON LITIJSKA CESTA IN LJUBLJANA

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DIPLOMA
MASTER THESIS

AVTOR *AUTHOR*

Tamara Glavnik

TIP ZAKLJUČNEGA DELA *TYPE OF THESIS*

magistrska naloga

MENTOR *MENTOR*

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LETO *YEAR*

2017

INŠTITUCIJA *INSTITUTION*

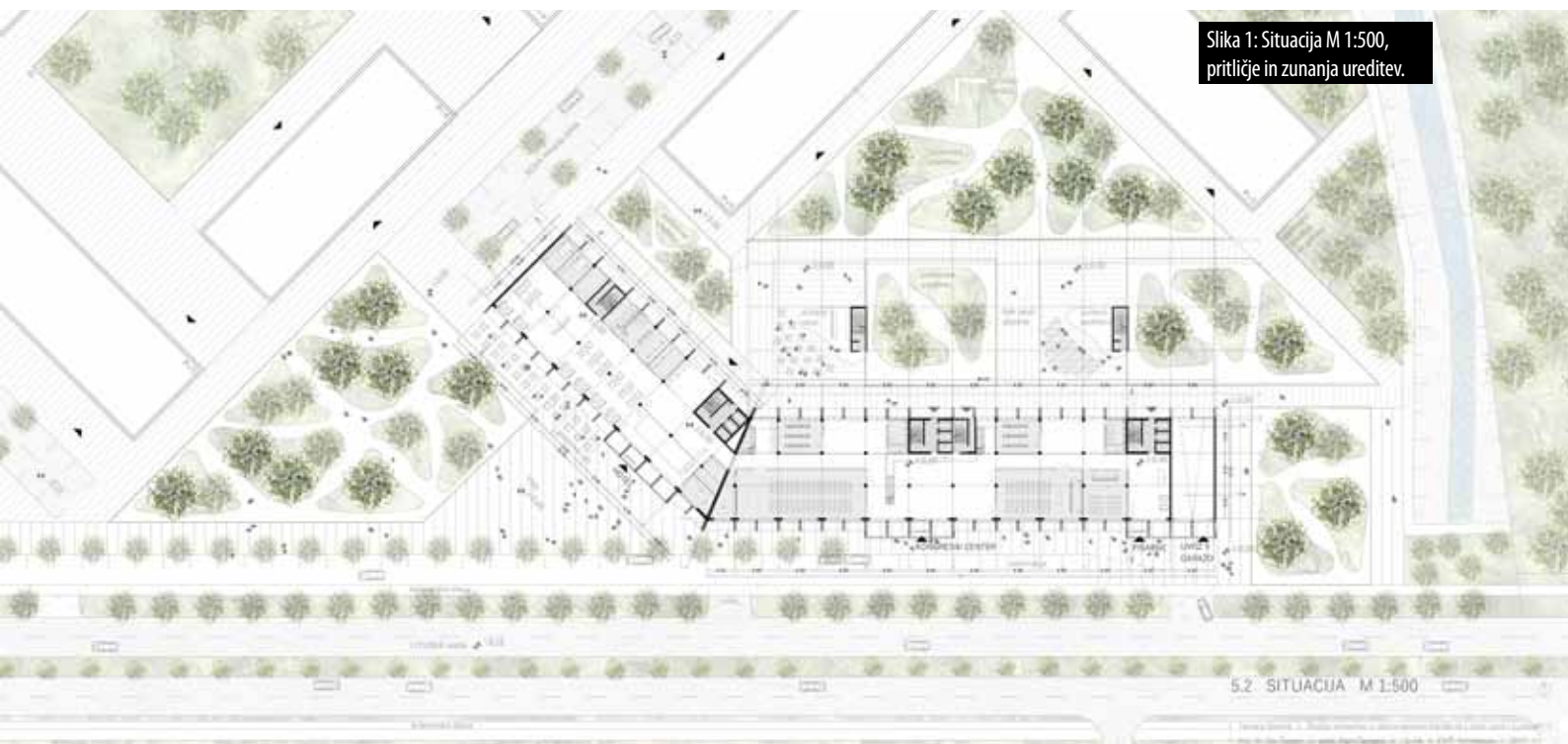
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GRADIVO PRIPRAVILA *MATERIALS PREPARED BY*

Tamara Glavnik, mag.inž.arh.

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GLAVNIK, Tamara, ČERPES, Ilka. Študija umestitve in idejna zasnova hibrida ob Litijski cesti v Ljubljani = Urban study and design of hybrid located on Litijska cesta in Ljubljana: [magistrsko delo]. Urednik publikacije Tamara Glavnik. Ljubljana: Fakulteta za arhitekturo, 2017. [COBISS.SI-ID 3501700]



Slika 1: Situacija M 1:500, pritličje in zunanja ureditev.

Idejna zasnova hibrida ob Litjaski cesti temelji na predhodni urbanistični idejni študiji in ureditvi širšega območja med Litjasko cesto, vzhodnim priključkom ljubljanske obvoznice, Gramozno potjo ter reko Ljubljanico. Mreža iz diagonal širše lokacije je prilagojena naravnim danostim lokacije, reliefu, pogledom ter osončenosti lokacije. Na teh izhodiščih temelji idejna zasnova prometne ureditve lokacije, ki jo ti razdelijo na posamezne stavbne otoke. Mreža prometa je zasnovana tako, da omogoča dobro in hkrati racionalno dostopnost do vseh stavbnih otokov. Le-ta omogoča boljšo pretočnost pri močno urbanem delu in umirja promet proti naravi. Isti princip se uporabi pri umeščanju programskih sklopov v območje. Ob glavni infrastrukturi so predvideni hibridi mešane rabe, ki tvorijo visoko stopnjo urbanega okolja. Ob reki pa so umeščene zelene površine, ki se zajedajo v pretežno stanovanjski sklop z vrtcem, kar pripomore k programski umiritvi območja.

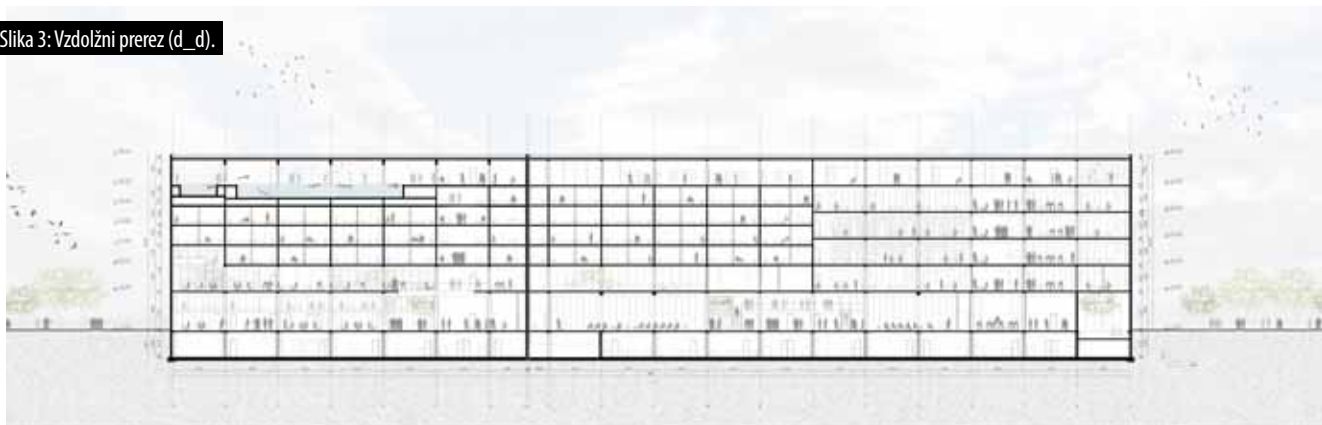
Iz morfološke analize je razvidno, da je obravnavano območje nepozidano, razen večjega objekta ob reki ter samostojne enodružinske hiše ob izteku Gramozne poti na most pred Muzejem za arhitekturo in oblikovanje.

V širšem kontekstu se kaže manjša, razpršena zazidava, ki se pojavlja v fragmentih. V obravnavi širšega konteksta lokacije prevladuje stanovanjska raba, sledi pa ji kmetijska namembnost. Pogledi se odpirajo proti jugu na Golovec in hribovski niz Orle ter na severno stran proti reki Ljubljanici. Proti avtocesti se interakcije konceptualno zapirajo tako proti hrupu kot tudi za poglede. Zanimivo geometrijo prostora kaže potek Gramozne poti, lokalne zbirne ceste, ki se kot diagonala vije z Litjanske ceste proti Ljubljani v smeri proti severozahodu. Ker na sami lokaciji ni obstoječega grajenega tkiva, so izhodišča za urbanistično zasnovo in koncept ureditve naravne danosti, in sicer relief, reka, PST in cestna infrastruktura ob lokaciji, torej vzhodni priključek



Slika 2: Prikaz južne fasade ob Litjaski cesti in zunanje ureditve.

Slika 3: Vzdolžni prerez (d_d).



na avtocestno obvoznico Ljubljane in Litijska cesta.

Idejna zasnova hibrida ob Litijski cesti predvidi stavbo, ki je zgrajena na ravnem terenu, na parceli, ki se na severu zaključuje z blagim spustom proti reki Ljubljanici v ozadju, na vzhodni strani je zamejena z zelenim pasom, ki se razteza do Bizoviškega potočka, južna fasada tvori ulični profil Litijske ceste, ki zameji parcelo objekta na jugu, na zahodu pa parcelo zameji notranja nova cesta skozi območje, ki je bilo del urbanistične študije.

Parcela je dostopna z Litijske ceste (jug) in z notranje ceste ob severozahodni fasadi (sekundarni dostop).

Glavni vhod v objekt je z Litijske ceste in ker gre za hibridni objekt, ima vsak od treh vodilnih programov svoj vhod z ulice – skupaj torej trije vhodi na glavni fasadi. Glavni vhod v hotel ima pred seboj trg z delno parkovno ureditvijo, ki povezuje idejno zasnovo hibridnega objekta z ostalimi objekti v urbanistični zasnovi.

Dostava in dostop zaposlenih sta predvidena skozi garažo, uvoz v garažo je predviden z Litijske ceste.

Parkiranje je predvideno v garaži, v dveh etažah, kjer so 203 parkirišča ter 6 parkirnih mest za invalide. Nad garažo so urejene tlakovane ter ozelenjene urbane površine objekta. Zunanje

parkiranje je predvideno vzdolž Litijske ceste, vzporedno z objektom.

Osnovni volumen hibridnega objekta je enovit in zalomljen pod kotom 45 stopinj. Stavba je podkletena po vsej tlorisni površini. Klet je namenjena tehničnim prostorom programov in je povezana s podzemno garažo ob objektu. Objekt se znotraj razdeli na tri dele, na pritličje z vhodno avlo hotela, kongresni center in pisarne. V zgornji etaži je bazen s fitnes in velnes programom. V pritlični etaži gre za idejo sredinskega povezovalnega hodnika z razširitvami ob katerega so umeščene programske vsebine. V prvem nadstropju so pojavi enoprostorska odprta jedilnica, ki se zaključuje z dvovišinskim klubom. Pri vzhodnem delu objekta, kjer so umeščene pisarne, gre predvsem za povsem fleksibilno skeletno tlorisno zasnovo, ki omogoča veliko raznovrstnost organizacije prostora. Pri hotelu se nad jedilnico začne strukturirana, modularna stenska zasnova tlorisa. Dinamika prostorov se ustvari tudi po vertikali, in sicer s prostorskimi poudarki (galerijami) v bližini prostorov s posebno družbeno vlogo. Vzhodni ter zahodni del objekta oziroma programsko pisarne in hotelski del stavbe imata različne etažne višine glede na namembnost programa. Komunikacijska jedra so tri, požarno varni stopnišči pa dve. V garaži sta še dve dodatni požarni stopnišči. Vsa jedra povezujejo vse etaže in dostopajo tudi do kleti, iz katere je neposreden dostop do garaže.

Slika 4: Vizualizacija ambienta ulice ob Litijski cesti.





Slika 5: Vizualizacija ambients bazena v najvišji etaži.



Slika 6: Vizualizacija ambients recepcije hotelskega dela hibrida.

Zunanje pročelje je iz večinskega deleža oken na jugu ter severu, ki so v kombinaciji s stekleno masko ter prefabriciranimi betonskimi vertikalnimi in horizontalnimi elementi. Z njimi se tvori globoka obešena fasada, ki senči objekt. Prečni, manjši fasadi, sta večinsko iz vidnega betona z eno ali dvema večjima steklenima površinama. Senčenje ter zastor svetlobe sta regulirana tudi z notranjimi žaluzijami.

ABSTRACT

The location lies at the east entrance in the city of Ljubljana, next to the junction to Ljubljana's Ring Road. The object is located next to the main road towards the city, Litjska cesta, which is an important spatial element of infrastructure. Hybrid forms a high diversity and complexity in terms of programme. Elements in the same volume overlap and connect to each other and generate interaction. The object is a combination of a hotel with wellness department, congress and offices. It also includes an underground parking. Public square provides public space and also an entry point for the volume. Behind the object there is located more introverted, semi public space that includes green areas.

Ajda Kafol Stojanović: OCENA KAPACITETE VODOVODNEGA SISTEMA KOT STROKOVNA PODLAGA V PROCESU PROSTORSKEGA NAČRTOVANJA

ESTIMATION OF WATER DISTRIBUTION SYSTEM CAPACITY AS AN EXPERT BASIS FOR SPATIAL PLANNING PROCESS

UVODNIK
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TIP ZAKLJUČNEGA DELA *TYPE OF THESIS*

magistrska naloga

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LETO *YEAR*

2018

INŠTITUCIJA *INSTITUTION*

Univerza v Ljubljani, Fakulteta za gradbeništvo in geodezijo

GRADIVO PRIPRAVILA *MATERIALS PREPARED BY*

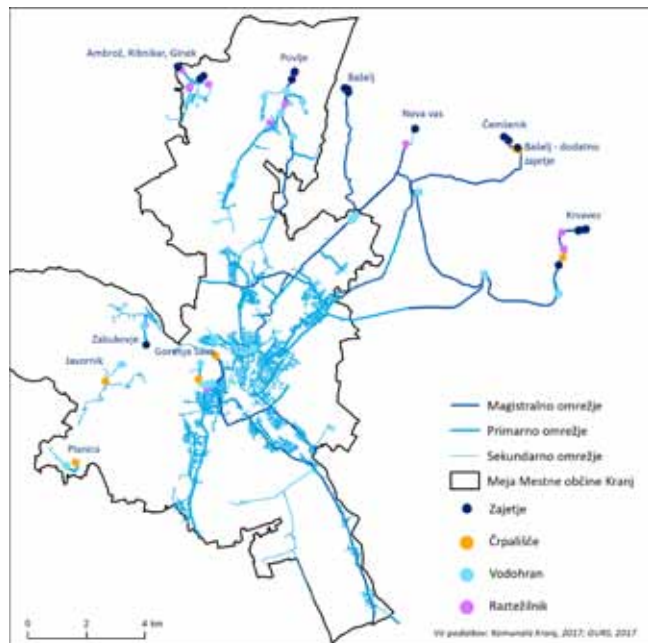
Ajda Kafol Stojanović, mag. prost. načrt.

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KAFOL STOJANOVIĆ, Ajda. Ocena kapacitete vodovodnega sistema kot
strokovna podlaga v procesu prostorskega načrtovanja. Magistrsko delo,
Ljubljana, Univerza v Ljubljani, Fakulteta za gradbeništvo in geodezijo:
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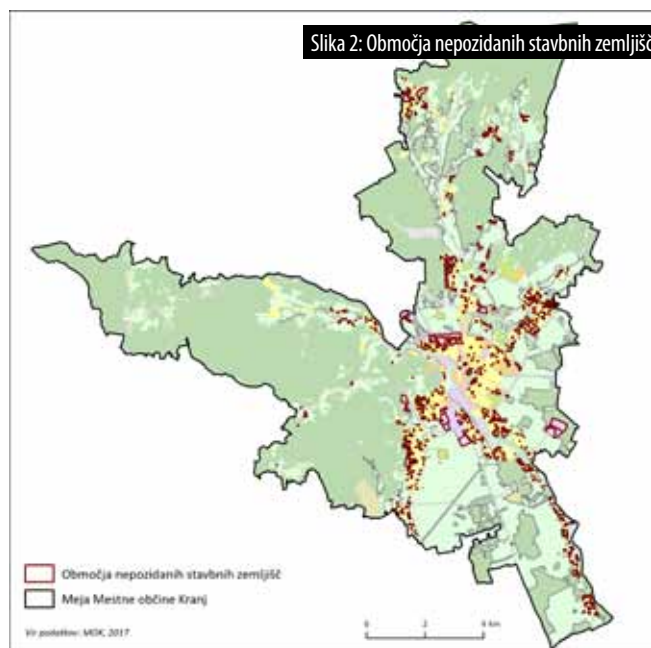
Poznavanje kapacitet komunalne infrastrukture je izredno pomembno za ustrezno načrtovanje prostorskega razvoja in za načrtovanje bodoče komunalne infrastrukture. V okviru magistrskega dela smo se ukvarjali z izdelavo ocene kapacitete vodovodnega sistema, ki je lahko uporabna v prostorskem načrtovanju kot strokovna podlaga za izdelavo prostorskih aktov.



Slika 1: Vodovodni sistemi v Mestni občini Kranj.

Ocena je bila izdelana za območja nepozidanih stavbnih zemljišč v Mestni občini Kranj, kjer je predviden razvoj posameznih dejavnosti (Slika 2).

Tovrstnih ocen se trenutno v fazi priprave prostorskih aktov ne izdeluje, predstavljajo pa pomembno podlago za načrtovanje poselitenih območij, razmeščanje dejavnosti v prostoru, časovno definiranost in oceno stroškov izvedbe načrtovanih ureditev.

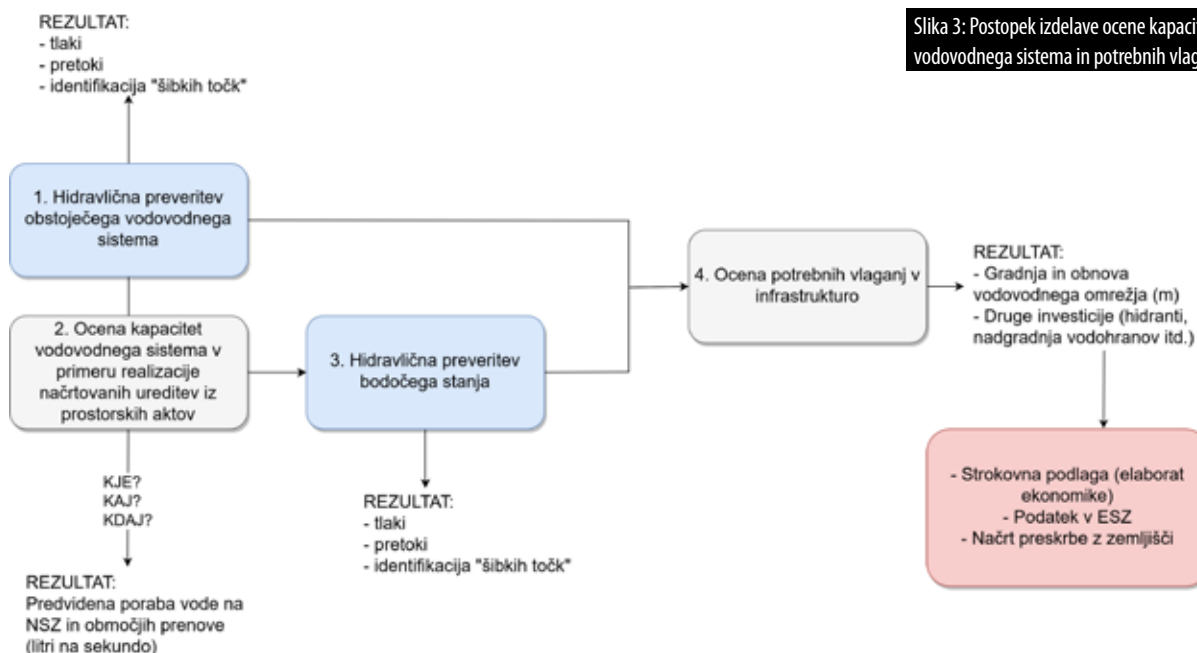


Slika 2: Območja nepozidanih stavbnih zemljišč.

Ocena zmogljivosti vodovodnega sistema je zasnovana v več korakih (Slika 3).

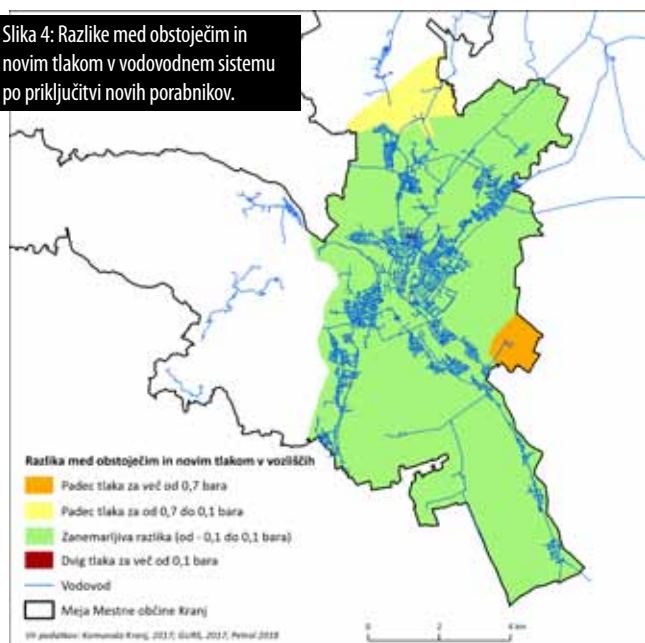
V prvem koraku smo hidravlično preverili zmogljivosti obstoječega vodovodnega sistema. Nato smo pridobili podatke o lokaciji, obsegu in lastnostih nepozidanih stavbnih zemljišč. Za nepozidana stavbna zemljišča, kjer je gradnja možna in dopustna, smo glede na večletne podatke o porabi pitne vode iz primerljivih območij ocenili predvideno povprečno porabo pitne vode. Primerljivost območij smo definirali glede na podrobno namensko rabo prostora, dejavnost in urbanistične kazalce. Območja nepozidanih stavbnih zemljišč s podatkom o predvideni porabi pitne vode smo nato vključili v hidravlični model vodovodnega sistema Kranj in preverili tlačne ter pretočne razmere v vodovodnem sistemu (Slika 4).

Za območje, ki izkazuje največjo predvideno porabo pitne vode smo preverili tudi ustreznost tlačnih razmer v primeru požara (Slika 5).



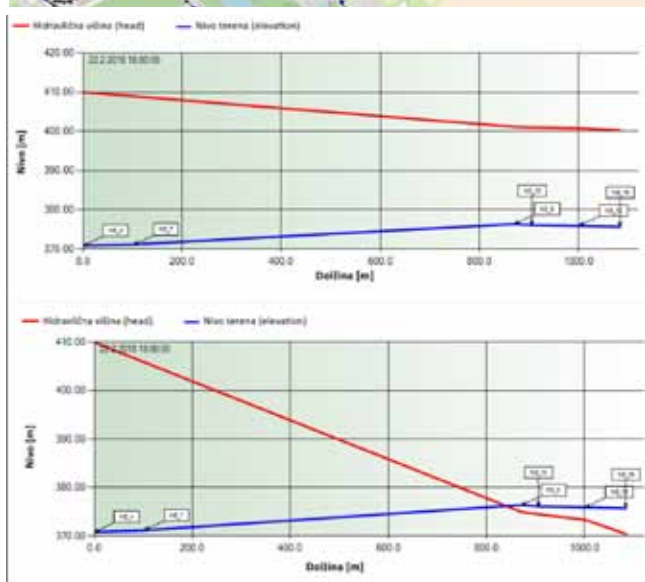
Slika 3: Postopek izdelave ocene kapacitete vodovodnega sistema in potrebnih vlaganj vanj.

Slika 4: Razlike med obstoječim in novim tlakom v vodovodnem sistemu po priključitvi novih porabnikov.



Na podlagi interpretacije rezultatov hidravlične preveritve (torej preveritve tlačnih in pretočnih razmer v vodovodnem sistemu) in dodatnih izračunov potrebne dolžine sekundarnega vodovodnega omrežja, smo opredelili potrebne investicije v vodovodni sistem ob realizaciji načrtovanih ureditev na območjih nepozidanih stavbnih zemljišč ter ocenili njihove okvirne stroške (Slika 6).

Slika 5: Tlačne razmere v vodovodnem omrežju pred in po simulaciji požara kažejo na padec tlaka pod nivo terena.

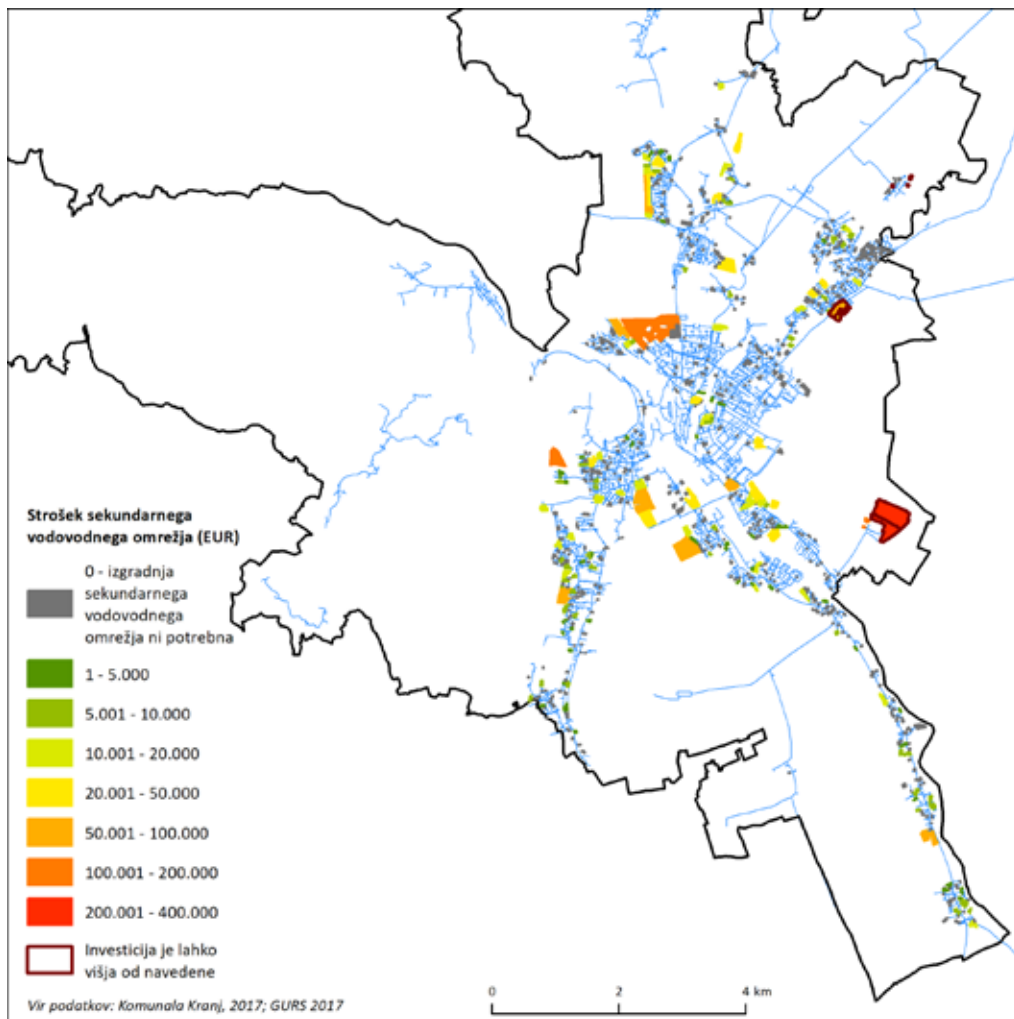


Rezultati oblikovane metodologije so se izkazali kot uporabni za presojo ustreznosti obstoječih kapacitet vodovodnega sistema ter načrtovanje novih, kar predstavlja manjkajočo podlago pri pripravi prostorskih aktov. Izdelana ocena kapacitete vodovodnega sistema lahko neposredno ali posredno pripomore k učinkovitejšemu planiranju dejavnosti v prostoru, oceni smotnosti in ekonomičnosti predvidenega obsega stavbnih zemljišč, določitvi etapnosti uresničevanja načrtovanih ureditev in k oceni potrebnih finančnih sredstev ter časovnega okvira za aktivacijo zemljišč. Učinkovito usmerjanje razvoja v prostoru se namreč lahko doseže s prostorskimi načrti, ki ne predstavljajo le želja, ampak konkretne idejne zasnove, ki so jasno tehnično, finančno in časovno opredeljene ter podprte tudi z ukrepi zemljiške politike. Pri tem je izrednega pomena sočasno načrtovanje poselitvenih območij, dejavnosti na njih in komunalne infrastrukture.

V prihodnjih raziskavah s tega področja je smiselno razviti in preizkusiti ocene kapacitet tudi za druge vrste komunalne infrastrukture, v prvi vrsti za kanalizacijski in elektroenergetski sistem. Obstoječi porabniki komunalnih storitev so za ocenjevanje prihodnjih potreb enako pomembni kot novi porabniki. Zanje bi bilo potrebno izdelati analizo možnih sprememb v porabi posameznih komunalnih storitev, pri čemer je potrebno upoštevati demografske in migracijske študije, ki so pomembne pri napovedovanju bodočega razvoja. Prihodnja poraba komunalnih storitev bo namreč močno odvisna predvsem od števila in strukture prebivalstva, njihove prostorske razporeditve in vedenja.

ABSTRACT

The thesis develops method for estimation of water distribution system capacity, applicable in spatial planning process as an expert basis. The estimation has been developed for the areas of vacant building land in the City Municipality of Kranj, where certain activities are planned. We identified the necessary investments in the water distribution system and estimated the costs of it, in the case of realisation of planned arrangements on vacant building land by interpreting the results of hydraulic modelling and additional calculations of required secondary water supply network length. The results of the methodology developed proved to be useful for assessing the suitability of the existing water distribution system capacities and for planning new ones, which represents the missing basis in the process of preparation and acceptance of spatial plans.



Slika 6: Območja nepozidanih stavbnih zemljišč glede na razred stroškov gradnje sekundarnega vodovoda.

Bojana Ivanović: OPREDELITEV TRAJNOSTIH KAZALNIKOV V URBANEM MATABOLIZMU DEFINING INDICATORS OF THE SUSTAINABILITY OF URBAN METABOLISM

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TIP ZAKLJUČNEGA DELA *TYPE OF THESIS*

Master thesis

MENTOR *MENTOR*

Assist Prof. Tijana Dabović, PhD

LETO *YEAR*

2019

INŠTITUCIJA *INSTITUTION*

Faculty of Geography - University of Belgrade

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Bojana Ivanović

Humanity nowadays is facing a deteriorating condition of environment, despite the numerous strategies adopted and activities undertaken. For a very long time, activities focused on environmental protection and achieving higher level of sustainability have been targeted on areas outside the cities. However, it turned out that cities are a key component in achieving sustainability globally. In order to solve numerous and complex problems in cities, spatial planners turn to different concepts.

Urban metabolism is a concept which provides the opportunity to analyse cities from a relatively new perspective and contributes to a better understanding of how the city functions. With a better understanding of the city as a whole, planners can plan and direct urban development more efficiently.

Even though the concept is not new, there's still no generally accepted definition (lat. definitus - determined, distinct, clear) of the term urban metabolism (greek: *μεταβολή* *metabolē* – *change; the chemical processes occurring within a living cell or organism that are necessary for the maintenance of life*). Rather, more or less every author dealing with this subject has its own. The lack of its clear definition is a major limitation to the application of this concept. It leaves open the question of the comparability of the knowledge acquired by different authors. Furthermore, numerous authors state that urban metabolism differs significantly from city to city and that these differences are consequences of the intertwining effects of numerous internal and external factors. However, even though urban metabolism will be manifested differently, it is something innate to the city. It includes phenomena and processes that take place in *every city*. These common features must be the basis for its definition. That is a step towards transforming the concept from descriptive representations of cities to a useful planning tool.

In this regard, we should be reminded that more than fifty years ago, Abel Wolman published a paper (1965), which was considered ground-breaking in the field of urban metabolism. His analysis focuses on flows and stocks of energy and matter in city. Wolman's engineering approach has a quantitative character, which has been dominant for a long time. However, it turned out that urban metabolism is much more than these

flows and stocks. It has to imply such functioning of the urban system, where all the elements work in the best way possible and thus contribute to the better functioning of the system as a whole. This progress in understanding of urban metabolism led to its intertwining with the concept of sustainable development (Figure 1). As a result, the concept of sustainable urban metabolism was coined. Its model should be what planners strive for. One of the first steps towards developing a model that can be applied in urban planning is to define indicators. *"Indicators are a key feature of spatial phenomena, brought to the level of measurable statements, so that they allow overview of the situation and keep track of changes in space"* (Dželebdžić, 2013).

Different possibilities for defining the indicators of the sustainability of urban metabolism were selected as the focus of the master thesis. When it comes to modelling and evaluating the sustainability of urban metabolism, there are a large number of papers and projects dealing with defining the optimal set of indicators. The master thesis gave insights into four, and this excerpt gives preview to the Study of Changes in Energy and Matter Consumption in City of Curitiba (Brazil), for period 2000-2010. This study is the latest from the mentioned four and, in that regard, the most comprehensive, attempts to bring together all dimensions of sustainable urban metabolism. That's the reason why it was selected for this excerpt.

In this study authors (Conke & Ferreira, 2015) have combined two models. First is model by Kennedy & Hoornweg (2012), who define basic indicators for urban metabolism analysis, divided in four layers: inputs, production, stocks, and outputs (Fig. 2 & Fig. 3). Second model focuses on social dimension of urban metabolism (Fig. 4), and as a base were selected works of Newman and Kennedy et al. (2014). Newman is known as one of the first authors to attempt to incorporate social issues into the study of cities. Kennedy et al. (2014) studied how basic infrastructure and services can improve the quality of life in the city. The great advantage of this set of indicators is comparability of the results for different cities, since they are expressed in standard units and are based on relatively available data (Conke & Ferreira, 2015).

Figure 1: Sustainable urban metabolism as a step towards more sustainable cities (Musango et al., 2017).



Figure 2: Indicators of urban metabolism – inputs and production (Conce & Ferreira, 2015).

Category	Indicator		Unit
INPUTS	Food intake		t
	Electricity consumption (total)	Residential	GW/h
		Industrial	
		Commercial	
		Public Services	
		Other	
	Energy consumption (total)	Natural gas	TJ
		Fossil fuels	
		Coal	
		Biomass/biofuels	
	Construction materials (use)	Cement	t
		Steel	
		Aggregates (sand, gravel)	
PRODUCTION	Water consumption		ML
	Food		t
	Wood		m ³
	Construction materials	Cement	t
		Steel	
	Minerals (clay, gold, crushed stones)		t
	Water production (surface water)		ML

Figure 3: Indicators of urban metabolism – stocks and outputs (Conce & Ferreira, 2015).

Category	Indicator		Unit
STOCKS	Minerals (clay, gold, crushed stones)		t
	Landfill waste (accumulated)		t
OUTPUTS	Municipal solid waste	Domestic and public waste	t
		Recyclable waste	
		Healthcare waste	
		Toxic waste	
		Tree and junk waste	
	Wastewater		ML
	GHG emissions		t-CO ₂ eq
	Air emissions	Total suspended particulate (TSP)	µg/m ³
		Smoke	
		Inhalable particles	
		Sulphur dioxide (SO ₂)	
		Nitrogen dioxide (NO ₂)	

POVZETEK

Koncept urbanega metabolizma ni nov. Pa vendar je v Srbiji praktično nepoznan in kot tak ni zastopan niti v teoriji ter niti v praksi. Zato je bil osnovni cilj magistrskega dela približati tematiko strokovnjakom v Srbiji in opozoriti na možnosti njegove uporabe.

Namen preglednega prispevka je poudariti nekatere podrobnosti. Prvič, glavni razlog za interesantnost koncepta: naslavljanje problema trajnosti mest. Drugič, glavna pomajkljivost koncepta: pomanjkanje splošno sprejete definicije. Tretjič, zaradi izrazitega pomena celostnega pristopa k urbanemu metabolizmu je skovan izraz trajnostni metabolizem v mestih. Zadnji segment predstavlja en možen (integriran) sklop kazalnikov, s pomočjo katerih lahko ocenimo trajnost mestnega metabolizma.

Category	Indicator
LIVABILITY	Population (Inhabitants)
	Fleet (vehicles/cap)
	Employment (people employed/EAP)
	Formal education (Literate over 15 years)
	Under-five mortality rate (per 1000 births)
	Violent deaths (100,000 population)
	Transport fatalities (100,000 population)
	Monthly average income (US\$/cap)
	Gini coefficient
	Educational attainment (average years)
QUALITY OF SERVICE	Population with access to internet
	Population with mobile phones
	Households without direct access to water
	Households without sewage
	Wastewater subject to treatment
	Households without public waste collection
	Households without grid electricity connection

Figure 4: Indicators of urban metabolism – livability and quality of services (Conke & Ferreira, 2015).

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Nour Chaarani: NEIZGOVORJENE ZGODBE IZ BEJRUTA ... VOGAL HAKAWATIJA

'BEIRUT'S UNSPOKEN TALES ...
THE HAKAWATI'S CORNER

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MASTER THESIS

AVTOR AUTHOR

Nour Chaarani

TIP ZAKLJUČNEGA DELA TYPE OF THESIS

Master Thesis - Architecture Senior Project

MENTOR MENTOR

Mr. Paul Mouawad

LETO YEAR

2019

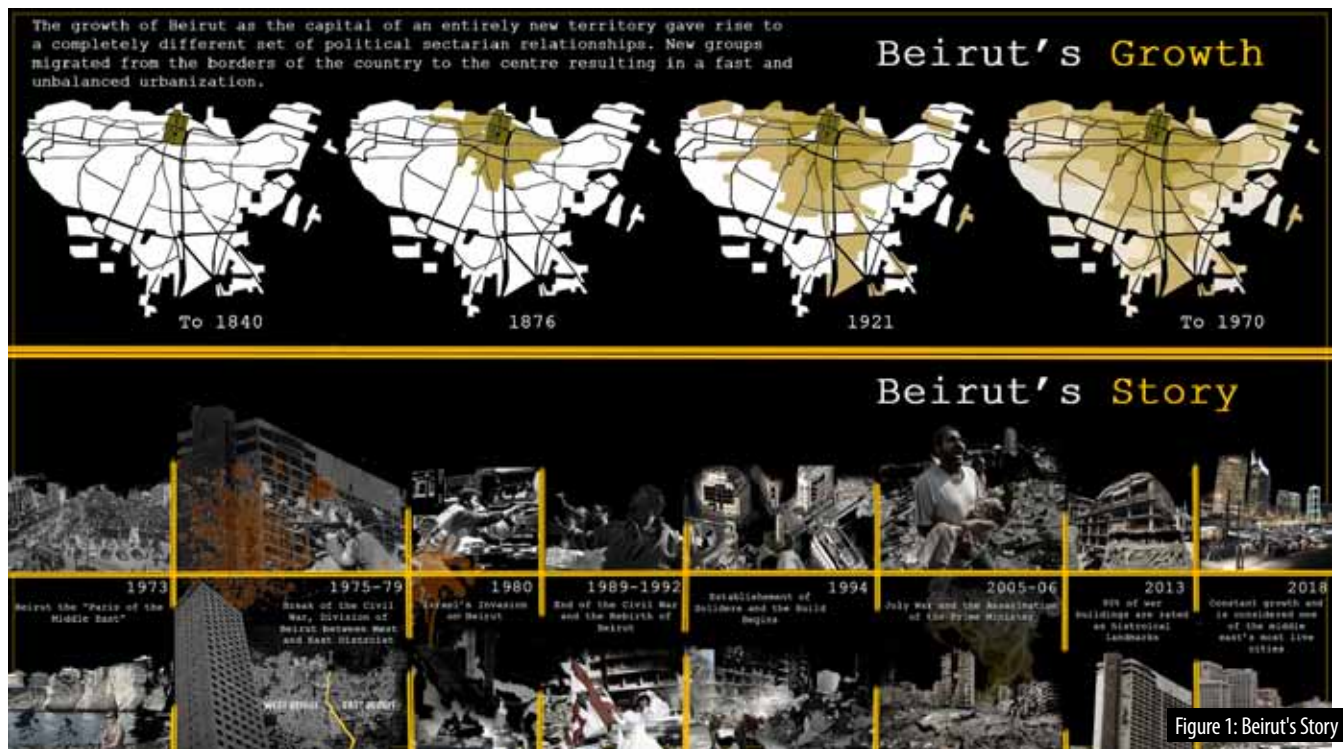
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GRADIVO PRIPRAVILA MATERIALS PREPARED BY

Nour Chaarani



Communication is more than simply the transmission of information. The term requires an element of success in transmitting or imparting a message, whether information, ideas, or emotions. Through communication cultures spread their traditions and languages within society. Culture is a set of shared values that a group of people holds. Such values affect how you think and act and, more importantly, the kind of criteria by which you judge others. Cultural meanings render some behaviors as normal and right and others strange or wrong (Goman, 2011). Through communication cultures begin to be exchanged globally as it acts as a tool to pave the way for cross-cultural communication in order to adapt and help gather communities of different backgrounds to share the same ideologies and ways of thinking.

Sociologists are discovering that oral transmission of ideas and topics maybe more objective and accurate than the written transmission of these subjects as the stories stated by the people are filtered by the community to ensure accuracy and credibility, while the written story is by necessity written by a single person which has therefore filtered the subject in a narrower perspective (Archer, 2016). Hence, by the use of narrative communication not only ideas can be perceived better but they can be transmitted through various groups even though they are of a different background but actually can deliver the message to others in an accurate manor.

Story telling "Sard Hikayat" is an oral transmission tool used to connect people to their past while providing a glimpse into the future (Ferreira, 2015). The narrative skill of storytelling was well respected during the 1800s and the early 1900s, as it was the only activity that was entertaining yet educational back then. Before the developement of today's technologies and electronics, entertainment was more real than virtual. The widespread of media and the internet which was non-existent acted as the foundation in the growth in popularity of this skill. Storytellers were existant in all societies all around the world. Each storyteller with his own style of narrative expressed the stories that were transcended throughout the history of each region. Throughout arabian countries a certain type of storyteller was known

for his style in narration and his ability to capture a crowd's imagination using a mere mixture of narration and gestures. This icon was labeled as the Hakawati. Crowds used to gather around the Hakawati in order to listen and stimulate their curiosity and imagination through the tales of his mind. He was not only considered an entertainer but also a mentor for the community who preached the concepts and ideas of equality, change in social prejudice, endowment of morals, expression of emotions, stimulation of the mind intellectually and spiritually through the stories that he exchanged with the public (Ferreira, 2015). The act of storytelling not only empowered the audience with knowledge or insight on a subject but it was also a form of art that was used to express what cannot be drawn, painted, sung or played. It was the act of word play along with voice notes playing in parallel with facial expressions and hand gestures which all in all created a vibe for the listener by the storyteller which was irresistible to ignore.

"Neither revolution nor reformation can ultimately change a society, rather you must tell a more powerful tale, one so persuasive that it sweeps away the old myths and become the preferred story." (Illich, 2007)

This form of art vanished as technology advancement along with the domination of electronic and visual media took over. It is considered a lost art in many cultures including the Lebanese culture. Beirut, a city of a thousand tales, streets and buildings holding the bruises of previous wars, people baring the scars of cruelty in their memories once was considered the Paris of the Middle East due its richness in livelihood, energy and activity. Nowadays, people in Beirut crave for a flashback to what once was a city of light, a city that approved of all cultures, and proud of their national traditions. The concept of Al Hakawati had its platform in Beirut as famous storytellers that came out of Lebanon spread their art throughout the Middle East. Amongst these storytellers is Jihad Darwiche. He is considered the last remaining Hakawati who mastered the art of storytelling and spread it in various topics. Darwiche last performed in 2009 where he stated his opinion concerning the problem facing

the dying art of storytelling. However, we hope this is going to change soon, as a new and young generation of storytellers is now being trained to "carry the flame" of this dying art over the generations to come. (Darwiche, 2005)

"The world is shaped by two things-stories told and the memories they leave behind" (Nazarian, 2002)

Today in the digital era we can perceive the world in many different ways, but not necessarily a good way. The digitization of information has not only made life emotionless as we perceive one another through virtual expressions and online conversations. The aspect of face to face interactions is decreasing progressively which is raising questions waiting to be answered, will our social interaction become fully controlled through the internet? Will human interaction become extinct? (Fell, 2017) These questions are being discussed as societies have been isolating themselves which is creating cases of social alienation which will send communities such as the Lebanese communities to the times that were existing post the civil war. A nation that was divided rather than united. These cases raise a lot of questions concerning the ability of the people to achieve conflict resolution and enter a phase of remission from the horrific memories that the war left behind. This brings us to the point of how can these aspects be dealt with and how can we encourage the people to listen to one another's ideas and stories in order to increase social interaction and exchange within the city of Beirut?

Narrative communication tools existed with the Hakawati in early times, but architects adopted this tool and infused it within their designs creating a new ideology in architecture called Narrative Architecture also known as Storytelling Architecture. Creating a story using the structure creates a level of meaning and connection to the pastor or user that can be engaging and provoking (Browne, 2010). The ability to exchange meaning beyond the obvious with the user and encouraging the user to stay rather than pass by is the key essence of this form of architecture. Narrative Architecture evolves from an introspective exploration of the client's mission and passion, the building's function, context and historical background (Browne, 2010). The dominant theme of architecture which is spread all over Beirut portrays a sense of show and "sell" rather than show and "tell". Due to the dominance of financial exploitation and lack of discipline in construction, Beirut has become a concrete jungle creating a hostile environment depriving the people of the stories that once existed within the streets of Beirut. With minimal architectural structures to remind the people of the golden days and no one to portray the beauty of the city back in the day and what were the stories of the people back then, we can only aim for an intervening approach that can help raise awareness to dying cultural aspects of the city, amongst them the treasure of "Al Hakawati".

"In a way, storytelling is a form of activism, it is resistance against silence, against forgetfulness." (Matta, 2017)

The area chosen for the intervention is located in the heart of Beirut and directly located alongside a major border which was named "the green line" during the Lebanese civil war. The green line was a collection of abandoned structures and a long path of waste and greenery creating a physical border between the areas. The area of choice is named Al Sanayeh which is in the midst of several different cultural and social clusters. Al Sanayeh is located in the front lines of what was considered east and west Beirut. Within this region exists several landmarks that are considered key structures in the Lebanese community amongst

these landmarks are the renowned Burj el Murr and Hneine Palace. Both of these structures neighbor a plot which previously had a residential structure named the Akar Palace. During the civil war, the Akar palace was exposed to a large amount of destruction which left it partially intact and the rest of it destroyed. Two facades remain fully intact while the remaining facades and interior partitions were fully destroyed.

"The Hakawati's Corner" will initiate a structure which will provide the people with a platform that can let them express their stories and history which will revive the lost treasure of storytelling. Alongside it will be seminars that would revive the memory of the community's lost stories and events that were once present in Lebanon and now are not. By providing the people the skill to portray their feelings and stories concerning several topics. We will be providing the small groups who until today preserve this form of art and provide them with a new platform where they could work on reinstating this form of art. A structure filled with performing areas categorized as Speakers Corners and large spaces to activate the user's storytelling skills within him. Through narrative architecture we could begin to expose the community to this form of architecture which will in parallel help raise social awareness towards the architectural style dominating the city and the rebirth of the lost art of Storytelling.

Beirut Speak.

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POVZETEK

Načini komunikacije in ilustracije so se prilagodili in razvili različno glede na različna področja glede in na kontekst, v katerem se uporabljajo. V različnih kulturah se zavedamo prisotnosti pripovedi kot orodja, ki je generacijam pomagalo, da obravnavajo preteklost in kako ustvajamo rešitve koristne ljudem. Pripovedovalka »Al Hakawati« je bila oseba, ki je imela vpogled v te zgodbe in je s svojimi veščinami v komunikaciji prenašala te zgodbe in navke na svoje poslušalce s pomočjo navdušujočih pripovednih veščin. Koncept Al Hakawati je bil temeljni kamen v vsaki skupnosti, ta vidik pa je

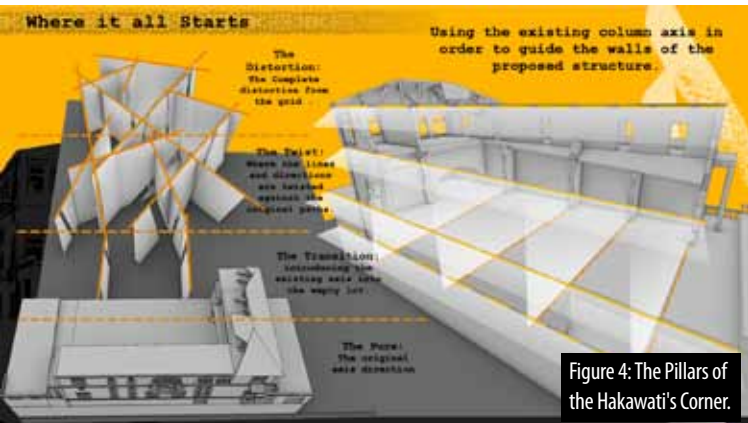
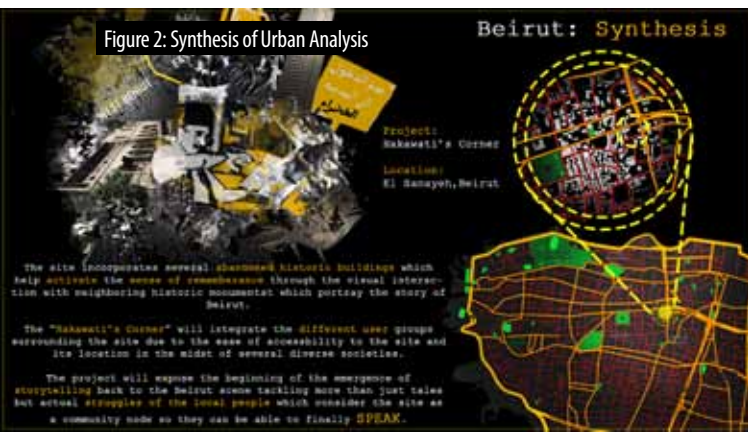


Figure 4: The Pillars of the Hakawati's Corner.

bil v veliki meri obstoječ v libanonski skupnosti. Ta posameznik bi delil zgodbe s prijetnimi kot tudi neprijetnimi sporočili iz preteklosti libanonske skupnosti, tako da bi preko animiranega pripovedovanja izobraževal poslušalce.

»Al Hakawati's Corner« predstavlja prizadevanje, da bi tej umetnosti komunikacije omogočili novo platformo, s katero bi libanonci lahko ponovno vstopili v današnjo sodobno družbo in promovirali izvirne ideje s svobodo govora, izobraževanja, zagotavljanja socialnega varstva in socialne interakcije v libanonski skupnosti, ki poskuša izstopiti iz ruševin preteklosti. Predlagana lokacije intervencije je v El Sanayeh v Bejrutu. Območje, ki vsebuje več mestnih znamenitosti, ki so del skupnega spomina. Z ustvarjanjem te skupnosti bod njeni upoabniki postali bolj ekspresivni člani ter bodo lahko širili zavedanje o nujnosti ohranjanja te izumirajoče pripovedniške tehnike, ki je lahko orodje za reševanje aktualnih družbenih razlik.

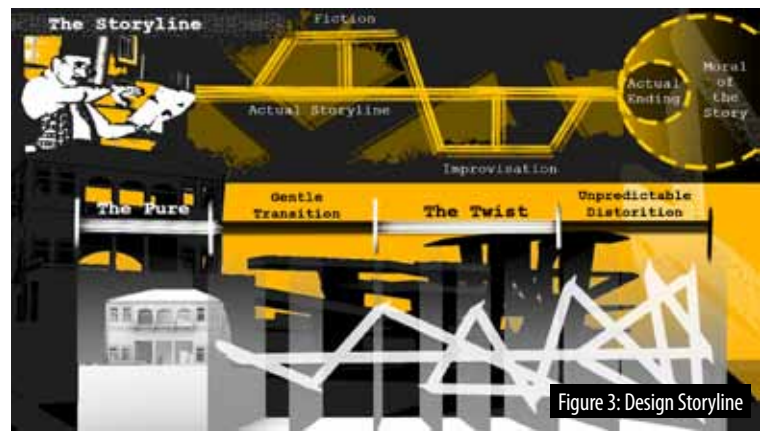


Figure 3: Design Storyline

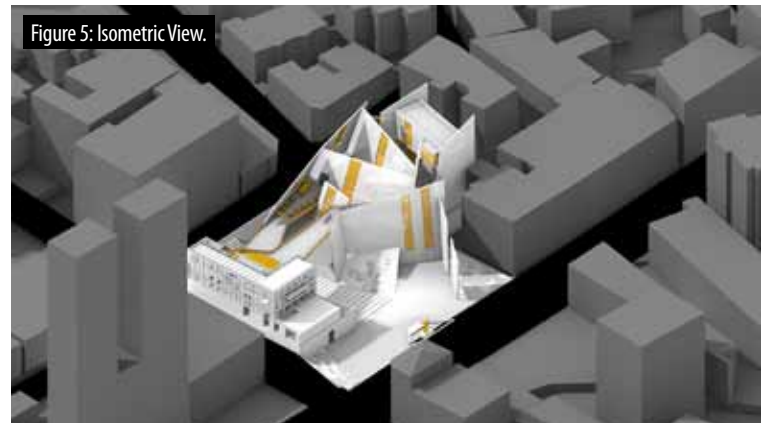


Figure 5: Isometric View.



Figure 6: Aerial Perspective.



Figure 7: Aerial Perspective.

Ghiwa Ojaimie: "AMIA" ... PONOVRNO OBUJENA: ZGODOVINSKI AMIOUN STORITVENI CENTER "AMIA" ... RISING AGAIN: HISTORIC AMIOUN SERVICES HUB

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MASTER THESIS

AVTOR *AUTHOR*

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TIP ZAKLJUČNEGA DELA *TYPE OF THESIS*

Master Thesis - Architecture Senior Project

MENTOR *MENTOR*

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LETO *YEAR*

2019

INŠTITUCIJA *INSTITUTION*

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GRADIVO PRIPRAVILA *MATERIALS PREPARED BY*

Ghiwa Ojaimie

As time changes, the need for various types of spaces diminishes, places whose function is no longer required, become subject to abandonment (Ismail, 2016). This is the case in Amioun, capital of Al-Koura District, North of Lebanon and one of the oldest towns in this country that dates back to the 14th century B.C. (Frayha, 1965). Due to natural and social aspects, this town is divided into two parts: upper and lower Amioun (Figure 1). The upper part is composed of traditional houses and historical churches while the lower one is more contemporary. Naturally between two stone cliffs, the area of growth in Amioun expands along the highway; the lower part. Accordingly, the concentration of new investors is mainly in this area leading to partly marginalizing the heritage and culture of the upper part by leaving it unseen and deserted. This will eventually dissolve the identity of an area that needs to be appreciated and preserved. (Heintzelman, 2013).

“Use it or lose it!”

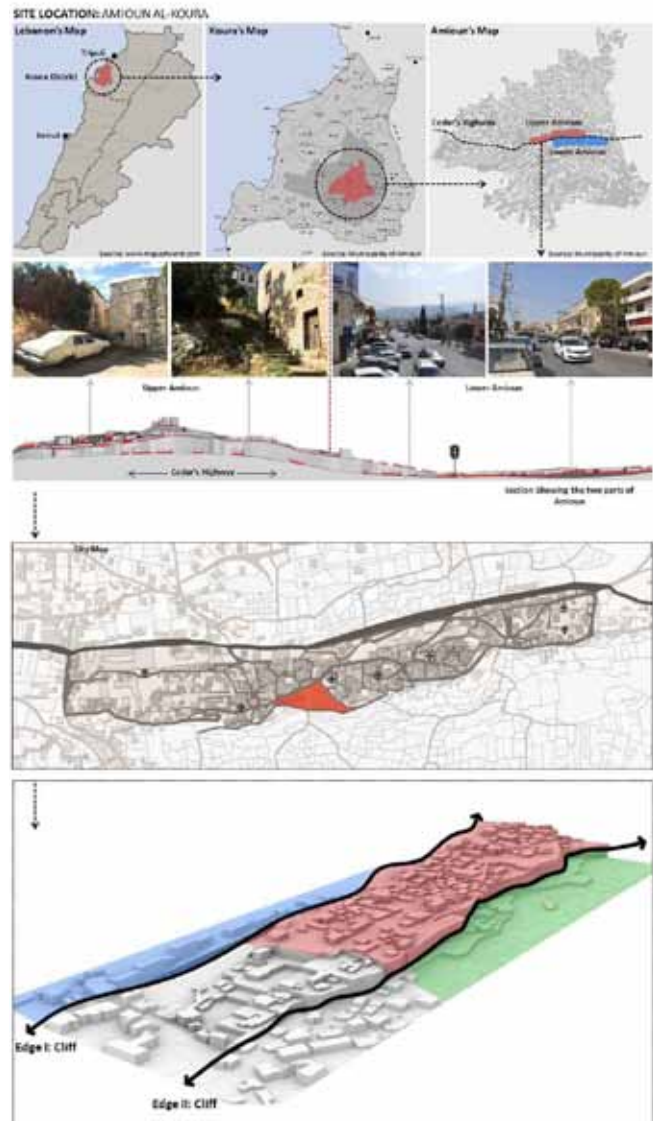
The main idea in this project is to focus on the upper part of Amioun. The proposed intervention is a “Historic Services Hub” in the center of the old town of Amioun, focusing on two aspects: “Public Spaces” and “Sense of Belonging”. As old Amioun overlooks the highway from one side and Al-Koura valley from the other side, the area of intervention will be from the side of the valley, a dead edge, considering its location as a potential in the design process (Figure 2).

The design process was the result of different layers: first by analyzing the site features that is the middle of the old town (Figure 3). The existing building inside the plot used to serve as a hospital until 1998. The first step of activating the project will be by reusing the existing and extending it to the cliff. By doing so, one less abandoned building is added to the urban fabric and there is less damage to the environment. (Rouwendal, J. 2014)

The conceptual approach started from the area of intervention, its orientation and accesses to the definition of the main focal points (Figure 4). From the visual perception from the old town, three focal points were located. The main idea is to break this dead edge and this linear expansion, where the new intervention will take place. By doing so, the project will be the new center of the old city. These cracks were translated into structures that extend vertically or horizontally along the cliff changing in thickness to support the cliff depending on the nature of the land and the existing rocks.

As one of the main purposes of the project is to revive old Amioun and bring people back to this area, it is important to focus on local users and tourists and the interaction between them. Hence, residents should benefit from the new project in terms of services and facilities while providing sources of attractions for visitors. For Koura Inhabitants, the functions will be as follow: Amioun's Municipality Department, Koura's Municipalities Union

Figure 1: Site Location: Amioun Al-Koura, North Lebanon.



Department, telecom offices, local workshop, and community events offices. While for the visitors, sidewalks cafes, exhibitions and souvenir shops are provided.

The distribution of the functions along the cliff will be according to its different levels. As on the lower level, outdoor functions will be distributed around the existing stairs and trails. In addition to the reception and car access leading to the upper parts of the cliff where six embedded parking lots take place. For the higher levels, a connecting building; the spine, will join the project: Koura Municipalities Union Offices providing a panoramic view for the offices. Amioun's Municipality will take place in the



Figure 2: Problematic, project type and site choice.

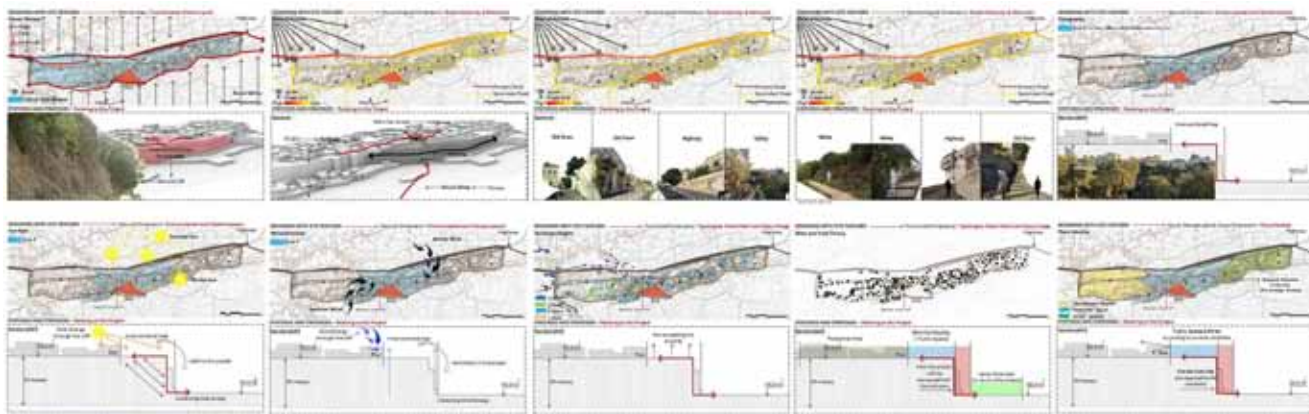


Figure 3: Site analysis, synthesis and project location on the cliff.



existing abandoned hospital. On level 30 meters, an extension to the adjacent church forming a piazza and leading to the main entrance, will take place providing public benches, biking trails, public seating and green areas.

For cars circulation, it can be reached from the highway, the old town or Al-Koura Valley. For vertical circulation, two main circulation cores take place that include fire rated stairs and elevators. For outdoor accessibility, pedestrian and disabled ramps and public stairs are available all the around the plot. Car drop off is from the Church's piazza holding bus stations and biking rails. Filters of perceptions between this piazza and the intervention are made leading to the main entrance whereas all doors open for the outside. Roofs of the buildings are accessible from each other's whereas green terraces and rooftops cafés take place.

As the proposed intervention is on a natural cliff, the choice of materials was critical. The idea is to merge the new intervention within this natural source yet giving the experience of the newly added buildings within the old surroundings. Fair faced concrete is used for the added structures to show contrast between the cliff and the project. These walls also part of the structural system. Steel structure is used for its light weight and to prevent from wind load and earthquakes. Horizontal and vertical piles are inside them supporting the cliff. choice of the glass in between them is for transparency reflecting the natural elements around. For the planning strategy, the added structures are translated physically in the first floors of the project (Figure 5) by partitioning the site on the ground levels leading to the lower parts of the cliff; therefor this division was also applicable in the other floors (Figure 6). This idea was also translated in the façades strategy, as the choice of materials either to merge or to contrast was also divided into modules (Figure 7).

For the technical part of the project, the sources of light and ventilation are part of the conceptual approach. The zones of the public seating are part of the light ventilation system in the project. From one, a skylight is provided to get light to the "spine" level and light tubes and wind pockets from the other. In addition, the added structures are also part of the mechanical and electrical system where technical shafts are inside these walls that go through the cliff for different usages.

For the spatial and users experience, the project itself invites people to it among different levels. It will be perceived from the old town as open public spaces within the different walls while leaving a curiosity for the visitors to explore the different areas. (Figure 8). While the project as a whole will be distinguished from the valley as it takes place on the cliff (Figure 9), giving this dead edge more life (Figure 10).

To conclude, historical Amioun should be preserved and attention should be given to it! During my senior studies, I focused on the upper part of Amioun, by proposing a services hub in the center of the old town that will protect the heritage, assure resident's needs and invite people all over again focusing on two aspects: spirit of the place and place making. The chosen site was the dead cliff of Amioun. The concept was translated through structural walls that will divide this edge by providing both services and fun for locals and guests to come back to this place.

"AMIA" will rise again

POVZETEK

Ko se čas spreminja, se potreba po različnih vrstah prostorov zmanjšuje, mesta, katerih funkcije ne potrebujemo več, so podvržena opustitvi. Tako primer je mesto Amioun, glavno mesto okrožja Al-Koura, severno od Libanona in eno najstarejših mest v tej državi, katerega zgodovina sega v 14. stoletje pred našim štetjem.

Umeščeno in ukleščeno med dve naravni kamniti steni območje širitve v Amiounu razširi vzdolž avtoceste. Sodobna vlaganja so ore-dotočena v ta del, ki je tako podvržen talni širitvi in preobrazbi; star, zgornji del mesta pa postaja s svojo dediščinsko zapoščino vedno bolj marginaliziran in zapostavljen.

Zgodovinski Amioun je potrebno ohraniti! Ena od možnih rešitev je urbani projekt, ki bi varoval dediščino, zagotavljal potrebe prebivalcev in vabil ljudi, s poudarkom na dveh vidikih: »Duh kraja« in »Ustvarjanje kraja«. Predlagani projekt je osredotočen na »središče starega mesta« v središču starega mesta.

'AMIA' ima zagotovljeno prihodnost!

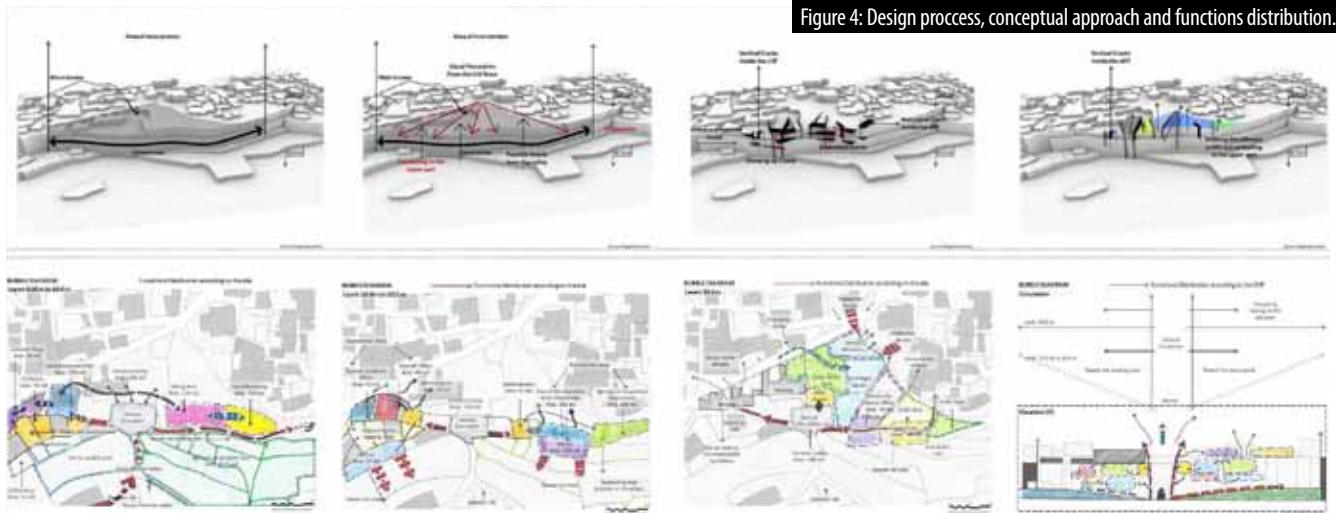


Figure 4: Design process, conceptual approach and functions distribution.

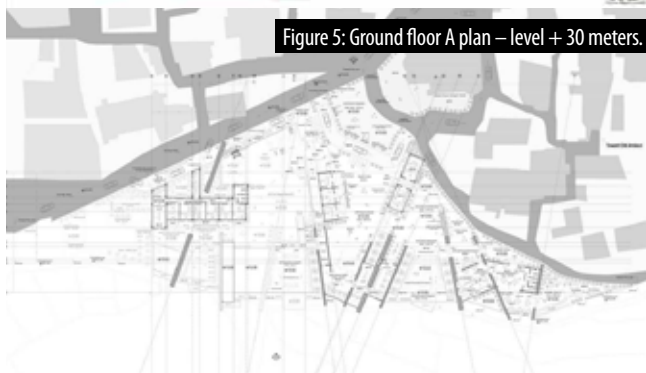


Figure 5: Ground floor A plan – level + 30 meters.



Figure 6: Ground floor B plan – level + 25 meters.

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Note: All Photos were taken by author.



Figure 7: Spine floors levels – level + 18 meters / two parking floors samples.



Figure 8: Views showing the project on the upper level of the cliff.



Figure 9: Top view of the whole project showing the cliff and how the project is perceived from the valley.

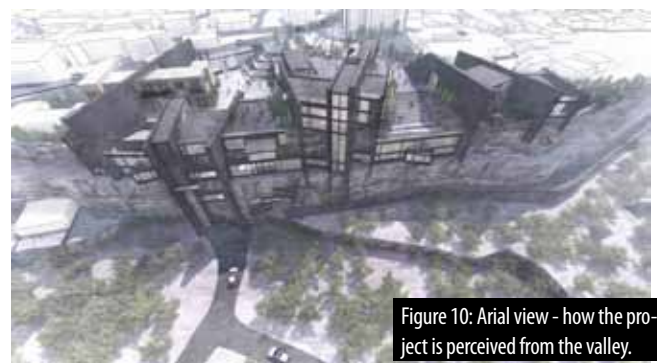


Figure 10: Aerial view - how the project is perceived from the valley.

Martine Younes: PREOBLIKOVANJE SPOMINOV – NEVTRALNI PROSTOR RESHAPING MEMORIES – THE NEUTRAL GROUND

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Figure 1: The site constituents and events' strip.



Is it really the war? Or is it the fact that decades later people of El-Chouf district are still stuck in their tragic memories and passing them onto new generations? The project's location in Kfar Hammel, El Chouf was strategically chosen being the abandoned initial village of the current segregated village Kfar Katra, El Chouf. This practically means that Kfar Hammel has no preceding wounds of the Mountain War nor has it witnessed any of the sorrowful events.

However, Kfar Hammel has memories of the previous coexistence between Drouz and Christians, where they once lived in peace together. In the site chosen, there exists ruins of the villagers' previous homes and an artificial pond, which they have created together exists to present. Also, an elongated strip of flat land just near the ruins is currently being used by the municipality for events, picnics, camping and festivities. Hence, Kfar Hammel has with time become the perfect 'neutral' ground for common gathering of both parties. The project's purpose is to become the site for coexistence; this smooth transition that would simultaneously revive the joyful memories of the site and recreate new ones for the future. The main functions were chosen to include a community kitchen, community library, daycare, gym, workshop for women, an assembly and meeting hall and multipurpose rooms. According to UN studies in other postwar cities or countries, these functions are suited to revive interaction focusing on education, entertainment and sports while targeting specifically women and children (the new generation).

For this community center to fulfill its purpose of reunion, the design strategy was oriented towards creating new uncommon layout of spaces originating from typical and well-known plans. In other words, for memories to be reshaped, spaces for such an experience should to be re-sculptured as well. How? According to Aldo Rossi, by taking typical layouts of certain functions or old memories and superposing them with other functions and

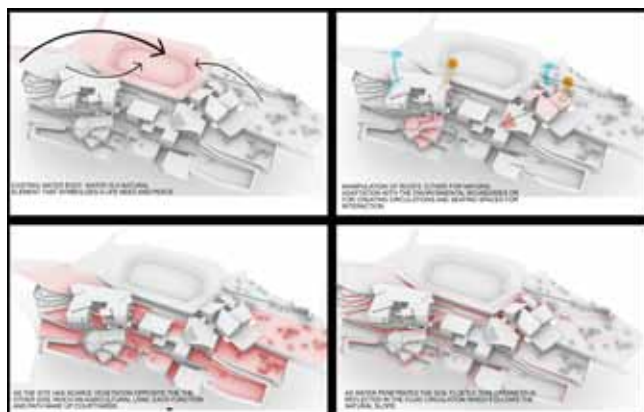
layouts of certain aimed characteristics and motives, the new typologies achieved will be ones that better serve their current purpose and time. So, each function was separately customized to acquire an interactive yet functional space.

The Community Kitchen: taking a typical rectangular restaurant kitchen plan we see that it is divided and meant for individual tasks to achieve fast results and practicality. However, superimposing a circular typology of a conference room (considered the most democratic and equal layout in parliaments) we obtain a concentric parallelepiped design where the different main tasks in the kitchen are highlighted yet preserved and overlooking one another. Hence, we obtain a **collective cooking area**.

The Community Library: analyzing a typical community library plan, it is divided according to quiet and more casual areas, usually very static and formal. Considering the coexistence of the different age groups simultaneously performing different activities in the courtyards, the voids formed in-between a group of neighboring houses are valued and deep rooted cultural activities in the village. The dynamism of the courtyard activities is symbolized by smaller squares that are spatially parallelepiped. These are then rotated towards an angle that connects the new segregated Kfar Katra to the initial bonded Kfar Hammel, a small historic reminder of what was and what now is. The interference of cubicles deconstruct the typical library order, thus obtaining small internally angled functions that are overlooked by circulation spaces. In this way, the different segregated rooms are still separated but they overlook one another and hence interaction unconsciously occurs, obtaining an **interactive community library**.

The Workshop, the Gym and the Daycare: As sports has proven to be an international language for peace¹, the stadium plan was chosen for this superposition. Being the site where

Figure 2: Design decisions beased on the site, accessibility, weather and views.



despite the division of two opposing crowds are present, both direct their views towards the same court and cheer while enjoying the game. This act of overlooking is used in the composition of the three mentioned functions, The children being the key targets for better relations in the future, the mentioned functions are superimposed to the stadium functions having the daycare as the center of attention. Hence the gym and women's workshop overlook the daycare by connectivity, obtaining the **overlooking functions**.

The Meeting Area and the Multipurpose Rooms: For reconciliation to occur, people are advised to reveal their wounds by communication. The memory of pain is slowly fades and acceptance for taking common decisions for the village and neighboring villages will be easier and more efficient, and this justifies the importance of the meeting hall. The circular shape is again chosen as equity and equality are preserved in such a layout, only this time the circle is extruded breaking the rhythm of squares and rectangles. The symbol of different tasks taking place in a multipurpose room was shown by dividing this area into three different volumes. The three rooms are intersected towards the center of the circular room and to one another, hence obtaining overlooking areas that are communicating 360 degrees, up and down, a **dialogue space**.

The site is a slope with a waterbody on the top overlooking a valley and a mountain behind and the main artery of El Chouf.

To one side, there are the ruins and the strip of festivities and on the other side the segregated Kfar Katra village. Behind the pond, is the mountain with the town of Deir El Qamar and the secondary road reaching the site. Wherever one stands, wherever one looks, mind blowing sceneries of nature, history and circulation entertain ones senses. Every function was situated according to the slope direction, angles and view it should remind people of. Hence, the site itself created the composition of the village-like project. The circulation was based on the concept of water fluently taking the easiest path through and hence it became the connecting strip of the different volumes. Each function or set of functions also has its own courtyard and various kinds of seating spaces as nature is the most soothing and calming element for therapy (see Figures 3, 10). The existing ruins became a view untouched with the active strip of picnics and festivities behind reminding people that the past can never be re-written but the future can (see Figure 1). The roofs were manipulated to show directions, create circulation and seating areas (see Figures 4, 7, 9) or to accommodate to the snowy and rainy weather conditions of the site (see Figure 3). The terraces would become gathering places and the daycare terrace having will become the new village court for events and gathering having visual and physical access at all time. As the composition already is dynamic, the material chosen ought to be simple without disturbing the harmony of the arrangement. To contrast the natural stone material of the initial village, pure concrete and textures of paint are the main materials of the project to emphasize the solid relations of the future.

The entire project is based on voyeurism, an instinct which every villager unconsciously practices. By observing and learning about the behavior of one another, over time people will fathom that they are all similar in behavior and mentality by being Lebanese, even if mistakes happen. This project does not resemble a typical community center, it reveals its aim through exterior form which is the first notice of the eye before the actual experience of the spaces. The composition is based on intersections and connections of differences. By deforming the norm, people will be intrigued to visit this place and by experiencing this deformation, the project will help in regathering the separated people, through its structure, composition and time.

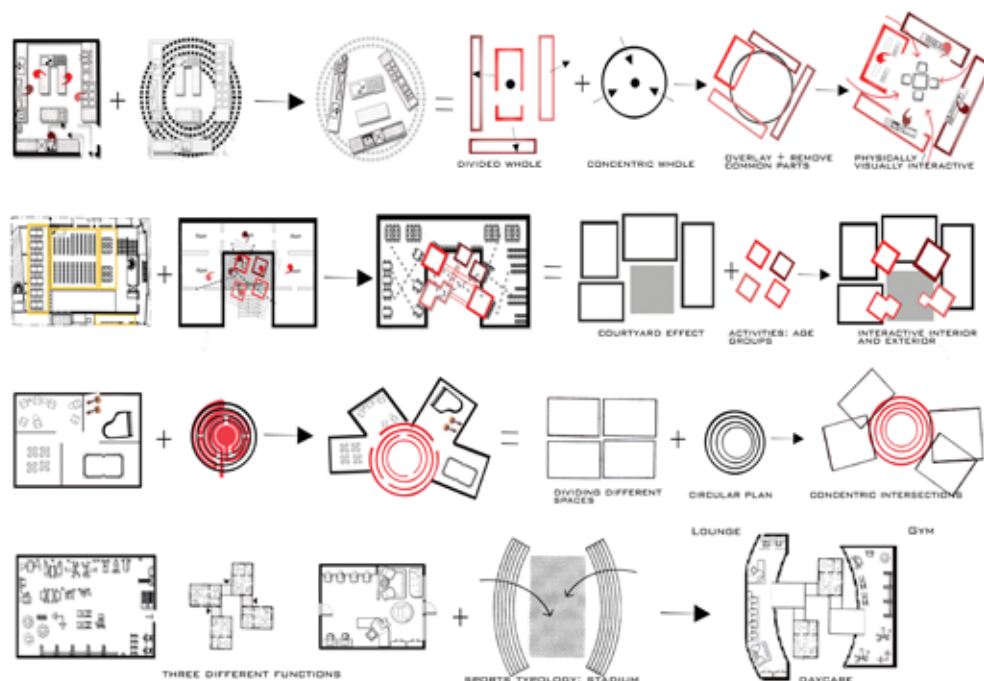
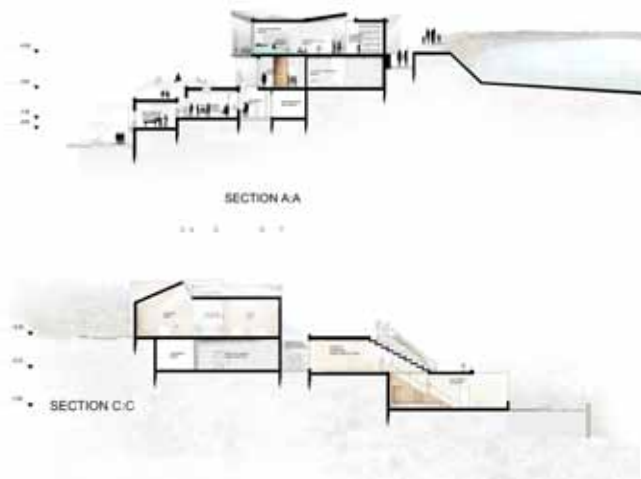


Figure 3: Design strategy to obtain the different compositions of the project.

Figure 4: Stairs with openings to interact out/in. The stairs act as circulation and seating.



Figure 5: Sections showing Circulation and the different functions' intersections and human interactions.



POVZETEK

Vojna je od nekdaj spreminjala demografsko in socialno podobo okrožij v Libanonu. Zlasti t.i. 'gorska vojna', ki se je začela leta 1977, je vključevala več kot 60 vasi iz območja El-Shouf. Francoska zgodovinarica Nora pojasnjuje: »Pomembne resnice povzročajo problematiko zgodovinskega spomina v okviru druženja med pripadniki libanonskih Druza in kristjani, saj bo spominjanje na tragedije ali zmage storjene tekom vojne nad posamezno skupino, verjetno vodilo do sovražnih čustev.« Tako se že navkljub več desetletjem miru ljudje še vedno izogibajo srečanjem različnih etničnih skupin.

Kfarkatra je bila do danes vizualno, fizično in duševno ločena po glavni cesti na dve ločeni okrožji: eno z pripadniki Druz in drugo krščansko. KfarHammel so pred 1. svetovno vojno prvotno zasedli kristjani KfarKatra in starešine Druz, pozneje pa je bila opuščena. Zapuščeno mesto je še vedno opomnik prvotnega mesta, kjer so pripadniki Druz in kristjani bivali v harmoniji. V mestu je še vedno ohranjenih 14 starih hiš. Še vedno pa je Kfar Hammel obiskan za piknike in prireditve, kjer je srečevanje med pripadniki različnih etničnih skupin sprejemljivo.

Cilj projekta je oživiti stari KfarHammel, ki je bil nekoč stičišče komunikacije in miru med prebivalci. Intervencija bo vključila obstoječe ostanke mesta, da bi ponovno prikazala preteklo in ponovno omogočila sobivanja med ljudmi.



Figure 6: Interior View showing the manipulation of roof to create circulation and the intersection with the lower space.



Figure 7: Interior View showing the manipulation of roof to create a homelike feeling for the concentric collective eating and cooking space.



Figure 8: Perspective view of the entrance to the project viewing the pond, the ramp to the lower level and the library.



Figure 9: Perspective View showing the stairs which are for sitting and circulating overlooking one of the cubicles of the library.



Figure 10: View of the whole composition together with courtyards and the circulation.

Gabriela Abi Antoun: ETNOGRAFSKO DOŽIVETJE DOMORODNEGA LJUDSTVA NA KARIBSKEM OTOKU SAN ANDREAS: PROSTOR ZA SPRAVO

ETHNOGRAPHIC EXPERIENCE OF THE
NATIVE CARIBBEAN POPULATION SAN
ANDRES ISLAND: A SPACE TO RECONCILE

UVODNIK

EDITORIAL

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ARTICLE

RAZPRAVA

DISCUSSION

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MASTER THESIS

AVTOR *AUTHOR*

Gabriela Abi Antoun

TIP ZAKLJUČNEGA DELA *TYPE OF THESIS*

Master Thesis - Architecture Senior Project

MENTOR *MENTOR*

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LETO *YEAR*

2019

INŠTITUCIJA *INSTITUTION*

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GRADIVO PRIPRAVILA *MATERIALS PREPARED BY*

Gabriela Abi Antoun



The project is located in the island of San Andres, an island that belongs to Colombia. The native population of the island is the Raizales, they have developed their own culture only in this island and it is based on their own traditions, religion, customs and lifestyle. Moreover, some characteristics of the native's cultural identity have been lost over the years and now it is at risk of vanishing. (Gordon, 2005) (see figure 1)

The project objective is to celebrate the Raizal Culture and smooth over the ethnic tensions that have been deteriorating between the Raizales and the island's other inhabitants by making the project open to the natives, non-natives and tourists to share a universal message of reconciliation.

The site consists of a rocky land and it is special since it does not include high waves due to the coral reef barrier in the sea. The area has a tropical climate with high temperatures and high humidity, the architecture itself should react to these factors (see figure 2).

Taking into consideration the land, the people and culture, the theory of regionalism applies to the selected site, which tries to get back the sense of place and identity. The theory of regionalism seeks to mediate between the local and the global, the local through the relationship of man and space, the genius loci and culture, while the global through science and technology. The project tries to transform the local into global through reconciliation of the past and the future, the land and the sea and the natives and nonnatives.

By analyzing the genius loci of the Natives, mass and void are equally important for them; they used to build clusters of houses around open areas that were used for socializing. This was as overarching inspiration to the main layout of the project.

Getting to the micro-level design, the strategy is inspired by the native architecture and investigating the construction methods,

Figure 2: The location of the coral reef barrier in the sea.



as a perseverance of the heritage. The main elements used in their designs were studied and adapted into the project as follows:

- **Geometry:** The main geometries used by the natives were the cube and the pyramid shapes, these were deconstructed in order to create the forms by dividing, joining and rotating them. (see figure 3)
- **Visible structure:** They used to have their structure on the façade that allowed them to have a free plan as well. This type of structure is adapted in the project by creating a skeleton for each one of the modules, highly visible from in the interior and exterior spaces. (see figure 4)
- **Weaving technique:** As a last phase in their construction, they used to weave the coconut palms to be used as a cover for their roof, this material serving as a shelter and at the

Figure 4: The exo-skeleton in one of the volumes.



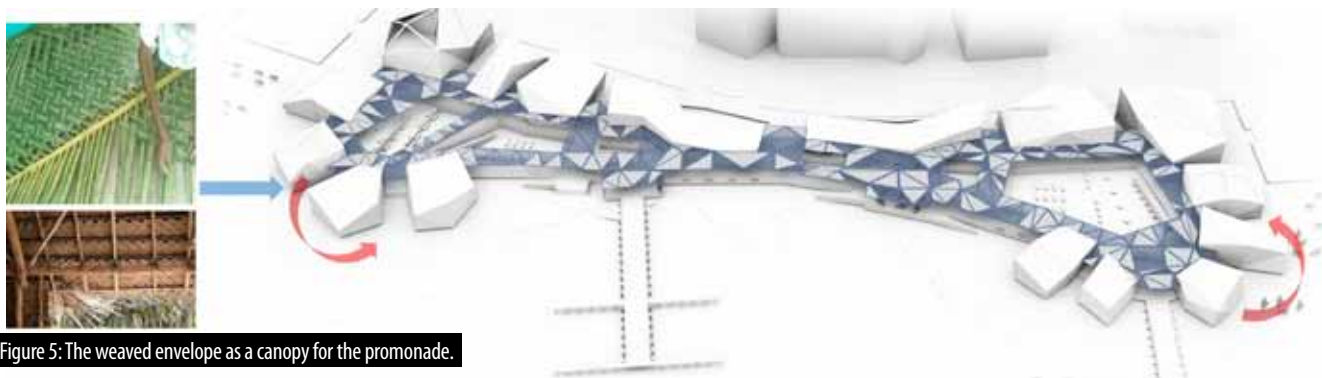


Figure 5: The weaved envelope as a canopy for the promenade.

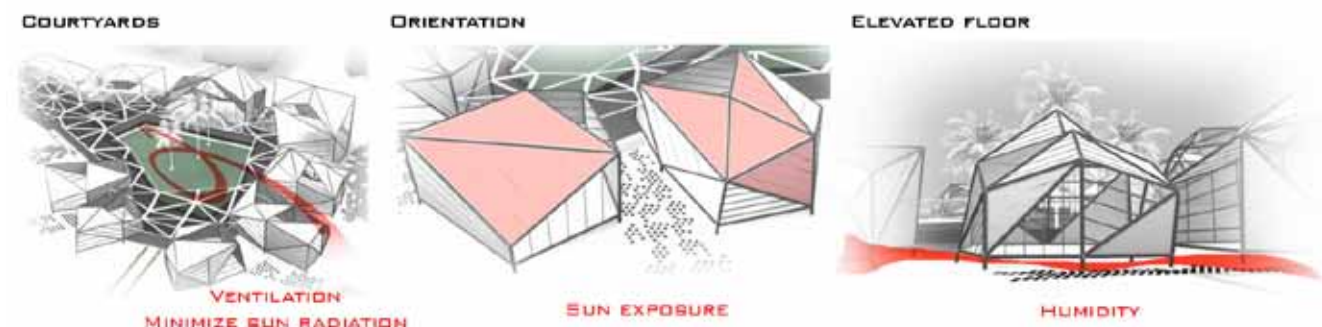


Figure 6: The adapted climatic strategies from the native architecture.

same time providing ventilation and indirect light. It was transformed to the project by creating a shelter, a woven envelope joining the units together while creating spaces for gathering as part of the cultural promenade. (see figure 5)

- Climatic strategies: Elevated floor for ventilation against moisture and humidity, Materials were chosen according to the orientation, the inclined roof against wind. (see figure 6)

The exploded axonometric shows the complete system of the project, which starts by a wooden platform elevated 60 cm from the ground, then the steel structure as the skeleton of the project, then a steel frame that is bolted to the structure and holds the materials be it glass or wood. In the end cover is placed, which is a light structure that will act as a continuous cover for the overall experience (Figure 7).

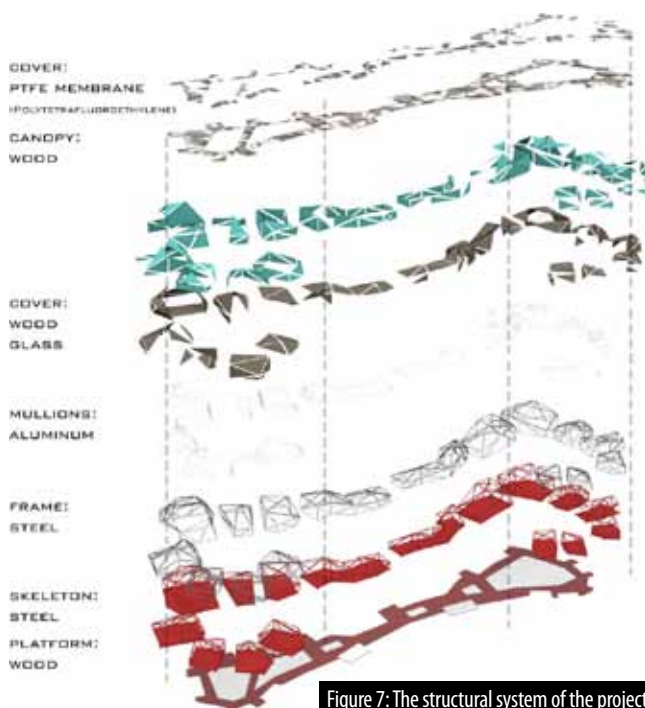


Figure 7: The structural system of the project.

The program the site is divided into three related categories: the cultural-educational, cultural-recreational and commercial that will act as a link between the two, it does not belong only to the inner area of the project but to the street as well. Within these functions there are a mediateque, galleries and workshops for crafts and painting. Moreover, for the recreational activities there are spaces for native dance, music and food. The modules decrease respectively by height and size from the street to the sea keeping the visibility and connection to the sea (Figure 8).

For the circulation, the project could be accessed through a main entrance while following the different courtyards (Figure 9). The project could also be accessed by the in between building spaces, for that each one of the volumes has its own reception space and a woven wall as a separation from the area and at the same time keeping the ventilation to flow (see figures 10 and 11). On the street level the facades are kept visible to the inside so people could feel invited to come (Figure 12).

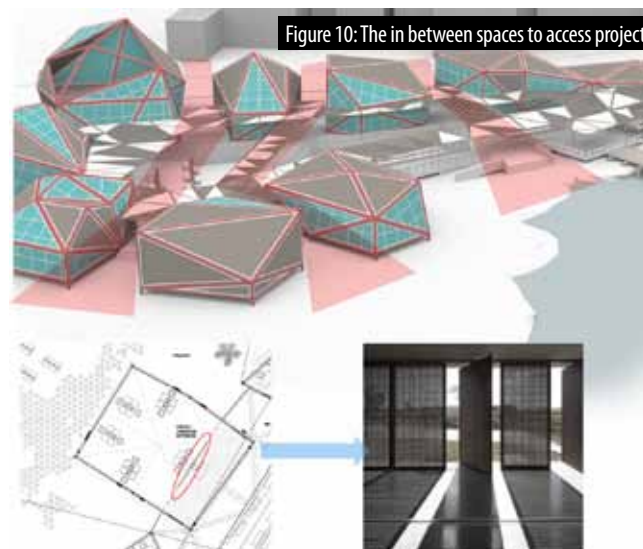


Figure 10: The in between spaces to access project.



Figure 8: The decreasing angle to the sea.



Figure 8: Cross section of the project.

People can get from one function to another by overlooking the main courtyards of the project, in addition to the access from the port side through the deck (Figure 13,14). As for the inner spaces, activities taking place such as handcrafts workshops are led by the natives for the residents and tourist in order to boost the communication between natives and non-natives in addition to the outdoor exhibitions (Figure 15).

The project also tends to create more transparency and relationship between inside and outside as shown in the views from the workshops. (see figures 16 and 17)

Reference:

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POVZETEK

Cilj projekta je proslaviti kulturo Raizalom in ublažiti etnične napetosti, ki se stopnjujejo med pripadniki Raizalevcev in drugimi prebivalci otoka. Projekt želi predvsem predstavljati kulturno izkušnjo, ki je odprta za vse. V konceptu je zamišljena regionalizacija območja in vračanje občutku kraja in identitete. To želimo doseči z ustvarjanjem povezave med odnosom človeka do prostora, duha kraja t.j. 'genious loci', kulturo, trajnostjo in tehnologijo. Projekt vključuje kulturno sprehajališče ob obali, ki vključuje izobraževalne, trgovske in rekreacijske dejavnosti, ki bi združevale ljudi in oživljale izginjajočo tradicijo.



Figure 11: The in between spaces.



Figure 14: Outside spirit of the project.



Figure 15: The outdoor exhibition area.



Figure 16: The relationship between inside and outside.

Anthony John Nicolas: PONOVRNA OBUJANJE IDEJE TERMALNIH KOPELI – MOŽNO ZDRAVILO ZA SODOBNO DRUŽBO

RE-IMPLEMENTING THE CONCEPT OF
THERMAL BATHS – A PROSPECTIVE REMEDY
FOR TODAY'S SOCIETY

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GRADIVO PRIPRAVIL *MATERIALS PREPARED BY*

Anthony John Nicolas

The whole process of this senior project is based on an assumption that states that a re-implementation of the concept of thermal baths, could be the remedy for the society today, where people are seeking a refuge from their daily life routine.

Bathing culture gained an important significance throughout history. Various civilizations created massive structures that hosted, along with the bathing functions, different types of social activities (Whitmore, 2013). For instance, Ottoman baths offered, along with their hygienic functions, different rituals and social activities. (Karatosun & Baz, 2017). These facilities were spread in different locations in the empire, and some of them remain till today. For example, several baths stand nowadays as Ottoman monuments in the city of Tripoli, North of Lebanon. Their documentation identifies their tangible heritage, related to their architectural and social significance, parallel to their intangible cultural heritage. This marks the importance of transferring this legacy to future generations.

Accordingly, the proposed project is to re-introduce the concept of the old thermal baths, while emphasizing on their social utility. Moreover, it is based on creating a multi-sensory architecture that consists on simulating experiences encountered in a natural environment that will contribute in the healing process. This idea derived mainly from an anthropological theory stating that the human race will always tend to reconnect to nature even without knowing it since it has spent 90% of its evolution time in nature (Williams, 2012). Therefore, the proposed architecture shall feed this need, where the users' mind will dwell naturally in a limitless space.

The project is located in Al Mina Tripoli, in the city's old fabric, encircled by the souk network (Figure 6). Through a quick overview of the city's figure ground map, it is clearly noticeable the presence of a hierarchy of voids, in the urban fabric. These voids vary in scale and in use respectively, where each is used for different activities.

The design strategy is divided into two phases: The first phase called the activation phase and requires the injection of various public functions, while creating inclusive spaces.

The second phase is the execution phase which stresses on applying a multisensory experience. Hence, the users become actively engaged, by triggering all their senses. This is achieved through the simulation of the following natural experiences:

- the forest experience where users explore predetermined areas while moving around the space in numerous ways

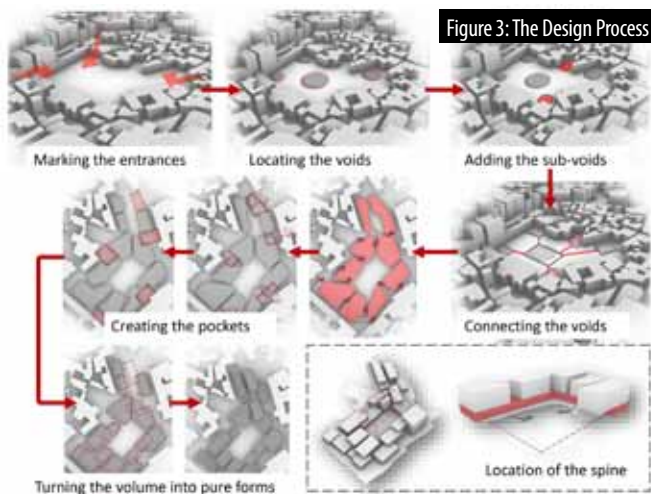


Figure 3: The Design Process



Figure 2: The architectural layout of the Ground Floor



- the cave experience that requires a diversity of scales and layers
- the lake experience that displays endless dimensions and a multitude of plans and backgrounds.

The program is defined, while creating two main sets of functions: The first set comprises public functions (Figure 2) , and

Figure 4: Transversal Section and Western Elevation.

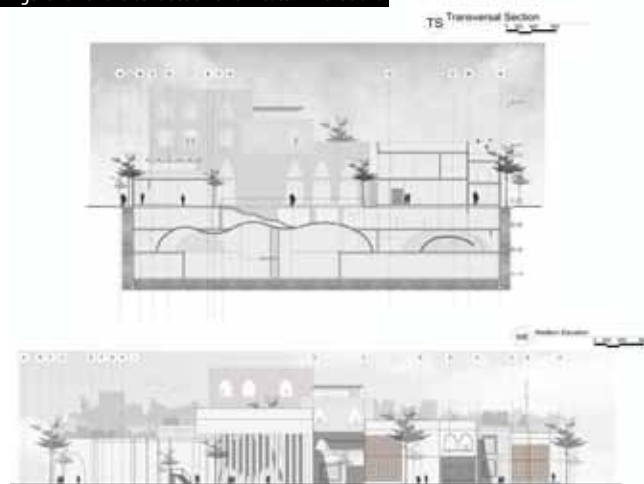
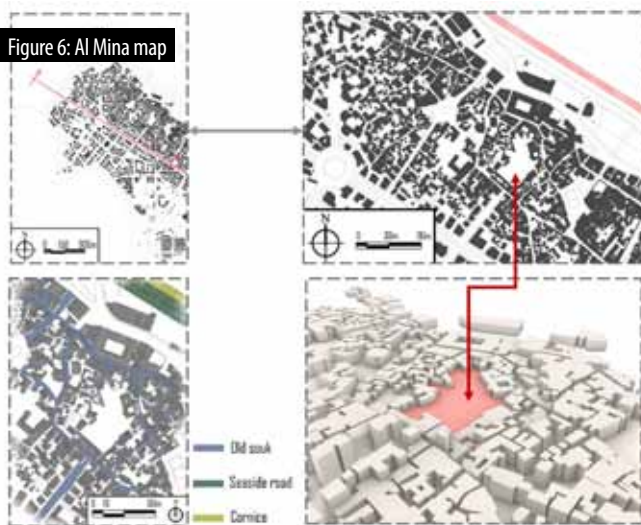


Figure 6: Al Mina map



the second set is the bathing functions (Figure 1). These two categories are split by levels, locating the first set on ground floors, and the second set in the underground, benefiting from the geothermal feature of the ground in order to reduce power and heat consumption. The result was a hidden Hammam buried in the underground.

Located in the old city fabric, the site is accessible from several entrances. Through analyzing several readings and visiting the site several times, a conclusion was reached: the streets of the old city provide its users by the so called multi-sensory experience. Accordingly, one of the objectives was to create a similar platform that will accommodate these experiences. One of those unique city's characters is the hierarchy of voids, previously discussed, so the intention was to insert this element in the plot: at each entrance open spaces were set, creating buffer zones that each will accommodate different outdoor activity (Figure 3). Moreover, smaller open spaces were added on some of the peripheries of the site to maximize the green spaces (Figure 3). Finally an open courtyard was set in the middle of the plot.

Afterwards, paths were added in order to connect different voids among each other. The result was scattered volumes that allow the users to explore predetermined areas with various ways of moving around the volumes, similar to the experience felt while moving in a forest (Figure 3).

The next step was to transform these complex volumes, into simple geometrical and overlapping forms (Figure 3).

The paths of the ground floor, in between the volumes, were carved in a way to delude the user's perception and contributing in the loss of his spatial orientation, leading them to unknown destinations. The bath's main entrances are located in hidden humble passage, in between the spaces. In addition, different experiences are applied in these passages, by creating aromatic paths, or by introducing water elements.

The multi-use central courtyard will create a livable project during different day times and different events. The project shall foster gender equality by enhancing the women's participation while providing specific functions. Moreover, the provided spaces shall be used by all age ranges, resulting in creating inclusive spaces.

As for the environmental approach, buffer corridors are created in front of the functions (Figure 8), helping in the protection against the site liabilities. Perforated steel panels (Figure 9) on specific facades are used in order to reduce the heat gain while penetrating the daylight.

The voids are followed by the special passages set to trigger the multi-sensory experience. For instance, the main routes and piazzas are equipped with water features (Figure 9).

Through these passages, the users are somehow guided, unintentionally, to this central courtyard that seems to be the main element of this architecture, where an alien volume is perceived: An un-contextual protruding volume appears in the recessed space while merging down with the landscape, creating an element of ambiguity among the users (Figure 7). The purpose of this volume is to attract the users' attention, while reflecting partially the spatial quality of the underground. The passage leading from the souk to the central space is narrow, compared to the other passages. The purpose of this layout is to emphasize the importance of another un-contextual volume: A sudden change of scale of the passage forces a deviation of perception, highlighting one of the entrances of the buried Hammam.

When arriving to the underground level, the users experience an astonishment due to the sudden variation resulting from a totally different spatial quality between the ground floors and the Hammam level (Figure 4).

The latter consists of a cave like structure made from the Glass reinforced concrete material. This shell is the volume protruding on the ground level, while introducing daylight to the Hammam in a mystical way (Figure 10).

This underground shell enhances the multi-sensory experience by applying a variation of materials and textures, while creating a variation of height, thus forcing a special pattern of movement and for the circulation around the spaces.

As for the program layout, the functions are distributed around the central pool. The water of this pool reflects the surrounding spaces, and contributes in creating endless dimensions, while simulating the experience of a natural lake. Around the pool, the functions are distributed, in a way to obtain a multitude of accesses from different locations (Figure 1).

Though his different parts, the project aims to re-celebrate the importance of the old thermal baths, while emphasizing on enhancing the human sensory systems, by reconnecting the users, unconsciously to nature. Nevertheless, this proposal is morphed to fit the contemporary social life, while respecting defined parameters imposed by the prevailing urban fabric.

ABSTRACT

S študijami arheološke in zgodovinske dokumentacije v različnih obdobjih je mogoče razbrati, da so imele javne terme pomemben pomen v različnih obdobjih v preteklosti. Poleg svojih higienskih funkcij so bile te kopeli del vsakodnevnih dejavnosti, med katerimi so se ljudje družili in razpravljali o različnih temah. Zato obstaja potreba po prenosu te kulture skupaj z njenimi oprijemljivimi in neoprijemljivimi vrednotami.

Zato je moj projekt sestavljen iz ponovne implementacije koncepta starih termalnih kopeli s poudarkom na njihovi družbeni uporabnosti, hkrati pa uvaja tudi več-senzorično arhitekturo, ki temelji na simuliranju naravnih izkušenj, ki bi uporabnike podzavestno povezala z naravo. Zato bo slednji začel aktivno vključen in bo njegov um naravno sobival v neomejenem prostoru.

Projekt se bo nahajal v Al Mini, v Tripoliju, v tkanini starega mesta, ki je dosegljiva samo prek starega mestnega omrežja souka. Mesto bo zaradi svoje izpostavljenosti zaradi različnih turističnih aktivnosti pomagalo pri promociji samega projekta.

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Figure 7: Eye level Perspective of the Central Courtyard.



Figure 9: The passage over the reflective pool on the floating panels.

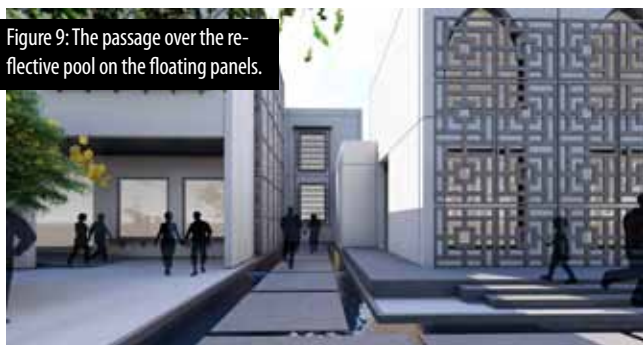


Figure 5: Wall Section.

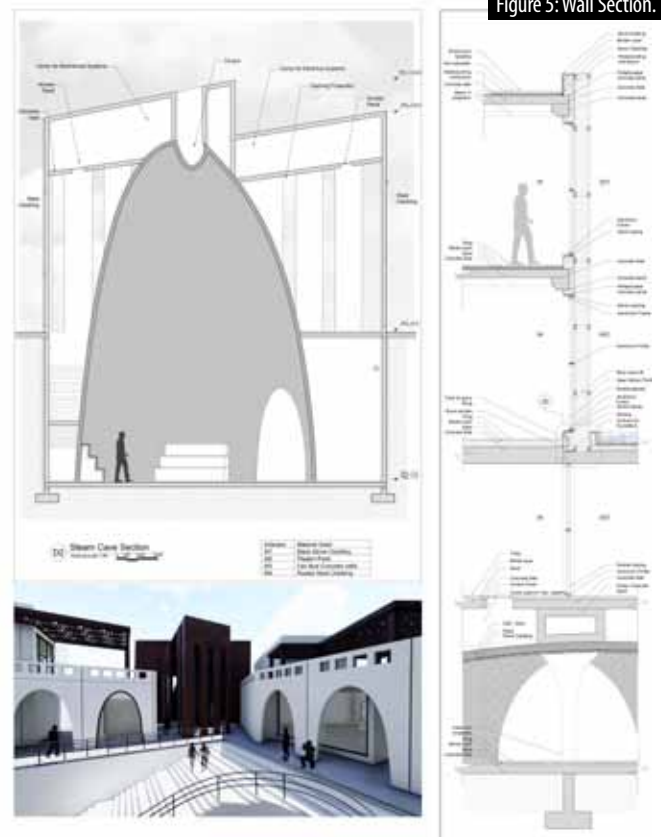


Figure 8: Eye level Perspective in the recessed courtyard.



Figure 10: The main central space of the buried Hammam.



Shant Lehimjian: PREOSTALA NIT ... ČISTO TELO

THE REMAINING STRAIN... A PURE BODY

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Figure 1: Aleppo's Old City Map with Site Location .



The city of Aleppo, Syria is one of the oldest continually inhabited cities in the world (Qudsi, Rebuilding old Aleppo, 2015), throughout the history and it was second largest city and the major economic center of Northern Syria, its historical area covered about 400 hectares and housed over 110,000 people. (Miro, 1997) The Old City of Aleppo, is designated by UNESCO as a World Heritage Site (Qudsi, Rebuilding old Aleppo, 2015). It has suffered massive destruction and has been the most-hit city in the Syrian civil war in 2012. The Old. (AFP, 2016) Approximately 60% of the old city of Aleppo has been extremely harmed, with 30% completely destroyed. (Kutiefan, 2015)

Aleppo, a city rich with its historic layers was administered progressively by the Hittites during history like Assyrians, Akkadians, Greeks, Romans and many others who left their stamp on the city. (Kutiefan, 2015). The old city structure characterized by many functions like khans and public baths, schools, mosques and churches with its large mansions, narrow alleys and covered souks, which all form part of the city's cohesive identity (UNESCO, 2014) . Also, the new city structure has wide roads around six large squares.

One specific square, which has been demolished during the Syrian war was Al Hatab Square, which devastated it along with the surrounding historic buildings.

The square is known as Aleppo's Al Jdaiyde (Jdeideh) Quarter (new district in Arabic), and it is located in a neighborhood that was built to the north of the city's extra-muros in the early 1420s. (UNESCO, 2014), Al Hattab Square found itself on the front line from the beginning of the war in what became a war of attrition between combatant forces.



Figure 2: Pre & Post War Pictures of Al Hattab Square .



Pre-war Al Hatab Square:

Al Hatab Square was the oldest Square in Aleppo, many churches, hammams, khans, hotels and restaurants and coffee shops were established around the square to help service the local inhabitants and visitors. Many cultures came during the 15th and 17th centuries to that square including Armenians who settled there in the 16th century and started developing silk trade with Persia. (Hajjar, 2010) Because of its shops and historical sites, Al Hatab Square and khans quickly became one of the busiest commercial hubs and also became a touristic area, which make the numerous European dealers would likewise come to work together in the square with their neighborhood specialists and interpreters lived here.

The proposal is the Revival of Al Hatab Square

Bringing it back from the Ashes

The proposed intervention is to reconnect Al Hatab Square which was a gathering point for many activities to the surrounding squares, this will recreate the spirit that was extending throughout the squares, into the streets, through the addition of markets, shops, historical sites and functions to serve possible touristic flows.

The project includes the rehabilitation of Al Hatab Square along with street extending and emphasizing the link between the square with Al Farhat Square and Bawabet Yasmin and Dar Zamaireya square (Figure 1). The strategy takes into consideration the spirit of pre-war Aleppo focusing on remembrance through the people with the new master plan. This intervention aims to

Figure 3: Aleppo was like a Pure Body, a well composed organism having all its component working together in synergy. The war came as a Parasite invading this existing organism filled with life. The parasite began nibbling at it until what is left is the remnants of what was once a pure system.

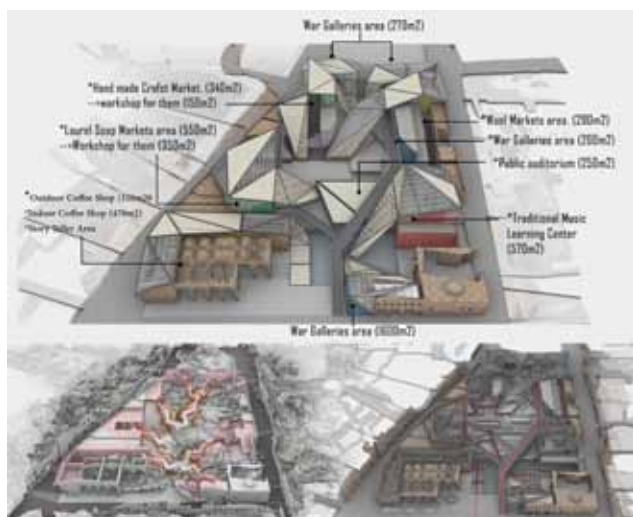


Figure 4: Diagram Showing the distribution of the functions according to the surrounding and the circulation according to the original path.

integrate the previously existing functions coupling them with contemporary needs.

The project develops a comprehensive strategy for the square and its connections to other squares. The project focuses on choosing one specific location, which is Khan Bshir Basha a historical building complex an area of integrated religious, economic and various craft and events. The Khan represents the heart and the principal attraction of the quarter which completely destroyed today (Sari, 2017). The intervention on the Khan acts as an economic trigger to the square, therefore bringing back activity to the area. The Khan will be the key aspect in the reformation of the area, which will eventually boost the activity within all four squares within its context.

Taking into the consideration in the project the cultural heritage, which is very important to people in terms of a sense of place, history, memory and identity. Urban heritage is a social, cultural and economic asset defined by representing layers of historic values and cultures and accumulation of traditions and experience, recognizable in their diversity. (Negussie, 2010)

Al Jdeide which holds three squares Al Hatab Square being the oldest, has historical identity that cannot change. The instinctive feeling of knowing the place but never passing through it will be the prime feature of the project.

ABSTRACT

Mesto Aleppo (Sirija) je bilo priča travmi, odkar so protestniki sredi leta 2012 preplavili vzhodni del mesta in je to območje v Aleppu postalo najbolj krvavo. Eno leto po začetku konflikta med odporiki in vlado (AFP, 2016) je bilo približno 60% starega mesta izjemno poškodovanega, 30% pa popolnoma uničenega (Kutiefan, 2015). Aleppo je bilo eno najstarejših kontinuirano naseljenih mest na svetu (Qudsi, N.D), ki je bilo v preteklosti priča vzponom in padcem kraljestev ali dinastij. Zgodovinsko območje obsega približno 400 hektarjev v katerem živi več kot 110.000 ljudi. (Miro, 1997). Staro mestno jedro Aleppa je Unesco označil za svetovno dediščino (Qudsi, N.D).

Namen predloga je vrniti kulturne in družbene vrednote Aleppa s pomočjo tradicionalnih izdelkov ter umestitvijo objekte za zabavo, ki bi svojim prebivalcem pomagali oživiti podobo Alepa. To je mogoče doseči z oživitvijo Khan Bshir Basha, ki se nahaja na trgu Al Hatab, tako da se zgradi razstavišče s prikazom podob vojne



Figure 7: Plan of Khan Bshir Basha after Restoration.

, orientirane s sever – jug. Trg je znan v Aleppu znan kot četrt Al Jdaijde (Jdeideh), nahaja pa se v sosedi, ki je bila zgrajena severno od mestnih spomenikov iz začetka 15. stoletja (UNESCO, 2014). To območje se je nahajalo na prvi bojni črti že od začetka vojne, ki je postalo vojna iztrebljanja med vojskujočimi silami. Predlog uvaja nazaj tradicionalne 'Souke', delavnice za ročne izdelane izdelke, tradicionalno glasbeno učno središče in odprte galerije o vojni znotraj obstoječih ruševin, ki bodo vrnila duha Aleppa.

Arhitekturni pristop vključuje dediščino Aleppa v arhitekturnih prostorih in funkcijah. Poleg tega je cilj pristopa ohraniti ruševine kot več kot zbirka ostankov, ampak prostor s svojo lastno individualnostjo. Vsaka razdrobljena ruševina je fizična manifestacija vojne in spomin, ki bo ostal dolgo po vračanju sirskega ljudstva.

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Figure 8: Structure System, cover the old Structure with light weight Steel Structure.

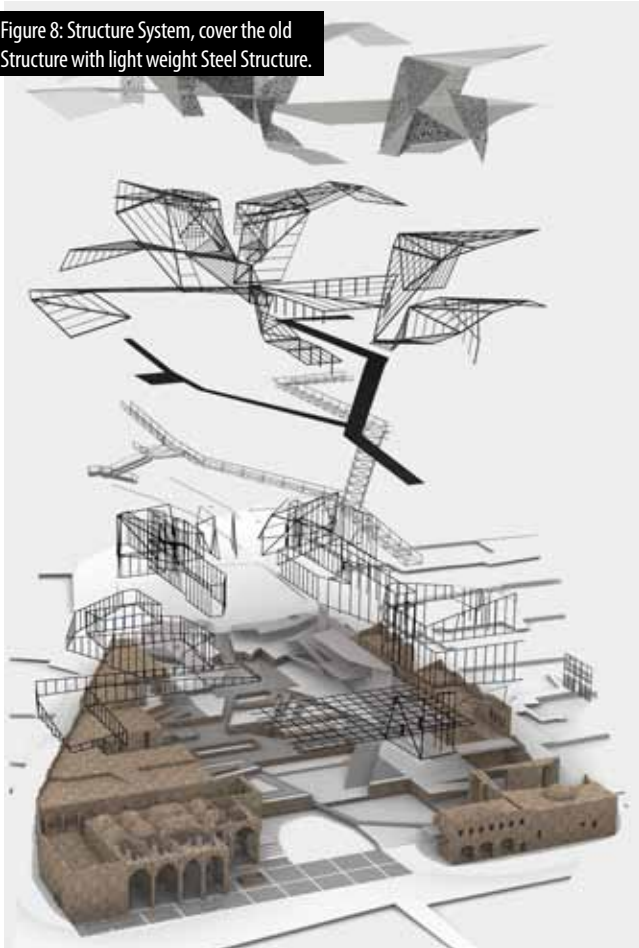


Figure 9: South West Corner Showing the entrance to the Courtyards passing by War Gallery and Souqs.

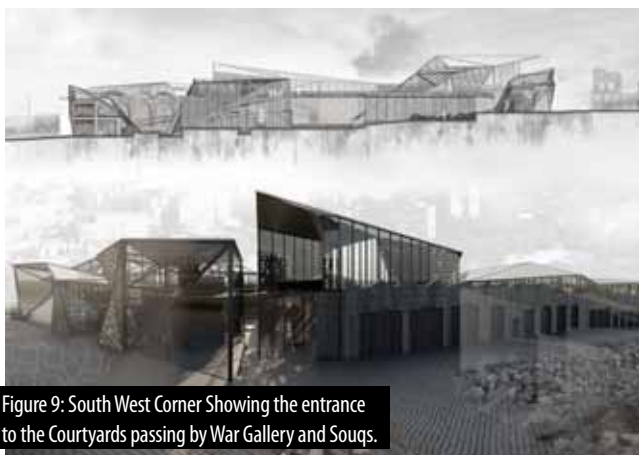


Figure 5: Perspective of the project from South Elevation with South Elevation Showing the combination between the old Structure and the new one .

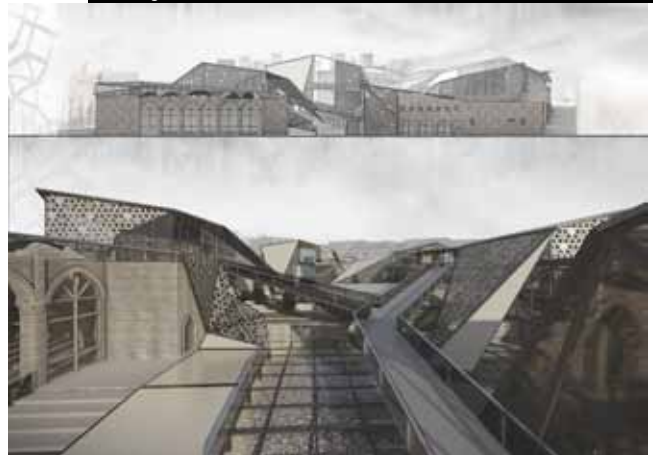


Figure 6: Perspective showing the Coffee Shop Corner on the South side and the War Gallery near to it with Section passing through Music Learning Center and workshop.



Figure 10: Perspective showing the Entrance to the Coffee Shop Corner with Public Auditorium.



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Lektoriranje in prevod: Mojca Vilfan

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Univerza v Ljubljani
Fakulteta za arhitekturo in
Fakulteta za gradbeništvo in geodezijo
Ljubljana, 2019

Scientific journal, No 7 / Year 2019
University of Ljubljana
Faculty of Architecture and
Faculty of Civil and Geodetic Engineering
Ljubljana, 2019

Naslov revije: Title of the Journal:

IGRA USTVARJALNOSTI
teorija in praksa urejanja prostora

THE CREATIVITY GAME
Theory and Practice of Spatial Planning

Urednici: Alenka Fikfak, Alma Zavodnik Lamovšek

Editors: Alenka Fikfak, Alma Zavodnik Lamovšek

Oblikovanje in naslovnica: Gašper Mrak
Lektoriranje: Mojca Vilfan
Prevod: Mojca Vilfan

Design and Title page: Gašper Mrak
Slovene text proofread by: Mojca Vilfan
Translation: Mojca Vilfan

Klasifikacija: (UDK) Renata Stella Čop, (DOI) Teja Koler Povh

Classification: (UDK) Renata Stella Čop, (DOI) Teja Koler Povh

Založila: Univerza v Ljubljani,
Fakulteta za arhitekturo in
Fakulteta za gradbeništvo in geodezijo

Published by: University of Ljubljana,
Faculty of Architecture and
Faculty of Civil and Geodetic Engineering

Spletna stran revije:
<https://www.iu-cg.org/>

Journal's Web Page:
<https://www.iu-cg.org/en/>

Spletna stran številke
<https://www.iu-cg.org/stevilka.php?vol=7&lang=si>

Current Issue Link
<https://www.iu-cg.org/stevilka.php?vol=7&lang=en>

DOI
<http://dx.doi.org/10.15292/IU-CG.2019.07>

ISSN 2350-3637

Univerza v Ljubljani
Fakulteta *za arhitekturo*



JAVNA AGENCIJA ZA RAZISKOVALNO DEJAVNOST
REPUBLIKE SLOVENIJE

Revijo je sofinancirala
Javna agencija za
raziskovalno dejavnost RS.

The journal is financially
supported by the Slovenian
Research Agency

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Fakulteta *za gradbeništvo in geodezijo*

